EXHIBIT B:

April 5, 2017 Application to Department of Health for Permit to Construct

April 5, 2017

Mr. Terry L. O'Clair, P.E.
Director, Division of Air Quality
North Dakota Department of Health
918 East Divide Avenue
Bismarck, North Dakota 58501

Dear Mr. O'Clair:

On behalf of Meridian Energy Group, Inc., Meridian is pleased to submit the attached Amendment to the Permit Application for Air Contaminant Sources filed with the Division on October 17, 2016, pursuant to obtaining approval for a Permit to Construct. This Amendment and related documents includes Meridian's estimate of federally enforceable limits of CO, NOx, PM10, PM2.5, O3 (as VOCs), SO_2 and HAPs, for the proposed facility Davis Refinery Project in Billings County, just west of Belfield, North Dakota.

The Amendment and supporting documentation has been prepared by Vepica USA, Inc. and Zia Engineering and Environmental Consultants, LLC, in accordance with requirements outlined within the Division of Air Quality's stationary source category designation in Section 33-15-14-01 and related National Ambient Air Quality Standards (NAAQS) for new sources. The process description information provided is based on the engineering design presently being developed by Vepica specifically for the complex, high-conversion crude oil refinery system proposed for the Project. The estimated Emissions Inventory for the Project was calculated in accordance with Environmental Protection Agency (EPA) guidelines, and EPA's Emission Estimation Protocol for Petroleum Refineries, Version 3, utilizing the Emission Factors compiled in AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, including applicable published updates and supplements. The physical and operational design of the proposed Davis Refinery is reflected in the emissions inventory and in the selection of related control technologies and operational constraints proposed for the Refinery. Meridian has confirmed that the proposed pollution control technologies and operational constraints result in emissions levels that allow the Refinery to qualify as a Synthetic Minor Source in accordance with the Division of Air Quality's requirements.

The emissions modeling and air quality impact analysis contained in Exhibit D was conducted by Vepica/ZIA on behalf of Meridian. The modeling was conducted in accordance with the Division of Air Quality Criteria Pollutant Modeling Requirements for a Permit to Construct, Site Specific Guidance issued by the Division for the Davis Refinery and other Departments and EPA guidance

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and policy documents, and the pre-Amendment dispersion modeling protocol dated April 2017. Again, Meridian has addressed all the related comments of the Division received in the Division's memorandum dated September, 16, 2016. In conducting this analysis, Vepica/ZIA used EPA approved computer models appropriate for the type of source, projected emissions, and local area topography and meteorology to determine the ambient air quality impact consistent with the Division's guidance. The modeling results indicate that the potential Project emissions do not exceed significance levels for impacts to adjacent properties and will therefore not cause an exceedance of the Ambient Air Quality Standards (AAQS) or the PSD Class I increment levels and Air Quality Related Values (AQRVs) for the Theodore Roosevelt Memorial National Park.

Meridian Energy Group has on several occasions provided an update on the proposed Project to representatives of the Division of Air Quality prior to submitting this Amendment. The information and advice received during each of those discussions has been extremely helpful, and has been incorporated into this Amendment and its exhibits. Meridian plans to continue to work closely with the Division during its review of this Amendment and the Application.

It is Meridian's intention to meet with representatives of the Division at its convenience, in the near future to discuss the Project in greater detail and address any questions concerning the Project arising from a review of this Amendment. Please call if there are any questions or comments in the interim.

Sincerely,
MERIDIAN ENERGY GROUP, INC.

Tom Williams
Executive Vice President, Planning & Permitting

MERIDIAN ENERGY GROUP, INC.

submits the

PERMIT TO CONSTRUCT APPLICATION
&
PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES

for the

DAVIS REFINERY PROJECT

SUBMITTED TO THE NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY

Permit to Construct Application for Davis Refinery

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SUBJECT

1 INTRODUCTION

Meridian Energy Group, Inc. ***("Meridian")*** is hereby amending its October 2016 request for approval from the North Dakota Department of Health ***("NDDoH")***, Division of Air Quality, for the construction of a new crude oil refinery, the Davis Refinery, with a nominal processing capacity of 55,000 barrels per day, located west of Belfield, ND in Billings County. The proposed refinery is being designed to produce refined products including gasoline, diesel fuel, jet fuel and fuel oil, as well as liquefied petroleum gas ***("LPG")***.

After careful analysis of applicable emission thresholds and conducting design optimization of the proposed Davis Refinery, Meridian has concluded that under applicable regulations, the proposed Davis Refinery, as it is being engineered and designed, will require a Synthetic Minor Permit to Construct ***("PTC")*** prior to beginning construction. Design optimization conducted during the early phases of engineering has been aimed at the reduction of air emissions through process technology choices and definition of operating conditions, in conjunction with, the selection of the proper emission controls after a pollutant-by-pollutant analysis of available control technologies. The PTC subject to this permit action application therefore includes federally enforceable limits of regulated air contaminants from the proposed facilities, to effectively limit emissions from the proposed Davis Refinery to below Major Source thresholds.

This application for a Synthetic Minor PTC was prepared in accordance with North Dakota's Permit to Construct requirements in NDAC Chapter 33-15-14-02, the NDDoH's Criteria Pollutant Modeling Requirements for a Permit to Construct, Site Specific Guidance issued by the Department for the Davis Refinery and other Department's guidance and policy documents, including the pre-application dispersion modeling protocol developed in consultation with the Department. Therefore, Meridian is presenting its amended complete Air Pollution Permit Application (AP 100) and a HAP Permit Application (AP-117) for the proposed Davis Refinery, in order to request approval from the NDDoH for the installation of a 55,000 BPD Oil Refining Facility near the town of Belfield in the western part of North Dakota. Meridian will submit any additional information needed by the NDDoH to evaluate the potential risk to human health or the environment from HAP emissions.

2 OVERALL PROJECT DESCRIPTION

2.1 THE COMPANY

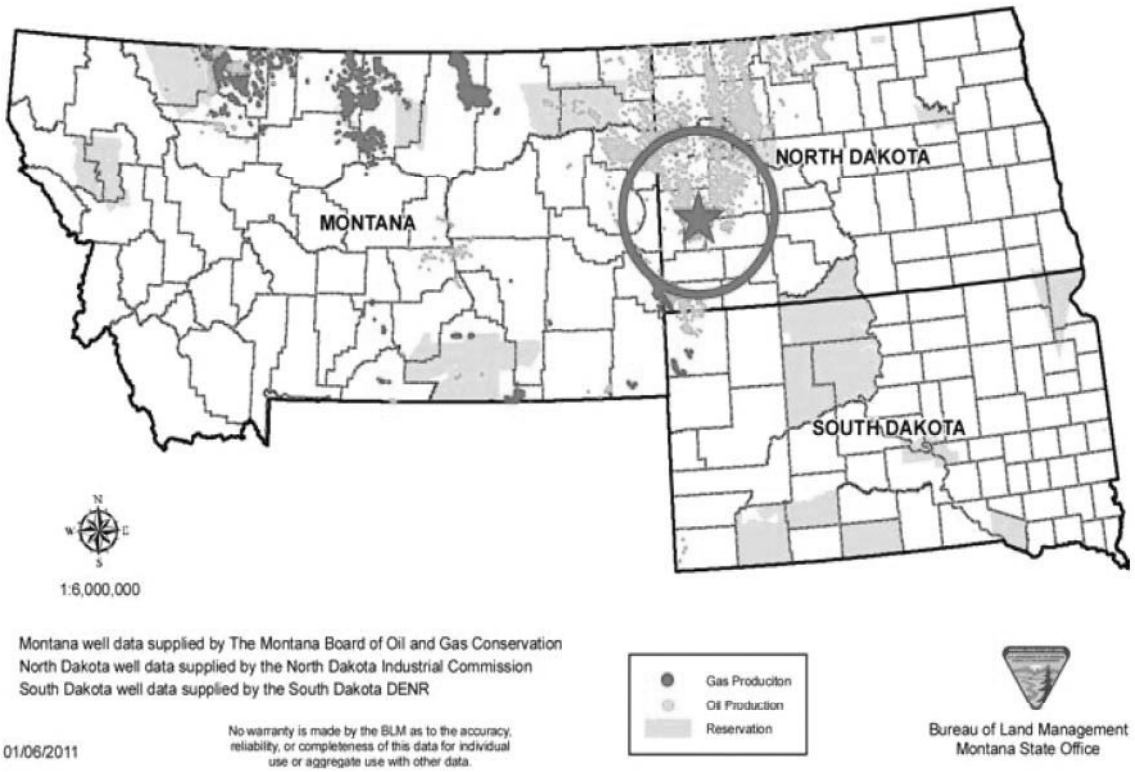


Figure 1. Montana/Dakota Oil Gas Producing Areas.

Meridian Energy Group, Inc. ***("Meridian" or the "Company")*** is a closely-held South Dakota corporation formed to build and operate the Davis Refinery ***(also "Davis" or the "Refinery")***, a 55,000 bpd high conversion crude oil refinery, in Billings County, North Dakota, in the heart of the Bakken Formation (see Figure 1 and Figure 2). The vast majority of the oil being produced in the Bakken is transported to distant refineries, and refined products consumed in the North Dakota markets are transported back for distribution. By building the Refinery near the source of crude oil, the Company can take advantage of low-cost sources of crude oil as feedstock and natural gas as refinery fuel. The Refinery will also benefit from a transportation cost advantage for its refined products.

Meridian will build and operate the Refinery on a 620-acre site in Billings County, North Dakota, just west of the town of Belfield ***(the "Site")***. The Site is located near the major oil and gas producing operations of the Bakken, is in close proximity to major north-south and

east-west highways, adjacent to oil & gas pipeline systems and the Burlington Northern Santa Fe ***("BNSF")*** main rail line that runs through the property. The Site will benefit from straightforward local and state permitting requirements and a favorable job-creation policy expressed by local and state governmental agencies. Meridian is designing the Refinery to be a 55,000 bpd high-conversion facility, producing a complete product slate including gasoline, diesel, jet fuel, fuel oil and LPG.

The Davis Refinery will be built near the source of Bakken crude oil production, where the Company can take advantage of low-cost sources of crude oil as feedstock and natural gas as refinery fuel. Abundant low-cost natural gas in the Bakken allows the Refinery to operate at low emissions levels and maximize efficient usage of crude feedstock. The Refinery also benefits from a transportation cost advantage that will be enjoyed by its refined products. Crude oil refineries can be configured to produce a wide variety of petroleum based products, from those commonly known like gasoline, jet and diesel fuels, to lubricants, asphalt base, plastics, waxes and lesser known specialty chemicals. The Refinery design will take full advantage of the particular nature of the Bakken Crude, which is a light-sweet crude, to produce a complete product slate responsive to the market and the needs of its tolling partners.

2.2 INDUSTRY AND MARKET

Shale oil was first discovered in the area of western North Dakota known as the Bakken formation several decades ago. However, until recently, oil and gas E&P companies found it cost prohibitive to produce. In 2007, companies returned to the Bakken with new techniques and began to produce significant amounts of crude oil from the shale formations, and by 2009, a full-blown oil boom was underway. North Dakota became a major U.S. domestic producer, forever changing the dynamics of the oil & gas industry. In recent years, North Dakota surpassed both Alaska and California to become the nation's second largest oil producing state. Over 1.1 million barrels per day of crude oil are produced in the Bakken, and most oil is shipped out of state for refining. Crude oil in its raw state is not a useful product. Refineries separate the crude oil into several categories of useful products through fractional distillation. These products are typically grouped into three categories: Light Distillates such as gasoline and naphtha; Middle Distillates, such as

diesel fuel and kerosene used as jet fuel; and, Heavy Distillates such as lubricants, fuel oil, wax and asphalt. Transportation fuels are the primary product category produced by refineries in the U.S. In 2013, according to the U.S. Energy Information Administration ***("EIA")***, one 42-gallon barrel of crude oil is converted by reporting refineries into 19 gallons of gasoline and 14 gallons of diesel fuel.

2.3 THE DAVIS REFINERY SITE

The Company will build and operate the Davis Refinery on a 620-acre site in Billings County, North Dakota (*see Figure 2)* ***(the "Site")*** where the Company has entered into an option-purchase agreement with the owner. As of July 5th, 2016 the Billings County Board of Commissioners unanimously approved a rezoning permit to industrial use that will allow the construction of the Davis Refinery on this property. The Site is located near the major oil and gas producing operations of the Bakken, the Site is in close proximity to major north-south and east-west highways, to oil and gas pipeline systems, the Burlington Northern Santa Fe ***("BNSF")*** primary rail line runs through the property, and the site is adjacent to the BakkenLink pipeline and rail terminal.

2.4 THE REFINERY

The Davis Refinery will be an approximately 55,000 barrels per standard day ***("bpsd")*** high-conversion crude refinery that will produce a full slate of refined products. Meridian intends to build the Davis Refinery in phases, to minimize capital investment during the initial phase and allowing reinvestment of the initial operational profits into the construction of the second phase. The initial phase of the Davis Refinery entails 27,500 BPD conventional distillation facilities to produce Tier 3 Gasoline and USLD from the atmospheric light and intermediate distillates and Fuel Oil from the atmospheric bottoms. The second phase will include upgrade adding another 27,500 BPD crude distillation unit and conversion units to improve gasoline, jet fuel and diesel yields, while minimizing the production of heavy residual fuel oil.

2.5 OVERALL PROGRAM SCHEDULE

The Company has initiated engineering and detailed design will proceed in parallel with the project financing activities, which Meridian hopes to result in financial closing on or about mid 2017. If that schedule is maintained, the initial phase of the Refinery will achieve Mechanical Completion sometime in early 2018. The full Refinery will follow the initial phase by eighteen to twenty-four months.

2.6 PTC APPLICATION AMENDMENT

During the initial phase of the Davis Refinery atmospheric distillation unit residue will be produced as fuel oil. To allow for conversion of heavy distillates into more valuable lighter products during the second phase of the Davis Refinery, Meridian, in its initial PTC application submitted to NDDoH on October 17, 2016, proposed a cracking process based on Fluid Catalytic Cracking ***("FCC")*** and associated downstream units to convert gas oils into naphtha and increase the production of gasoline. Upon further evaluation of the market conditions and of the term, and conditions of distribution and marketing agreements for the Davis Refinery products, in which production of jet and diesel fuel will be important, Meridian has chosen the hydrocracking ***("HYK")*** refining process as an attractive alternative. The addition of vacuum distillation and a HYK Unit during the second phase of the Davis Refinery will provide Meridian with the flexibility to adjust the ratio of ULSD to naphtha produced to meet changing market demands, while ensuring the quality of the products meets the current stringent fuel environmental standards.

The replacement of the initially proposed FCC unit and downstream units (alkylation, hydrotreating, sweetening and isomerization) by the HYK process has both economic and environmental advantages for the Davis Refinery. This process combines the cracking of large chain molecules and hydrotreatment of lighter products into a single processing unit that can ensure better conversion of low-quality vacuum gas oil into high-quality, clean burning middle distillates and reformer quality full range naphtha, while also improving the Refinery's environmental footprint since hydrocracking does not yield any coke as by-product.

The HYK Unit at the Davis Refinery will utilize Axen's licensed technology to achieve 95% conversion of VGO into middle distillates in a single stage unit. Naphtha produced

will be desulphurized reformer feed quality that will undergo further processing prior to being added to the gasoline pool. Diesel produced will meet ULSD specifications. Unconverted gas oil will be low sulfur and combined with the vacuum residues to be marketed as Low-sulfur Fuel Oil ***("LSFO")***

Table 1 below summarizes the main unit changes from the original PTC application process scheme to the current process scheme that is being presented in this PTC amendment, additional details on the changes can be found in Exhibit B – Emissions Inventory. Block flow diagrams for the new Davis Refinery process scheme are included in Exhibit E – Block Flow Diagrams.

Table 1. Summary of Proposed Davis Refinery Process Unit Changes

Unit Number	Original Unit	Current Unit	Main change
101	Atmospheric Distillation Unit #1	Atmospheric Distillation Unit #1	Increased heater duty
102	Atmospheric Distillation Unit #2	Atmospheric Distillation Unit #2	Increased heater duty
103	Vacuum Distillation Unit	Vacuum Distillation Unit	Decreased capacity from 26,000 BPD to 16,800 BPD. Decreased heater duty.
105	Naphtha Hydrotreater Unit	Naphtha Hydrotreater	Increased capacity from 12,108 BPD to 16,128 BPD. Increased heater duty.
106	Catalytic Reformer #1	SR/CCR Catalytic Reformer	Substituted for transformable SR to CCR design. New capacity of 16,128 BPD. Increased heater duty.
107	Catalytic Reformer #2	N/A	Eliminated.
110	Diesel Hydrotreater	Distillates Hydrotreater	Increased capacity from 11,539 BPD to 19,850 BPD to process both kerosene and diesel cuts. Increased heater duty.
111	Light Naphtha Hydrotreater	N/A	Eliminated.
112	Fluid Catalytic Cracker (FCC)	Hydrocracker	Substituted by a Hydrocracker Unit with a processing capacity of 14,380 BPD and increased heater duty.
114	FCC Naphtha Hydrotreater	N/A	Eliminated.

Unit Number	Original Unit	Current Unit	Main change
117	Isomerization Unit	N/A	Eliminated.
118	Alkylation Unit	N/A	Eliminated.
120 & 122	SRU & Thermal Oxidizer	SRU & Thermal Oxidizer	Increased SRU capacity from 10.2 to 11.2 LTPD. No changes to thermal oxidizer.
125	Kerosene Hydrotreater	N/A	Eliminated.
202	Boilers	Boilers	Decreased overall total steam generation capacity from 180 MMBTU of medium pressure steam to 114 MMBTU of combined medium/high pressure steam.
203	Tank Farm	Tank Farm	Reduction of on-site storage capacity which resulted in elimination of 7 feedstock, intermediates and finished product storage tanks.
206	Wastewater Treatment Plant	Wastewater Treatment Plant	Increased design capacity from 140 gpm to 180 gpm.
207	Flare System	Flare System	No changes.
208	Truck Loading-Unloading System	Truck Loading-Unloading System	Increased capacity to handle about half of the full refinery's production. Balance via future pipelines.
	Rail Loading-Unloading System	Rail Loading-Unloading System	Eliminated.
212	Firewater Pumps	Firewater Pumps	No changes
215	Cooling Towers	Cooling Towers	Increased capacity from 3-1,500 gpm cooling tower cells to 5-2,500 gpm cooling tower cells.
216	Emergency Power Generator (EPS) System	Emergency Power Generator (EPS) System	No changes
FUGITIVE	Process equipment leaks in VOC and Natural Gas service	Process equipment leaks in VOC and Natural Gas service	Adjusted to units in current process scheme.

3 REFINERY OVERVIEW

The proposed refinery scheme when fully installed will utilize conventional distillation and high-conversion technology to process up to 55,000 bpd of feedstock crude oils into a full slate of refined products including Liquified Petroleum Gas ***("LPG")***, Gasoline, Jet Fuel, Auto Diesel, and Fuel Oil.

Feedstock to the refinery will be delivered via pipeline and pumped into storage tanks. From the storage tanks, crude oil will be fed to conventional distillation (atmospheric and vacuum) to separate feedstock into Naphtha, Kerosene, Diesel and Gas Oil which will be sent to other units for further processing. Propane and Butane will be obtained from the overhead distillation off-gases.

To enhance environmental compliance, Naphtha, Kerosene and Diesel cuts will undergo hydrotreatment to remove sulfur and other pollutants and meet Tier 3 Gasoline, Jet Fuel and Ultra-Low Sulfur Diesel ***("USLD")*** specifications. To meet benzene content in the gasoline pool, light Naphtha will be hydrogenated to saturate benzene into cyclohexane. The heavy Naphtha will be further processed via catalytic reforming to increase octane to meet gasoline blending requirements.

Hydrocracking has been chosen for conversion of vacuum gas oil into lighter products and improve the refinery yields of LPG, Gasolines, Jet Fuel and ULSD based on market demands. The unconverted gasoil will be combined with the vacuum residues and marketed as low-sulfur Fuel Oil.

To support the plant's main processes, a sulfur recovery system will treat plant off-gas streams to be used as refinery fuel gas, while producing elemental sulfur. Ancillary equipment for the refinery will include utilities such as Raw Water Treatment, Fire Water, Cooling Water, Steam Generation, Condensate, Plant Air, Instrument Air, Electrical Distribution and Emergency Power Generation, and Waste Water Treatment.

A tank farm will include storage for incoming feedstock as well as refined products. Loading facilities will include accommodations for truck transportation of refined products. Refinery buildings will include the main control room, administrative offices, and maintenance shop and warehousing.

4 PROCESS DESCRIPTION

4.1 OVERVIEW

The proposed refinery scheme at full capacity includes atmospheric distillation, naphtha and intermediate distillates hydrotreatment, naphtha reforming and benzene saturation, vacuum distillation, and hydrocracking to process up to 55,000 BPD of Bakken crude oil into a full slate of refined products including LPG, Tier 3 Gasolines, Jet Fuel, ULSD, and Low-sulfur Fuel Oil.

The selected configuration for the Davis Refinery corresponds to a cracking refinery (see Davis Refinery Block Flow Diagram in Exhibit E) having substantial capability for yield and quality improvement, while minimizing the production of heavy residual fuel oil. Product sulfur levels are controlled by various desulphurization methods to meet sulfur product specifications.

Feedstock to the refinery will be delivered via pipeline and pumped into storage tanks. From the storage tanks, crude oil will be fed to two Crude Atmospheric Distillation Units ***("ADUs")*** to separate feedstock into Overhead Gas plus Naphtha, Kerosene and Diesel cuts which will be sent to other units for further processing. To increase the production of high-value petroleum products, atmospheric residue will be run through a Vacuum Distillation Unit ***("VDU")*** for further fractioning.

Heavy and Light Naphtha from the Gas Plant is fed to the Naphtha Hydrotreater ***("NHT")*** Unit to remove sulfur and nitrogen, among other impurities, that would otherwise poison the catalyst used in the downstream catalytic reforming process. Hydrotreated Heavy Naphtha is fed to the Catalytic Reforming Unit ***("CRU")*** to transform the low-octane components into higher octane reformate to be used in gasoline blending. As a byproduct of the CRU, hydrogen rich gas is produced to supply the requirements of the hydrotreater and hydrocracker units. To meet benzene content limitations in the gasoline pool, light Naphtha from the NHT and the CRU is sent to the Benzene Saturation Unit ***("BSU")*** to be hydrogenated and convert benzene into cyclohexane.

Straight kerosene and diesel from the ADUs is sent to the Distillates Hydrotreater ***("DHT")*** Unit where sulfur and other impurities are removed from the incoming feed.

The DHT includes a backend product Splitter to separate Ultra-Low Sulfur Kerosene **("ULSK")** from the ULSD product and allow the Davis Refinery to produce, based on market demands, high quality Jet Fuel during summer operations.

Combined gasoil feed from the VDU, is fed to the HYK Unit for conversion into lighter products such as LPG, reformer grade naphtha, ultra-low sulfur middle distillates, LSFO. Cracking of large hydrocarbon molecules into smaller molecular hydrocarbons take place in this unit under the presence of hydrogen, heat, pressure, and a catalyst. LPG from the HYK is sent to the refinery's Gas Plant. The HYK heavy naphtha is further treated in the CRU prior to being blended with the HYK light naphtha into the gasoline pool. Intermediate ultra-low sulfur distillates (kerosene and diesel) from the HYK are sent to Jet Fuel and/or ULSD storage based on seasonal operations and market demands. esulfurized unconverted heavy cycle oil produced in the HYK is blended with the residual fuel oil from the VDU to produce LSFO.

Due to the high paraffin content and therefore poor cold-flow properties of distillates from Bakken crude, the kerosene and diesel will be blended during wintertime fuel production, to produce ULSD with good cold flow operability at the expense of Jet Fuel production. To meet market specifications during wintertime and summertime fuel production, the RVP of the gasoline produced by the proposed Davis Refinery will also be adjusted seasonally.

To support the plant's main processes, plant sour off-gas streams and acid gas from the sour water unit will be routed to the Sulfur Recovery Unit ***("SRU")*** for Hydrogen Sulfide (H_2S) removal. The resulting sweet gas is sent to the fuel gas system. A sulfur recovery unit will convert removed H_2S to elemental sulfur.

The refinery includes utilities such as process water, fire water, cooling water, demineralized water, steam generation, condensate, plant air, instrument air, power distribution and emergency power generation, storm water, and waste water treatment.

The tank farm includes incoming feedstock tankage and intermediate and refined product storage. Loading facilities will include accommodations for both truck transportation and feedstock and product pipelines. Refinery buildings will include the main control room, administrative offices, maintenance shop, first aid services, and warehousing.

4.2 ATMOSPHERIC DISTILLATION UNITS (ADUs)

The ADUs separate the lighter hydrocarbons from the heavier hydrocarbons based on the differences in their boiling point. Crude feedstock is heated in the crude feed heaters prior to entering the atmospheric distillation tower. As the hot gases move up the height of the tower they become cooler and condense into a liquid. The liquids are drawn off the distillation tower at specific heights based on the boiling point of the specific cut to be drawn, ranging from raw naphtha at the top, raw intermediate distillate fuels in the mid-sections, and leaving at the bottom the heavier parts called atmospheric tower bottoms ***("ATB")***.

Overhead vapors from the ADUs will be sent to the Gas Plant to separate into refinery fuel gas, LPG and butane for the gasoline pool. Intermediate distillate (Kerosene and Diesel) cuts from the ADUs will be sent to the DHT for further processing. To increase the production of high-value petroleum products, ATBs will be run through the VDU for further fractioning prior to hydrocracking.

A single stage desalter will be included in the design of the ADU to reduce salts, suspended solids and other water soluble compounds to reduce heat exchangers and fractionator fouling and plugging due to salt deposition and reduced rate of corrosion in the overhead system. The effluent from the desalter will be sent to the oily water treatment system.

Emission point sources associated with the Atmospheric Distillation Unit include the refinery fuel gas fired furnaces of feed heaters 101-H-0101 and 102-H-0201.

4.3 GAS PLANT

Overhead vapors plus naphtha from the ADUs, are sent to the corresponding Gas Plant to separate them into fuel gas, propane, butane, and C5+.

The naphtha liquids coming off the atmospheric distillation columns will be routed to debutanizer columns, which will serve to stabilize the naphtha liquids by removing butane and lighter ends. The stabilized naphtha will be fed to the Naphtha Hydrotreater and the overhead gases from the debutanizer will be treated for mercaptans removal, heated and fed to the depropanizer column. The overhead stream of the depropanizer will be recovered as propane grade LPG and the bottom product as butane.

There are no emission point sources associated with the Gas Plant.

4.4 NAPHTHA HYDROTREATER (NHT) UNIT

The NHT Unit will treat heavy and light naphtha to reduce sulfur and nitrogen contents, among other impurities, that would otherwise degrade the catalysts used in the downstream processes. Catalyst degradation would lead to excessive coking and rapid deactivation of the catalysts.

The feed to the NHT will be mixed with recycle hydrogen and brought to reactor inlet temperature by a refinery fuel gas fired reactor feed heater prior to entering the NHT reactor. The reactor effluent goes through a separator from where the liquid phase flows through a refinery fuel gas fired reboiler to the product stripper to be stabilized and sent to the catalytic reformer. The off gas from the stripper is routed to the sulfur recovery unit before being sent to fuel gas system for distribution to fuel gas users. Once stabilized, the naphtha liquids are heated in a refinery fuel gas reboiler prior to being fed to the splitter column to be separated into light and heavy naphtha and routed for further processing to the Benzene Saturation Unit ***("BSU")*** and Catalytic Reforming Unit ***("CRU")***, respectively.

Emission point sources associated with the NHT Unit include the refinery fuel gas fired furnaces of the reactor feed heater 105-H-0501, stabilizer reboiler 105-H-0502 and splitter reboiler 105-H-0503.

4.5 CATALYTIC REFORMING UNIT (CRU)

The CRU process transforms the low-octane naphtha feed into higher octane reformate to be used in gasoline blending. As a byproduct, hydrogen rich gas is produced to supply the requirements of the refinery's hydrotreaters, benzene saturation and hydrocracking units.

The reaction section of each CRU consists of three reactors with a catalyst bed and three refinery fuel gas fired reactor feed heaters with a common stack. The feed to the CRUs initial reactor is preheated with the last reactor effluent, combined with a stream of hydrogen-rich recycle gas and further heated to the reactor inlet temperature until totally vaporized. As the vaporized feed flows through the bed of catalyst in each reactor, dehydrogenation, which is highly endothermic, occurs. Therefore, to maintain the required

reaction temperature and the rate of reaction, the effluent of each reactor is reheated in a subsequent reactor feed heater before passing through to the following reactor.

Cooled effluent from the last reactor flows into a separator from where hydrogen-rich gas is recycled to the process and excess hydrogen-rich gas from the reforming reactions is exported for use in the NHT, DHT, HYK and BSU Units. The liquid from the gas separator vessel is routed through the refinery gas fired stabilizer reboiler into the stabilizer column where butane and lighter gases produced by the hydrocracking reactions are split from the high-octane liquid reformate product. Overhead off-gases from the stabilizer column are routed to the gas plant to obtain propane grade LPG and fuel gas and subsequently to the sulfur recovery unit before being sent to the fuel gas system for distribution to fuel gas users. The reformate product is further fractionated in two streams, light and heavy reformate. The heavy reformate is high in octane and low in benzene, hence it is an excellent blending component for the gasoline pool. The light reformate contains essentially all the benzene produced in the reforming process and will requires further processing in the BSU to meet benzene content in the gasoline pool.

Meridian has opted to invest in a transformable catalytic reforming unit that will operate as a Semi-Regenerative ***("SR")*** Catalytic Reformer at a lower capital cost during the first phase of the Davis Refinery and will have the ability to be converted to Continuous Catalyst Regeneration ***("CCR")*** operation with increased Naphtha reforming capacity during Phase 2 in order stage their capital investment, and reformate and hydrogen yields.

During the initial phase of the Davis Refinery, the catalyst will be periodically regenerated by in situ high temperature oxidation about every 6 to 24 months to maintain catalyst activity. During Phase 2 a closed loop catalyst-transfer equipment and special regenerator will be added to continuously transfer catalyst from the operating reactors to the regenerator and back to the reactors.

Emission point sources associated with the CRU include the refinery fuel gas fired furnaces of heaters 106-H-0601/2/3 (via a common flue stack) and stabilizer reboiler heater 106-H-0605. Other CRU emissions include flue gases from periodic catalyst regeneration in Phase 1, and once the full refinery is operational emission point sources will include the CCR regeneration vent 106-VS-0601.

4.6 BENZENE SATURATION UNIT (BSU)

Benzene precursors in the CRU feed are partially converted to benzene in the reforming process and primarily contained in the light reformate stream from the reformer splitter. To ensure the Davis Refinery meets maximum gasoline specification of 0.62 vol. % benzene, light naphtha from the NHT and light reformate from the CRU will be further processed in the Benzene Saturation Unit ***("BSU")*** prior to sending them to the gasoline blending pool.

The BSU utilizes a highly active catalyst that is operated in the liquid phase and under mild conditions to hydrogenate and convert the benzene contained in the feed into cyclohexane. The reactor effluent is stabilized in a stripper column and sent for storage in the gasoline blending pool. Off-gases from the stripper column are routed to the sulfur recovery unit before being sent to the fuel gas system for distribution to fuel gas users.

There are no emission point sources associated with the BSU.

4.7 DISTILLATES HYDROTREATER (DHT) UNIT

The DHT Unit will treat the kerosene and diesel cuts from the ADUs to remove sulfur, nitrogen and waxes and produce ULSK and ULSD with a final product sulfur content of less than 15 wppm.

The intermediate distillates from the ADUs are combined, mixed with recycle hydrogen and then brought to reactor inlet temperature by a refinery fuel gas fired reactor feed heater prior to being fed to the DHT. Effluent from the reactor goes through a separator from where the liquid phase stream flows to the product stripper in which direct steam injection is used as the stripping medium. Off gases from the stripper are routed to the sulfur recovery unit before being sent to the fuel gas system for distribution to fuel gas users. Stripped liquids are heated in a refinery fuel gas reboiler prior to being fed to the splitter column to be separated into kerosene and diesel and routed to Jet Fuel and/or USLD blending and storage as seasonal and market conditions require.

Emission point sources associated with the DHT Unit include the refinery fuel gas fired furnaces of the reactor feed heater 110-H-1001 and splitter reboiler 110-H-1002.

4.8 VACUUM DISTILLATION UNIT (VDU)

ATB from the ADUs are sent to the VDU for further fractionation. ATB is preheated through heat exchange with the vacuum gas oil products and finally brought to the vacuum distillation column inlet temperature by a refinery fuel gas fired feed heater. The column separates the vacuum gas oils under vacuum pressure into light vacuum gas oil ***("LVGO")*** and heavy vacuum gas oil ***("HVGO")*** to avoid product cracking and degradation at high temperature. LVGO and HVGO are cooled and combined to feed the HYK Unit while vacuum residue is sent to fuel oil storage.

Emission point sources associated with the VDU include the refinery fuel gas fired feed heater 103-H-0301.

4.9 HYDROCRACKING UNIT (HYK)

Combined LVGO and HVGO from the VDU are fed to the HYK Unit for conversion into lighter products, LPG, reformer grade Naphtha, ULSK and ULSD. The hydrocracking process occurs in the presence of a catalyst and in a hydrogen-rich atmosphere at elevated temperatures and pressures. Basically, the process cracks the high-boiling, high molecular weight hydrocarbons into lower-boiling, lower molecular weight hydrocarbons while removing any sulfur and nitrogen present in the hydrocracking feedstock. As a result, the hydrocracking products are essentially free of sulfur and nitrogen and other impurities. Diesel from the HYK is ULSD quality that can be sent directly to diesel blending while Naphtha is reformer feed quality that can be sent for further processing in the CRU to make it suitable for the gasoline pool.

The HYK feed is mixed with a stream of high-pressure hydrogen and brought to the reactor inlet temperature by a refinery fuel gas fired heater before it enters the top of the reactor where it flows through a series of specially formulated catalyst beds to achieve targeted products chosen by refinery operations. Two main chemical reactions occur in the reactor: the catalytic cracking of heavy hydrocarbons into lighter unsaturated hydrocarbons and the saturation of the newly formed hydrocarbons by infusing them with hydrogen ("hydrogenation"). Other reactions occurring which improve the quality of the feed include the saturation of any olefinic material present, the saturation of aromatics

("hydrodearomatization"), as well as the hydrogenation of the sulfur and nitrogen present in the feedstock to form gaseous H_2S and ammonia (NH_3).

The resulting reactor off gases are routed to the sulfur recovery unit prior to being sent to fuel gas system for distribution to fuel gas users. Effluent from the hydrocracking reactor is cooled by heat exchange with the reactor feed and further air cooled before being routed to a high-pressure separator where most of the hydrocarbons condense. The hydrogen-rich gas streams from the separator are scrubbed to remove H_2S and compressed and mixed with fresh hydrogen for recycling and reuse in the process. The hydrocarbon liquid phase from the high-pressure separator is routed to a low-pressure flash drum where it partially vaporizes. Off-gases are routed to the sulfur recovery unit for treatment while liquids are routed to the H_2S stripper where steam is used to remove H2S as sour water. From there, the stripped reactor liquids are heated in a fuel-fired heater and fed into the splitter which is a continuous distillation tower that separates the hydrocracked hydrocarbon stream into LPG, Naphtha, ULSK, ULSD, and low-sulfur unconverted gasoil.

Emission point sources associated with the HYK include the refinery fuel gas fired furnaces of the reactor feed heater 112-H-1201 and fractionator feed heater 112-H-1202.

4.10 SOUR WATER UNIT (SWU)

The SWU will treat sour water generated at the refinery's ADUs, NHT, DHT and HYK Units to remove H_2S and NH_3, producing stripped water and an acid gas streams. Stripped water is recycled back to the refinery processes as desalting water for the ADUs and as wash water for the hydrotreating/hydrocracking processes. Any excess stripped water will be sent to WWTP. The resultant sulfur-laden acid gas is processed at SRU where H_2S is reduced to elemental sulfur.

There are no emissions point sources associated with the Sour Water Stripper Unit.

4.11 SULFUR RECOVERY UNIT (SRU)

To handle the sulfur recovery needs of the proposed Davis Refinery the estimated required capacity of the SRU is 11.2 LTPD. At this level of sulfur recovery neither scavengers (effective for < 0.1 ton/day), nor Claus units (effective for >20 tons/day), are viable

options. Treatment options that involve iron-redox are proven, effective sulfur recovery technologies for sulfur recovery needs in the intermediate (0.1-20 tons/day) range.

For the Davis Refinery, Meridian has chosen Merichem's LO-CAT technology for sulfur recovery. This patented liquid-redox system uses a proprietary chelated iron solution catalyst to convert H_2S to innocuous, elemental sulfur slurry inside an oxidizer vessel. The slurry passes through a sulfur filter to produce an elemental sulfur cake which is loaded onto trucks for offsite reuse or disposal. No hazardous waste byproducts are produced. The environmentally safe catalyst is continuously regenerated in the process. The Direct LO-CAT process allows 100% turndown in gas flow and H_2S concentrations and has an H_2S Removal efficiency of 99.9 %.

Emission point sources associated with the SRU include, a thermal oxidizer (122-H-2201) for complete combustion of tail gases from the LO-CAT oxidizer.

4.12 UTILITIES AND INDUSTRIAL SERVICES

The Davis Refinery will be designed to be a self-sufficient complex responsible for generating all the utilities and industrial services required except natural gas and electrical power.

4.12.1 Storage

The Storage Facilities are designed to store crude feedstock as well as, finished products, component blend stocks and intermediate stocks. The feedstocks and products handled in the Storage Area include:

Feedstock:	Bakken Crude
Intermediate products:	Desulfurized Heavy naphtha
	Distillates (Kerosene and Diesel)
	Light Slop
	Heavy Slop
	Vacuum Gasoil
Blend stocks:	Reformate
	Hydrotreated LightNaphtha
	Butane

Final Products:	Propane grade LPG
	Tier 3 Regular Gasoline
	Jet-Fuel
	ULSD
	Low-sulfur Fuel Oil

Crude, Naphtha, Reformate and Gasoline storage tanks will be Internal Floating Roof type. Diesel, fuel oil and slop oil tanks will be cone roof. Butane and LPG will be stored in bullet type tanks. A vapor recovery system is contemplated to ensure emissions from the tank farm area do not exceed permissible levels.

4.12.2 Loading / Unloading Facilities

The Bakken crude will arrive to the Davis Refinery via pipeline. To supply the local market with refined products, and accommodate raw material receipt from the nearby areas, the refinery will also have a tanker truck loading/unloading facility. During Phase II, a product pipeline system is expected to be available to move part of the production into common carrier pipeline systems in the Midwest.

A Tank Truck Loading Facility will be required to ship finished products, and will be the principle mode of transport for first phase product. Tank trucks will be loaded at island-type racks, equipped with several islands, each of which will have loading positions equipped with several product loading arms. A vapor recovery connection will be provided at each loading island for VOC control.

4.12.3 Fuel Gas System

The Davis Refinery heaters, boilers and thermal oxidizers will be designed to burn refinery fuel gas. The fuel gas system will operate under pressure control and will be designed to collect light ends from the gas plant and off gases from the refinery processes and distribute treated fuel gas to low pressure consumers. Before being routed to the fuel gas distribution system, sour gas streams will be treated in the SRU to remove H_2S. The totality of the fuel gas will be treated to meet hydrocarbon and water dew point required by the consumers.

All fuel gas streams will be sent to a central collection drum to dampen the effect of fluctuations in stream composition and thermal content. The drum is the pressure control

point for the system. It provides volume to reduce pressure fluctuations and to disengage entrained liquid.

There are no emissions point sources associated with the Fuel Gas System. The H_2S removed from the fuel gas stream will be recovered as elemental sulfur in the SRU .

4.12.4 Raw and potable water system

The main source of raw water for the Davis Refinery will be brackish groundwater from wells drawing from the Dakota formation located at a depth of approximately 5000 ft. Other potential source of water could be a treated effluent for industrial reuse.

The Raw Water Treatment System will be composed of two separate treatment trains: the Demineralized Water System ***("DWS")*** and the Service Water System ***("SWT")***. This segregation is to prevent mixing brine water with low salinity water with oil traces.

The SWS will receive recycled water from the Wastewater Treatment Plant and blowdowns from the cooling and boiler system and will provide water with the quality required by the cooling system and the process and utility water needs of the refinery. The DWS will receive water from the water wells and will provide water with the quality required by the Boiler Feed Water System. There are no emissions point sources associated with the Raw Water Treatment System.

4.12.5 Fire water system

The requirements for fire water are intermittent, but constitute a very large instantaneous flow. Raw water and/or stormwater collected from non-process areas will be used as a source for the plant's fire water system. Depending on the confirmed quality of the water source, it will be routed to the fire water tank with minimal treatment. Total fire water pump capacity requirements will be provided by three pumps, driven by 600-hp diesel engines. It is anticipated that diesel engines will be tested once a month to ensure operability of the firewater system. Annual hours of operation are not expected to exceed 100 hours. A jockey pump, installed in parallel with the main fire pumps, pressurizes the system when the latter are not in use.

4.12.6 Cooling Water System

The use of cooling water at the Davis Refinery will be minimized considering that water is scarce in this particular region. Air cooling will be the preferred cooling method in order to reduce the global import of raw water.

Any cooling water requirements will be supplied in a non-contact recirculating type circuit via an inline counterflow, induced draft cooling tower system comprised of multiple cooling water cells. The selected systems recirculate the cooling water throughout the facility, as opposed to a once-through configuration, and the cooling mechanism is induced mechanical draft type with counter flow arrangement. During the mixing of the air with the warm water returning to the cooling tower, a very small fraction of the water will exit the towers as drift droplets. To significantly reduce the drift loss, and minimize the visible water vapor plume typical of cooling tower systems, drift eliminators (0.001% drift rate) will built into the media.

The cooling water system will include the cooling water pumps, chemical dosing packages, side stream filtration, blowdown facilities and distribution network. The system will have a continuous make-up and blowdown. The makeup is controlled by the cooling tower basin liquid level to balance losses by evaporation, drift, blowdown and others. The blowdown controls the concentration of impurities and could be recycled to the RWTP, and if quality becomes an issue, it will be discharged to the waste water treatment facility.

The cooling water system will have a total of five 2,500 gpm capacity cells (215-C-1501A, 215-C-1501B, 215-C-1501C, 215-C-1501D and 215-C-1501E), four in operation and one stand-by, which are the emission point sources associated with the Cooling Water System for the full refinery configuration.

4.12.7 Steam Generation and Boiler Feed Water Treatment

Onsite processes will use heat integration as much as possible to minimize steam requirements due to heating needs. Medium pressure and high pressure steam will still be required at processing units to satisfy other needs such as stripping, purging, etc. To

minimize steam tracing due to the limited water supply in the refinery site area electrical heat tracing will be maximized.

The medium pressure steam needs of the refinery processing units beyond those that can be satisfied through heat integration/heat recovery will be generated in four standard packaged Miura gas boilers and through heat recovery in process units. To supply the operation needs of the refinery, three boilers will be in operation and one will be kept in cool stand-by. The system design will include condensate treatment for direct use as feed to the boiler system and will include bypass to the oily water treatment system in case of oil contamination.

The high pressure steam requirements of the HYK unit will be generated in three packaged high-pressure industrial gas boilers. Two boilers will be in operation and one will be kept in hot stand-by.

Emission point sources associated with the Steam Generation and Boiler Feed Water Treatment include a common flue gas stack for refinery fuel gas fired MP boilers 202-B-0201A, 202-B-0201B, 202-B-0201C, 202-B-0201D and the individual stacks of HP boilers 202-B-0202A, 202-B-0202B, and 202-B-0202C.

4.12.8 Instrument Air System

Instrument and Plant Air to cover the refinery service and maintenance activities requirements for dry oil-free air service to operate pneumatic instruments, control valves, ESD valves and utility stations at the required temperature, pressure and water dew point will be supplied by two electrical motor driven Air Compressors. A Back Up Air Compressor and a HP Air Receiver will comprise the backup system that will supply 20 minutes of instrument air in case of emergency.

There are no emissions units associated with the Instrument Air System.

4.12.9 Nitrogen System

The proposed Davis Refinery will use nitrogen for inerting equipment to prevent flammable atmospheres, blanketing tanks to prevent the ingress of air and snuffing fired heaters, preparing piping and equipment for maintenance by purging out hydrocarbons,

and removing air/oxygen in equipment before startup. Nitrogen supply will be contracted out as a utility service. Liquid nitrogen will be stored in a liquid storage system.

There are no emissions units associated with the Nitrogen System.

4.12.10 Oily Water Treatment System

The oily water treatment system collects and treats oily wastewater generated in the refinery processes which contains oil, emulsified oil, or other hydrocarbons. Oily wastewater streams are generated mainly in the desalter units, process oily water drains, and from tanks bottom draws. Potentially oil-contaminated drainage will also be treated through the oily water treatment system. This will include precipitation runoff that falls directly on refinery areas that have a high potential for contact with oil, products and byproducts produced during refining operations. Potentially oil-contaminated drainage also includes other runoff generated during other routine and non-routine activities foreseen during design (e.g. maintenance, firewater).

This oily wastewater treatment system will include treatment to remove both free and emulsified oil from the water. The final treatment scheme will be dependent on the final reuse, recycle or disposal method of treated water. Following treatment, water will be recycled back as raw water to the refinery processes.

The Oily Water Treatment System is considered an area source of air emissions. To minimize emissions, the system will include tightly covered treatment units, blanketing gas and/or vapor recovery, and will be BWON (Benzene Waste Operations NESHAP) compliant.

4.12.11 Blowdown and Flare System

The refinery will operate a vapor recovery system to capture vapors and return to product/processes instead of releasing through stacks or via flaring during normal operations. Flaring will be on an intermittent and as-needed basis.

To safely combust hydrocarbon relief flows during process upsets, and other times as needed during startups, shutdowns, or malfunctions the refinery will have a flare system comprised of a combination of an enclosed flare and elevated emergency flares. Two elevated flare structures will be erected at the site, each with a hydrocarbon flare tip

servicing about half of the plant relief flows during cases in which the capacity of the enclosed flare is exceeded. A separate system with an elevated flare installed on the same structure of one of the emergency hydrocarbon flares will be provided to handle acid gases in cases of SRU unavailability.

Flare system emissions are due to the pilots which will operate continuously in standby mode with only a small, non-visible pilot flame. The flare system will have a VOC destruction efficiency of 98%. Intermittent emissions from blowdown scenarios are also accounted for as detailed in Exhibit B – Emissions Inventory.

4.12.12 Emergency Power Generation

The proposed refinery design includes an emergency generator driven by a 4700 hp diesel engine. The emergency generator will operate in cases of complete blackout only, and normally it will operate less than 100 hours per year to account for monthly maintenance checks.

4.13 ALTERNATIVE OPERATING SCENARIOS

The initial construction phase (Phase 1) of the proposed Davis Refinery corresponds to a 27,500 BPD Hydroskimming refinery (see Davis Refinery Phase 1 Block Flow Diagram in Exhibit E). The Phase 1 configuration will include a single ADU and associated Gas Plant, the NHT, CRU and BSU to produce gasoline, and the DHT to produce ULSD. Additional distillation and conversion units will be added during subsequent construction in order to increase the crude feedstock processing capacity to 55,000 BPSD to augment the gasoline and middle distillates yields and reduce fuel oil production.

The ADU and associated Gas Plant to be installed during Phase 1 will be designed to operate as previously described but with only kerosene and intermediate distillate side streams while the heavy gasoil cut will be recovered through the atmospheric residue stream to be marketed as Fuel Oil. Provisions for a future heavy gasoil side stream will be incorporated into the design to feed directly, if needed, into the HYK to be installed at a later date.

During Phase 1, the NHT, CRU, BSU and DHT will operate as previously described but at reduced capacities to handle the gasoline pool and diesel production anticipated for this

phase. Meridian has opted to invest in a transformable catalytic reforming unit that will operate as a Semi-Regenerative ("SR") Catalytic Reformer at a lower capital cost during the first phase of the Davis Refinery and will have the ability to be converted to CCR operation with increased Naphtha reforming capacity during Phase 2 in order stage their capital investment, and reformate and hydrogen yields.

During the initial phase of the Davis Refinery, the catalyst will be periodically regenerated by in situ high temperature oxidation about every 6 to 24 months to maintain catalyst activity. At full refinery processing capacity, the SR Catalytic Reformer will be converted to a CCR Unit via the addition of a closed-loop catalyst-transfer equipment and special regenerator will be added to continuously transfer catalyst from the operating reactors to the regenerator and back to the reactors.

Utilities and tankage to be installed include only enough capacity to handle needs of this phase. For the boiler system, only two Miura MP Boilers are required during phase 1. To fulfill the cooling water needs of phase 1 only two cooling water cells will be initially installed. The installed wastewater treatment system capacity of this phase will be sized to handle the flows of the phase 1 refinery configuration. Of the elevated flare structures envisioned for the full refinery, only one will be erected in Phase 1 to support one hydrocarbon emergency flare and the acid flare. Tankage will also have sufficient capacity to handle the 27,500 BPD throughput intended during Phase 1, therefore differences in tankage from that of the full refinery configuration include, one less reformate and light naphtha tanks, no Jet Fuel tanks, and two Fuel Oil tanks, one of which will be repurposed to VGO service at a later date once the full refinery comes on-line.

5 SUMMARY OF AIR POLLUTANT EMISSIONS

A detailed emissions inventory of the Emission Units associated with the refinery operations was prepared to assess the Potential to Emit ***("PTE")*** of air contaminants *"subject to regulation"* or *"regulated air contaminants"*, also known as *"regulated NSR pollutants"*.

"Emissions Unit" in accordance with NDAC 33-15-14-06 *"means any part or activity of a stationary source that emits or has the potential to emit any regulated air contaminant or any contaminant listed under section 112(b) of the Federal Clean Air Act."*

"Potential to emit" has the meaning given to it in NDAC 33-15-14-06: *"the maximum capacity of a stationary source to emit any air contaminant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air contaminant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the administrator of the United States environmental protection agency and the department."* For a petroleum refinery, quantifiable fugitive emissions must also be included with point source emissions in the facility-wide PTE calculation.

"Fugitive emissions" as per NDAC 33-15-14-06 *"are those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening."*

"Regulated air contaminant" has the meaning given to it in NDAC 33-15-14-06:

"(1) Nitrogen oxides or any volatile organic compounds.
(2) Any contaminant for which a national ambient air quality standard has been promulgated.
(3) Any contaminant that is subject to any standard promulgated under section 111 of the Federal Clean Air Act.
(4) Any class I or II substance subject to a standard promulgated under or established by title VI of the Federal Clean Air Act.

(5) Any contaminant subject to a standard promulgated under section 112 or other requirements established under section 112 of the Federal Clean Air Act, including sections 112(g), (j), and (r) of the Federal Clean Air Act, including the following:
(a) Any contaminant subject to requirements under section 112(j) of the Federal Clean Air Act. If the administrator fails to promulgate a standard by the date established pursuant to section 112(e) of the Federal Clean Air Act, any contaminant for which a subject source would be major shall be considered to be regulated on the date eighteen months after the applicable date established pursuant to section 112(e) of the Federal Clean Air Act; and
(b) Any contaminant for which the requirements of section 112(g)(2) of the Federal Clean Air Act have been met, but only with respect to the individual source subject to section 112(g)(2) of the Federal Clean Air Act requirement.

Regulated NSR Pollutant is defined at 40 CFR 51.166(b)(49) as:

"(i) Any pollutant for which a national ambient air quality standard has been promulgated and any constituents or precursors for such pollutants identified by the Administrator (e.g., volatile organic compounds are precursors for ozone); (ii) Any pollutant that is subject to any standard promulgated under section 111 of the Act; (iii) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or (iv) Any pollutant that otherwise is subject to regulation under the Act; except that any or all hazardous air pollutants either listed in section 112 of the Act or added to the list pursuant to section 112(b)(2) of the Act, which have not been delisted pursuant to section 112(b)(3) of the Act, are not regulated NSR pollutants unless the listed hazardous air pollutant is also regulated as a constituent or precursor of a general pollutant listed under section 108 of the Act.". "Regulated NSR pollutant", in accordance NDAC 33-15-15 and 33-15-16, does not include greenhouse gases as defined in 40 CFR 86.1818-12. Regulated NSR pollutants for petroleum refineries include particulate matter (PM), particulate matter with a diameter of 10 microns or less (PM_{10}), particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), ozone (as VOCs), lead (Pb), hydrogen sulphide (H_2S) and reduced sulfur compounds.

5.1 DAVIS REFINERY EMISSION UNITS

Identification of the Emission Units of the proposed Davis Refinery was made based on the review of engineering data from process units, specifically: block and process flow diagrams ***("BFD" & "PFDs")***, process descriptions and engineering calculations.

The main Emission Units and associated equipment of the proposed Davis Refinery which have the PTE regulated air contaminants through direct discharges to the atmosphere include gas fired process heaters and steam boilers, internal combustion engines ***("ICE")***, storage tanks, cooling water towers, truck loading facilities, thermal oxidizers, flares and fugitives.

The following list identifies emission point and area sources of criteria pollutants at the Davis Refinery:

1. ADUs: furnaces.
2. NHT Unit: furnaces.
3. CRU: furnaces and catalyst regenerator regenerator vent. During initial phase, this unit will have a semi-regenerative configuration.
4. BSU: none.
5. DHT Unit: furnaces.
6. VDU: furnaces.
7. HYK: furnaces.
8. SWU: none.
9. SRU: thermal oxidizer.
10. Tank Farm: IFR seals, fixed roof tank vents.
11. Flare System: furnaces
12. Cooling Water System: cooling tower drift loss.
13. Boilers: gas fired furnaces
14. Product Loading Operations: truck loading stations
15. Fuel Gas System: no direct discharges, emissions are accounted for via fuel gas users.
16. Fire water system: diesel engine driven back-up firewater pumps.
17. Emergency Power Generation: internal diesel combustion engine.
18. Waste Water Treatment

19. Fugitives: these are accounted for each operating unit based on the number of equipment components including valves, flanges, pumps, and will be minimized through a Leak Detection and Repair Program ***("LDAR")***

5.2 DAVIS REFINERY EMISSIONS INVENTORY

Emissions of regulated air contaminants were estimated using the Emission Factors presented in the EPA Emissions Estimation Protocol for Petroleum Refineries, unless noted otherwise. Where applicable, EPA AP-42 Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources, Fifth Edition, was consulted for specific criteria pollutant emission factors. As part of the development of the emissions inventory, a Controls Technology Review was conducted and efficiencies of selected controls were included in the controlled PTE calculations when the controls were proposed as part of design of the Davis Refinery. The detailed emissions inventory including assumptions, methodologies, and calculation are included Exhibit B.

Table 2 summarizes the Emissions Units of the proposed Davis Refinery at full capacity (55,000 BPD) including emission controls that are inherent part of the equipment design (i.e. low NOx burners, floating roofs and seals, drift eliminators, etc.). Table 3 summarizes the Davis Refinery inventory of emissions at full capacity without considering add-on emissions controls. Table 4 summarizes the air emissions control technology proposed as part of the design of the Emission Units including proposed emissions controls efficiencies. Table 5 summarizes the Davis Refinery PTE at full capacity including the effect of add-on pollution controls such as Selective Catalytic Reduction ***("SCR")*** for NOx control on large heaters, implementation of a LDAR program, etc. Table 6 summarizes the Davis Refinery PTE after construction of the Phase 1 of the Davis Refinery (27,500 BPD).

Table 2. Davis Refinery Emissions Units

Unit Number	Unit Description	Emission Unit Description	TAG	Air Pollution Control Equipment
101	Atmospheric Distillation Unit #1	Feed Heater rated 82.13 MMBTU/h and fired on refinery fuel gas	101-H-0101	Best combustion practices. Ultra Low NOx Burner Design
102	Atmospheric Distillation Unit #2	Feed Heater rated 82.13 MMBTU/h and fired on refinery fuel gas	102-H-0201	Best combustion practices. Ultra Low NOx Burner Design
103	Vacuum Distillation Unit	Feed Heater rated 75.00 MMBTU/h and fired on refinery fuel gas	103-H-0301	Best combustion practices. Ultra Low NOx Burner Design
105	Naphtha Hydrotreater Unit	Reactor Feed Heater rated 8.60 MMBTU/h and fired on refinery fuel gas	105-H-0501	Best combustion practices. Ultra Low NOx Burner Design
		Stabilizer Reboiler rated 9.30 MMBTU/h and fired on refinery fuel gas	105-H-0502	Best combustion practices. Ultra Low NOx Burner Design
		Splitter Reboiler rated 17.90 MMBTU/h and fired on refinery fuel gas	105-H-0503	Best combustion practices. Ultra Low NOx Burner Design
106	Catalytic Reformer Unit	Reactor heaters #1/2/3 with a combined rating of 136.90 MMBTU/h and fired on refinery fuel gas	106-H-0601	Best combustion practices. Ultra Low NOx Burner Design
		Stabilizer Reboiler with a rating of 5.70 MMBTU/h and fired on refinery fuel gas	106-H-0605	Best combustion practices. Ultra Low NOx Burner Design
		Regenerator vent	106-VS-0601	Cooling and Scrubbing (wash drum)
110	Distillates Hydrotreater Unit	Reactor Feed Heater rated 19.50 MMBTU/h and fired on refinery fuel gas	110-H-1001	Best combustion practices. Ultra Low NOx Burner Design
		Splitter Reboiler rated 27.30 MMBTU/h and fired on refinery fuel gas	110-H-1002	Best combustion practices. Ultra Low NOx Burner Design
112	Hydrocracker Unit	HYK Reactor Feed heater rated 37.16 MMBTU/h and fired on refinery fuel gas	112-H-1201	Best combustion practices. Ultra Low NOx Burner Design
		HYK Fractionator heater rated 40.34 MMBTU/h and fired on refinery fuel gas	112-H-1202	Best combustion practices. Ultra Low NOx Burner Design
122	Sulfur Recoivery Unit / Thermal Oxidizer	Thermal Oxidizer with a rated capacity of 1.58 MMBTU/h	122-H-2201	Emissions from this SRU will be routed to a Thermal Oxidizer.

Unit Number	Unit Description	Emission Unit Description	TAG	Air Pollution Control Equipment
202	Medium Pressure Steam Boiler 1	MP Boiler with a rated capacity of 11.68 MMBTU	202-B-0201A	Best combustion practices.
202	Medium Pressure Steam Boiler 2	MP Boiler with a rated capacity of 11.68 MMBTU	202-B-0201B	
202	Medium Pressure Steam Boiler 3	MP Boiler with a rated capacity of 11.68 MMBTU	202-B-0201C	
202	Medium Pressure Steam Boiler 4	MP Boiler with a rated capacity of 11.68 MMBTU	202-B-0201D	
202	High Pressure Steam Boiler 1	HP Boiler with a rated capacity of 22.00 MMBTU	202-B-0202A	
202	High Pressure Steam Boiler 2	HP Boiler with a rated capacity of 22.00 MMBTU	202-B-0202B	
202	High Pressure Steam Boiler 3	HP Boiler with a rated capacity of 22.00 MMBTU	202-B-0202C	
203	Crude oil Tank #1	Crude Oil Storage Tank #1 with a nominal 110,999 bbl capacity	203-T-0301	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Crude oil Tank #2	Crude Oil Storage Tank #2 with a nominal 110,999 bbl capacity	203-T-0302	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Desulfurized Heavy Naphtha Tank	Heavy Naphtha Storage Tank with a nominal 64,996 bbl capacity	203-T-0305	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Reformate Tank #1	Reformate Storage Tank #1 with a nominal 33,312 bbl capacity	203-T-0306	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Reformate Tank #2	Reformate Storage Tank #2 with a nominal 33,312 bbl capacity	203-T-0307	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Gasoline Tank #1	Regular Gasoline Tank #1 with a nominal 64,996 bbl capacity	203-T-0308	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Gasoline Tank #2	Regular Gasoline Tank #2 with a nominal 64,996 bbl capacity	203-T-0309	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Jet Fuel Tank #1	Jet Fuel Tank #1 with a nominal 33,312 bbl capacity	203-T-0311	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Jet Fuel Tank #2	Jet Fuel Tank #2 with a nominal 33,312 bbl capacity	203-T-0312	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Straight Run Diesel Tank #1	SR Diesel Storage Tank #1 with a nominal 33,312 bbl capacity	203-T-0313	Conic Roof, Submerged Fill Pipe

Unit Number	Unit Description	Emission Unit Description	TAG	Air Pollution Control Equipment
203	Ultra Low Sulfur Diesel Tank #1	ULSD Storage Tank #1 with a nominal 64,996 bbl capacity	203-T-0015	Conic Roof, Submerged Fill Pipe
203	Ultra Low Sulfur Diesel Tank #2	ULSD Storage Tank #2 with a nominal 64,996 bbl capacity	203-T-0016	Conic Roof, Submerged Fill Pipe
203	Fuel Oil / Vacuum Gasoil Tank	Fuel Oil / VGO Storage Tank with a nominal 33,312 bbl capacity	203-T-0323	Conic Roof, Submerged Fill Pipe
203	Fuel Oil Tank	Fuel Oil Storage Tank with a nominal 33,312 bbl capacity	203-T-0324	Conic Roof, Submerged Fill Pipe
203	Light Naphtha Tank #1	Light Naphtha Storage Tank #1 with a nominal 33,312 bbl capacity	203-T-0331	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Light Naphtha Tank #2	Light Naphtha Storage Tank #2 with a nominal 33,312 bbl capacity	203-T-0332	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Light Slops Tank	Light Slops Tank with a nominal 2,620 bbl capacity	203-T-0327	Cone with IFR (Internal Floating Roof) and Submerged Fill Pipe
203	Heavy Slops Tank	Heavy Slops Tank with a nominal 2,620 bbl capacity	203-T-0328	Conic Roof, Submerged Fill Pipe
206	Wastewater Treatment Plant	Oil/Separator Inlet from Benzene Waste Operations NESHAP (BWON) Compliant plant with a 200,000 gal/d design capacity	-	Wastewater treatment plant must comply with the design requirements of 40 CFR 60 Subpart QQQ
207	Enclosed HC Operating Flare	Enclosed Flare with pilots at 100 SCFH average of fuel gas, for handling up to 24.4 MMSCFD (including purges and fuel gas blowdown)	207-FL-1701	High temperature, optimal balance between air flow, gas/pollutant loading and low heating value
207	Acid Flare	Acid Gas Flare with pilots at 100 SCFH average of fuel gas, for handling up to 15.8 MMSCFD.	207-FL-1702	High temperature, optimal balance between air flow, gas/pollutant loading and low heating value
207	HC Emergency Flare #1	HC Emergency Flare with pilots at 100 SCFH average of fuel gas, for handling up to 74.6 MMSCFD of emergency reliefs.	207-FL-1703	High temperature, optimal balance between air flow, gas/pollutant loading and low heating value
207	HC Emergency Flare #2	HC Emergency Flare with pilots at 100 SCFH average of fuel gas, for handling up to 88.8 MMSCFD of emergency reliefs.	207-FL-1704	High temperature, optimal balance between air flow, gas/pollutant loading and low heating value

Unit Number	Unit Description	Emission Unit Description	TAG	Air Pollution Control Equipment
208	Truck Loading-Unloading System	Dedicated normal service of loading/unloading refinery products (Gasoline, Diesel / Jet and Fuel Oil).	-	Submerged Loading and dedicated service.
212	Firewater Pump Diesel Engine	Combustion gases (flue gas) from 350 HP diesel firewater pump.	212-P-1201	Backup pump to the electric firewater pump. Operating for less than 100 hours per year
215	Cooling Towers	Five cells Induced draft - counter flow Cooling Tower. Design Cooling Water Circulation Rate: 2,500 gpm/each	215-CT-1501A	Drift Eliminators (0.001% drift rate) Inherent to Design. Under normal operations 4 in service 1 in standby
			215-CT-1501B	
			215-CT-1501C	
			215-CT-1501D	
			215-CT-1501E	
216	Diesel-fired Emergency Power Generator (EPS) set*	Combustion gases (flue gas) from 4700-HP emergency generator stack.	216-EG-1601	Operating for less than 100 hours per year. The engines shall be certified to emissions standards as outlined under 40 CFR 60, Subparts IIII and JJJ. The engines shall be manufactured with the appropriate control equipment to meet these emissions standards
FUGITIVE	Process equipment leaks in VOC and Natural Gas service	Fugitive (leaks) emissions from process equipment elements throughout the refinery	-	Leak Detection and Repair (LDAR) Program Screen level at 500 ppm

Taken from Table 1, Exhibit B - EMISSIONS INVENTORY FOR DAVIS REFINERY.
VEPICA, 2017. Doc. N° P-5715043-01-001-18042-I001.

Table 3. Davis Refinery Summary of Emissions without Add-on Controls (Full Build-Out)

	Criteria Pollutants										HAPs
Emission Units	**CO**	**Pb**	**PM<10**	**Filerable PM <10**	**PM <2.5**	**Filterable PM <2.5**	**Condensable PM**	**NO_X (as NO_2)**	**SO_2**	**VOC**	**Total HAPs**
Leaks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	195.29	29.26
Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.43	14.95
Stationary Combustion Sources	76.16	1.33E-03	10.88	2.72	10.88	2.72	8.16	81.60	1.60	14.67	5.34
Catalytic Reforming Unit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.07
Sulfur Recovery Plant	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.22	1.65	0.00
Vacuum Systems	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,679.20	0.00
Blowdown System	0.83	0.00	0.01	0.01	0.01	0.01	0.00	3.66	5.20	0.15	0.00
Flares	0.25	4.38E-06	0.04	0.01	0.04	0.01	0.03	0.27	0.005	0.05	0.00
Wastewater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	290.73	32.17
Cooling Towers	0.00	0.00	82.78	0.00	0.00	0.00	0.00	0.00	0.00	15.77	0.00
Truck Product Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	826.96	0.00
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total STPY	**79.60**	**1.34E-03**	**93.71**	**2.73**	**10.92**	**2.73**	**8.19**	**86.04**	**7.02**	**5,032.62**	**81.78**

Taken from Table 5, Exhibit B- EMISSIONS INVENTORY FOR DAVIS REFINERY. VEPICA, 2017. Doc. N° P-5715043-01-001-18042-I001.

Table 4. Davis Refinery Summary of Proposed Emission Controls

Source/Unit	Target Pollutant	Pollution Control Technologies Used	Assumed % Control
Leaks (Fugitive Emissions)	VOC	LDAR (Leak, Detection and Repair) program with differential light absorption and ranging (DIAL) or optical gas imaging (OGI) technology.	97% (valves), 93% pumps, 97% flanges, 97% sample points, (30% heavies) Program baseline of 500 ppm
Tanks	VOC	IFRs with Double Seal and Wipers	NESHAP std
Stationary Combustion Sources (Process Unit Furnaces and Utility Boilers)	CO NOx Org. HAPs	CO – Good Comb. Practices w/ Ultra Low NOx Burners NOx – SCR's w/ Ultra Low NOx Burners Org. HAPs – Good Comb. Practices w/ Ultra Low NOx Burners	CO – 96% NOx – 75% Org. HAPs – 75%
Catalytic Reforming Unit (Regeneration Vent)	HAPs	NA – minor emissions levels CCR will include a wash drum inherent to the design to scrub continuous catalyst regeneration off-gases prior to venting.	NA – de-minimus
Sulfur Recovery Plants	SO_2	Lo-CAT with vent gases routed to thermal oxidizer. Other pollutants are considered minor.	SO_2 - 99.9%
Blowdown System	CO NOx SO_2	Vapor recovery to product capture and emergency flaring only for upsets	99.8%
Flares	CO NOx VOC HAPs	Lower heating value of feed gases, requirements specified by EPA and NDDoH regulations. Emergency flaring for upset conditions only.	98% +
Wastewater Treatment System	VOC HAPs	Covered API/CPI oil/water separators and induced/dissolved air flotation units Equalization tanks instead of open ponds. Vapor Recovery System	VOC – 95% HAPs – 55%
Product Loading	VOC	Vapor recovery to product recycle with upsets to emergency flares	98%
Fugitive (on-site vehicular) emissions	PM	Paving of areas of routine vehicle traffic. Maintain vehicle speeds to < 15 mph	$PM_{2.5}$ - 0.00054 lb/vmt PM_{10} - 0.0022 lb/vmt Silt load = 2.15E-02
Spent Catalyst	PM	De-minimus	NA – de-minimus

Taken from Exhibit C - EMISSIONS INVENTORY – CONTROLS TECHNOLOGY REVIEW FOR DAVIS REFINERY. VEPICA, 2017. Doc. N° P-5715043-01-001-18035-I001.

Table 5. Davis Refinery Summary of Potential to Emit (Full Build-Out)

	Criteria Pollutants										HAPs
Emission Units	**CO**	**Pb**	**PM<10**	**Filerable PM <10**	**PM <2.5**	**Filterable PM <2.5**	**Condensable PM**	**NO_X (as NO_2)**	**SO_2**	**VOC**	**Total HAPs**
Leaks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.70	1.51
Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.43	8.55
Stationary Combustion Sources	76.16	1.33E-03	10.88	2.72	10.88	2.72	8.16	34.51	1.60	14.67	1.35
Catalytic Reforming Unit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.07
Sulfur Recovery Plant	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.22	1.65	0.00
Vacuum Systems	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blowdown System	0.83	0.00	0.01	0.01	0.01	0.01	0.00	3.66	5.20	0.15	0.00
Flares	0.25	4.38E-06	0.04	0.01	0.04	0.01	0.03	0.27	0.005	0.05	0.00
Wastewater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.54	0.72
Cooling Towers	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00
Truck Product Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.34	0.00
Fugitive Dust	0.00	0.00	0.00	0.00	9.72E-04	0.00	0.00	0.00	0.00	0.00	0.00
Total STPY	**79.60**	**1.34E-03**	**12.99**	**2.73**	**10.92**	**2.73**	**8.19**	**38.95**	**7.02**	**61.63**	**12.21**

Taken from Table 8, Exhibit B- EMISSIONS INVENTORY. VEPICA, 2017. Doc. N° P-5715043-01-001-18042-I001.

Table 6. Davis Refinery Phase 1 Summary of Potential to Emit (Phase 1)

	Criteria Pollutants										HAPs
Emission Units	**CO**	**Pb**	**PM<10**	**Filerable PM <10**	**PM <2.5**	**Filterable PM <2.5**	**Condensable PM**	**NO_X (as NO_2)**	**SO_2**	**VOC**	**Total HAPs**
Leaks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.27	1.20
Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.66	8.55
Stationary Combustion Sources	25.34	3.86E-04	3.15	0.79	3.15	0.79	2.37	10.89	0.46	4.25	0.39
Catalytic Reforming Unit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.12
Sulfur Recovery Plant	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.04	0.29	0.00
Vacuum Systems	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blowdown System	0.41	0.00	0.00	0.00	0.00	0.00	0.00	1.83	2.60	0.08	0.00
Flares	0.29	3.72E-06	0.03	0.01	0.03	0.01	0.02	0.23	0.004	0.04	0.00
Wastewater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.62	0.48
Cooling Towers	0.00	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00
Truck Product Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.34	0.00
Fugitive Dust	0.00	0.00	0.00	0.00	9.72E-04	0.00	0.00	0.00	0.00	0.00	0.00
Total STPY	**26.46**	**3.90E-04**	**3.71**	**0.80**	**3.19**	**0.80**	**2.39**	**13.04**	**3.11**	**36.71**	**11.74**

Taken from Table 9, Exhibit B- EMISSIONS INVENTORY. VEPICA, 2017. Doc. N° P-5715043-01-001-18042-I001.

6 CRITERIA POLLUTANTS –AMBIENT AIR QUALITY STANDARDS

The Clean Air Act ***("CAA")*** requires states to develop a general plan to attain and maintain the National Ambient Air Quality Standards ***("NAAQS")*** in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. The EPA has established in 40 CFR 50, the NAAQS for *"criteria pollutants"*: nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), particles finer than 10 microns in size (PM_{10}), particles finer than 2.5 microns in size ($PM_{2.5}$), ozone (of which VOCs are a precursor) and airborne lead (Pb). The EPA has approved North Dakota's State Implementation Plan ***("SIP")***, and has delegated to the NDDoH the authority for approval of permits for new stationary sources of air contaminants subject to regulation under the CAA.

The North Dakota SIP identifies the emissions control requirements the state will rely upon to attain and/or maintain the primary and secondary NAAQS. Consequently, the NDDoH has adopted in NDAC 33-15-02, as mandated by North Dakota Century Code 23-25-03.2 and 23-25-03-3, Ambient Air Quality Standards affecting petroleum refineries which are equivalent to federal rules or standards under the CAA.

North Dakota and National Ambient Air Quality Standards (AAQS) Criteria Pollutants (µg/m³)

Averaging Period	Sulfur Dioxide (SO_2) µg/m³	Hydrogen Sulfide (H_2S) µg/m³	Particulates (PM_{10}) µg/m³	Particulates (PM_{10}) µg/m³	Carbon Monoxide (CO) µg/m³	Nitrogen Dioxide (NO_2)µg/m³	Ozone[2] (O_3) µg/m³
Annual	80	-	50	12	-	100	-
24-hour	365[1]	140	150[1]	35	-	-	-
8-hour	-	-	-	-	10,000[1]	-	147
3-hour	1,300[1]	-	-	-	-	-	-
1-hour	196	280	-	-	40,000[1]	188	235

[1] One exceedance per year is permitted.
[2] VOCs are a precursor.

The proposed Davis Refinery is a *"designated air contaminant source"* under NDAC 33-15-14-01; therefore, it is subject to the permitting requirements and emission limitations for new stationary source of air contaminants subject to regulation, also known as *"criteria pollutants"* or *"regulated NSR pollutants"*, to ensure compliance with North

Dakota's SIP. North Dakota's SIP classifies sources of regulated NSR pollutants in accordance with Section 112 of the CAA.

Major Sources are defined in NDAC 33-15-14-06 as:

"(1) A major source under section 112 of the Federal Clean Air Act, and (2) A major stationary source of air contaminants, that directly emits or has the potential to emit, one hundred tons [90.68 metric tons] per year or more of any air contaminant subject to regulation (including any major source of fugitive emissions of any such contaminant, as determined by rule by the administrator of the United States environmental protection agency). For purposes of this definition, air contaminant subject to regulation does not include greenhouse gases as defined in title 40, Code of Federal Regulations, 86.1818-12(a)."

As allowed under the provisions of 33-15-14-06, minor sources of NSR regulated pollutants are those that do not exceed the major source thresholds for criteria pollutants under their physical and operational design, including the effect of add-on pollution controls or restrictions on hours of operation that are proposed as part of the design.

Based on the PTE of regulated NSR pollutants from the proposed facilities, summarized in Section 5 above, the proposed Davis Refinery qualifies as a Minor Synthetic Source of regulated NSR pollutants.

7 HAZARDOUS AIR POLLUTANTS AND THE AIR TOXICS POLICY

Under the EPA approved North Dakota SIP, codified in the North Dakota Air Pollution Control Rules, the NDDoH has authority to establish limits of HAP emissions in accordance with section 33-15-02-04(3) which states, *"The ambient air shall not contain air contaminants in concentrations 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 Department may establish, on a case-by-case basis, specific limits of concentration for these contaminants."*

North Dakota's Air Toxics Policy delineates the NDDoH policy with respect to the control of routine releases of HAPs. The Air Toxics Policy is compliant with the residual risk provisions of the Clean Air Act and is applicable to all new or modified air contaminant sources, as designated in NDAC 33-15-14-01 of the North Dakota Air Pollution Control Rules, which are required to submit an application for a PTC under NDAC 33-15-14-02.

The North Dakota Air Pollution Control Rules adopt in whole or in part the Federal standards that regulate for both large and small sources of HAPs, under the authority of Title I, part A, Section 112 of the CAA. As with the standards for criteria pollutant, the EPA has developed national requirements for emissions of HAPs known as "National Emission Standards for Hazardous Air Pollutants ***("NESHAP")***" codified in 40 CFR Part 61, and requirements for specific categories of HAP emitting stationary sources codified in 40 CFR Part 63 "National Emission Standards for Hazardous Air Pollutants for Source Categories", also known as Maximum Achievable Control Technology ***("MACT")*** standards. NDAC 33-15-13 identifies the applicable requirements of 40 CFR 61, and NDAC 33-15-22 identifies the applicable requirements of 40 CFR 63, that have been adopted by the State of North Dakota.

As with sources of air contaminants, North Dakota's SIP classifies sources of HAPs in accordance with Section 112 of the CAA. Major sources of HAPs are those stationary sources with a PTE any single HAP in excess of 10 TPY or combined HAPs in excess of 25 TPY. Minor sources of HAPs, also called "area sources" are those that do not exceed the major source thresholds under their physical and operational design.

Based on the PTE of HAPs from the proposed facilities, the proposed Davis Refinery qualifies as an Area Source of HAPs.

7.1 STATE AIR TOXICS POLICY

The Policy for the Control of Hazardous Air Pollutants in North Dakota (Air Toxics Policy) is applicable to the proposed Davis Refinery and must be followed to ascertain the health-related risks represented by proposed new source of HAP emissions. In order to determine compliance with the NDDoH *"Policy for the Control of Hazardous Air Pollutant Emissions in North Dakota"*, dispersion modeling is used to determine the maximum off-property, ground-level ambient concentration of each HAP emitted.

HAP emissions are classified into one of three categories:

1. known human carcinogens,
2. suspected or reasonably anticipated human carcinogen, and
3. noncarcinogen or substance lacking sufficient data to determine carcinogenicity.

These classifications are identified as Group 1, Group 2, and Group 3 HAP emissions, respectively. The NDDoH recommends a three-tiered approach of decreasing conservatism to calculate the maximum off-property, ground-level ambient concentration of each HAP. Three tiers of analyses are not required if compliance with the Maximum Individual Carcinogenic Risk ***("MICR")*** and Maximum Acceptable Ambient Levels ***("MAAL")*** can be shown through Tier I and/or II. Since modeling for compliance with Significant Impact Levels for Class I and Class II areas was undertaken by Meridian, we completed a Tier III analysis, for combined HAPs and utilized the weighted concentration of the HAP emissions to compare to MICR and MAAL results. Results of this analysis are included in the detailed Modeling Analysis Report for Meridian which is submitted under separate cover.

8 PREVENTION OF SIGNIFICANT DETERIORATION (PSD) APPLICABILITY (40 CFR 52) - NEW SOURCE REVIEW (NSR)

According to 40 CFR 81.335, Billings County in North Dakota is an attainment or unclassifiable area for all criteria pollutants. New sources of emissions located in an attainment or unclassifiable area must be reviewed for applicability under an EPA-approved Prevention of Significant Deterioration ***("PSD")*** program. North Dakota implements an EPA-approved PSD program in accordance with the provisions of NDAC 33-15-15 which adopt in whole or in part the Federal PSD regulations (40 CFR 52). Ambient impacts analyses specified by the PSD rules are required if the source is classified as a *"major stationary source"* under the rules.

Petroleum refineries are a listed source category in the PSD rules. For listed sources categories, like refineries, fugitive emissions must be counted toward major source applicability. The proposed Davis Refinery is a new stationary source, thus, the PSD applicability analysis herein focuses on the new source provisions of the North Dakota PSD program as they may apply to the facility.

Specifically, the facility-wide PTE of a pollutant is considered "significant" if it exceeds the annual emission rates known as significant impact levels ***("SILs")***. If emissions of all regulated NSR pollutants are less than the SILs, PSD review is not required.

Summary of Class I and Class II Significant Impact Levels ($\mu g/m^3$)

	1-hour		3-hour		8-hour		24-hour		Annual	
Pollutant	**Class I**	**Class II**	**Class I**	**Class II**	**Class I**	**Class II**	**Class I**	**Class II**	**Class I**	**Class II**
SO_2	--	7.8	1.0	25	--	--	0.2	5	0.1	1
NO_2	--	7.5	--	--	--	--	--	--	0.1	1
PM_{10}	--	--	--	--	--	--	0.2	5	0.1	1
$PM_{2.5}$	--	--	--	--	--	--	0.07	1.2	0.06	0.3
CO		2,000	--	--	--	500	--	--	--	--

The SIP also identifies the allowable increments in air pollution at Class I, and Class II areas. PSD increments prevent the air quality in clean areas from deteriorating to the level set by the AAQS. The AAQS is a maximum allowable concentration or *"ceiling,"* while a PSD increment, on the other hand, is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment.

North Dakota / National Prevention of Significant Deterioration (PSD)
Class II Increments Criteria Pollutants (µg/m^3)

Averaging Period	Sulfur Dioxide (SO_2) µg/m^3	Hydrogen Sulfide (H_2S) µg/m^3	Particulates (PM_{10}) µg/m^3	Particulates (PM_{10}) µg/m^3	Carbon Monoxide (CO) µg/m^3	Nitrogen Dioxide (NO_2)µg/m^3	Ozone[2] (O_3) µg/m^3
Annual	80	-	50	12	-	100	-
24-hour	365[1]	140	150[1]	35	-	-	-
8-hour	-	-	-	-	10,000[1]	-	147
3-hour	1,300[1]	-	-	-	-	-	-
1-hour	196	280	-	-	40,000[1]	188	235

[1] One exceedance per year is permitted.
[2] VOCs are a precursor.

North Dakota / National Prevention of Significant Deterioration (PSD)
Class I Areas PSD Increments and Significant Impact Levels (µg/m^3)

Pollutant / Averaging Time	Significant Impact Level (µg/m^3)	PSD Increment (µg/m^3)
PM_{10}; Annual	0.1/0.2[1]	4
PM_{10}; 24 hour	0.2/0.3[1]	8
SO_2; Annual	0.1	2
SO_2; 24 hour	0.2	5
SO_2; 3 hour	1.0	25
NO_2; Annual	0.1	2.5

[1] North Dakota vs. National

In accordance with NDAC 33-15-15, *"the Prevention of Significant Deterioration (PSD) program means a major source preconstruction permit program administered by the department that has been approved by the administrator of the United States environmental protection agency and incorporated into the state implementation plan*

pursuant to 40 CFR 51.166 to implement the requirements of that section. Any permit issued by the department under the program is a major NSR permit."

The requirements of the PSD program only apply to Major Sources. Based on the PTE of the proposed facilities under their physical and operational design, including the effect of add-on pollution controls, the proposed Davis Refinery qualifies as a Synthetic Minor Source.

Even though PSD review is not triggered for minor sources of air pollution, the PTE of all regulated NSR pollutants by the proposed Davis Refinery were reviewed to determine if the facility-wide PTE of any pollutant is considered "significant". The results of the airshed modeling conducted for the proposed Davis Refinery, in accordance with NDDoH approved modeling protocols, indicates that emissions of all regulated NSR pollutants are less than the PSD significant emission rates; confirming that complete PSD review is not required for the proposed Davis Refinery. As a Synthetic Minor Source the facility is not subject to the ambient impacts analysis requirements of the PSD program.

8.1 NORTH DAKOTA AIR QUALITY CONSTRUCTION PERMITS

The provisions of NDAC 33-15-14 prohibits the construction, installation or establishment of a new stationary source unless the owner or operator has filed an application for and received a Permit to Construct in accordance this chapter. A Permit to Construct from the NDDoH Air Quality Section is required for any new stationary source, or modification to an existing source, within a source category designated in Section 33-15-14-01. The proposed Davis Refinery is a "designated air contaminant source" under NDAC 33-15-14-01; therefore, it requires a Permit to Construct.

Construction Permitting is based on the facility's PTE for Criteria Pollutants (CO, Pb, NOx, PM_{10}, $PM_{2.5}$, O_3, SO_2) and HAPs. PTE also includes the effect of add-on emission control technology, if enforceable by permit. The level of PTE determines what type of permit a facility falls under.

North Dakota's Permits to Construct fall into two main groups: minor sources and major (Title V) sources. Within minor sources are true minor sources with no federally enforceable limits and synthetic minor sources where a source accepts a federally

enforceable operating limit to stay under major source limits. Within major sources there are those subject to the additional requirements of North Dakota's PSD program. The table below summarizes permit types with their corresponding PTE limits.

Permit Types and PTE Limits

Permit Type	Criteria Air Pollutant Limit [1]	Combined Hazardous Air Pollutant (HAP) Limit [2]	Single HAP Limit	Federally Enforceable Limits (Y/N)
Minor Source	<100 tons/yr	< 25 tons/yr	< 10 tons/yr	No
Synthetic Minor Source [3]	**<100 tons/yr**	**< 25 tons/yr**	**< 10 tons/yr**	**Yes**
Major (Title V) Source [4]	≥100 tons/yr	≥ 25 tons/yr	≥ 10 tons/yr	Yes
PSD Major (Title V) Source [4]	≥250 tons/yr	≥ 25 tons/yr	≥ 10 tons/yr	Yes

[1]Criteria Pollutant Criteria Air Pollutant limit applies to each individual pollutant and is not a combined total amount.
[2] List of Hazardous Air Pollutants
[3] Sources that have the potential to emit 100 ton/yr or greater of a criteria pollutant, 10 ton/yr or greater of any hazardous air pollutant, or 25 ton/yr or greater of any combination of hazardous air pollutants, and the permittee accepts a federally enforceable limit in the Permit to Operate that limits the potential to emit to the same criteria specified for a minor source.
[4] In addition, some sources will require a Title V permit because of applicability under the Prevention of Significant Deterioration (PSD) program; PSD levels apply to construction permits not to operating permits.

NDDoH may impose any reasonable conditions upon a permit to construct, including:

a. Sampling, testing, and monitoring of the facilities or the ambient air or both.
b. Trial operation and performance testing.
c. Prevention and abatement of nuisance conditions caused by operation of the facility.
d. Recordkeeping and reporting.
e. Compliance with applicable rules and regulations in accordance with a compliance schedule.
f. Limitation on hours of operation, production rate, processing rate, or fuel usage when necessary to assure compliance with this NDAC 33-15-14.

In accordance with the allowable provisions of 33-15-14, and based on the PTE of regulated NSR pollutants from the proposed Davis Refinery, under its physical and operational design and including the effect of add-on air pollution control equipment, the

proposed facility can qualify as a Synthetic Minor Source. The proposed emissions controls to limit air contaminant emissions to levels below Major Source thresholds are proven technologies that have been successfully implemented at other refineries. Emissions controls will include but not be limited to Low NOx burner design and Selective Catalytic Reduction for gas fired equipment, selected tanks with internal floating roof, vapor recovery on certain tanks and at truck and rail loading facilities, automated leak detection systems, and continuous emissions monitoring on select equipment to ensure that there are no exceedances of "Emissions allowable under the permit".

"Emissions allowable under the permit" have the meaning given in NDAC 33-15-14-06 and *"means a federally enforceable permit term or condition determined at issuance to be required by an applicable requirement that establishes an emissions limit (including a work practice standard) or a federally enforceable emissions cap that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject."*

Meridian will accept federally enforceable limits in the Permit to Construct subject to this permit action, limiting the facility-wide PTE of CO, NOx, PM_{10}, $PM_{2.5}$, O_3 (as VOCs), SO_2 and HAPs to the proposed limits specified in Table 4 of Section 5 in order to ensure compliance with Ambient Air Quality Standards and the Air Toxics Policy.

9 TITLE V APPLICABILITY

The provisions of 40 CFR 70 provides for the establishment of comprehensive State air quality permitting programs consistent with the requirements of Title V of the 1990 Clean Air Act Amendments (CAAA): North Dakota's federally-approved Part 70 permit program is codified in NDAC 33-15-14-06.

The proposed Davis Refinery qualifies as a Synthetic Minor Source and as such requires a PTC under NDAC 33-15-14-02. The PTC subject to this permit action application, includes federally enforceable limits of CO, NOx, PM10, PM2.5, O3 (as VOCs), SO_2 and HAPs, from the proposed facilities, to effectively limit emissions from the proposed Davis Refinery to below Major Source thresholds. Therefore, the proposed Davis Refinery is not subject to Title V of the 1990 Clean Air Act.

In accordance with the Minor Source Permit to Operate provisions of NDAC 33-15-14-03: *"no person may operate or cause the routine operation of an installation or source designated in section 33-15-14-01 without applying for and obtaining, in accordance with this section, a permit to operate. Application for a permit to operate a new installation or source must be made at least thirty days prior to startup of routine operation. Those sources that received a permit to construct under section 33-15-14-02, need only submit a thirty-day prior notice of proposed startup to satisfy the requirement to apply for a permit to operate under this subdivision."*

A Minor Source Permit to Operate for sources that received a permit to construct under section 33-15-14-02, will only be granted by NDDoH after *"the applicant can show to the satisfaction of the department that the source is in compliance..."* Compliance is demonstrated through performance testing, and the dates and periods of trial operation for the purpose of performance or emission testing must be approved in advance by NDDoH. Once the permit to construct is granted, and in accordance with the provisions of 33-15-14-03, Meridian will apply for a Permit to Operate the proposed Davis Refinery at least thirty days prior to the start-up of routine operations. In order to satisfy the Minor Source Permit to Operate application requirements, Meridian need only submit a thirty-day prior notice of proposed startup and ensure performance testing is completed in accordance with NDDoH requirements.

10 REGULATORY FRAMEWORK

This section summarizes the primary applicable air quality regulations for the proposed refinery. In this section, a comprehensive analysis of the regulatory framework applicable to the proposed Davis Refinery is presented, as well as the justification of the type of permit Meridian will be applying for the facility.

10.1 SUMMARY OF STATE AND FEDERAL RULE APPLICABILITY:

The table below summarizes the state and federal regulations applicability for the proposed project.

Summary of State and Federal Regulations Applicability

Program / Standard	Code	Applicability
NORTH DAKOTA AIR POLLUTION CONTROL RULES	NDAC 33-15	Yes
General Provisions	NDAC 33-15-01	Yes
Ambient Air Quality Standards	NDAC 33-15-02	Yes
Restriction of Emission of Visible Air Contaminants	NDAC 33-15-03	Yes
Emissions of Particulate Matter Restricted	NDAC 33-15-05	Yes
Emission of Sulfur Compounds Restricted	NDAC 33-15-06	No
Control of Organic Compounds Emissions	NDAC 33-15-07	Yes
Control of Air Pollution from Vehicles and Other Internal Combustion Engines	NDAC 33-15-08	Yes
Prevention of Air Pollution Emergency Episodes	NDAC 33-15-11	Yes
Standards of Performance for New Stationary Sources	NDAC 33-15-12	Yes
Emission Standards for Hazardous Air Pollutants	NDAC 33-15-13	Yes
Designated Air Contaminant Sources, **Permit to Construct,** Minor Source Permit to Operate, Title V Permit to Operate	NDAC 33-15-14	Yes
Prevention of Significant Deterioration (PSD) of Air Quality	NDAC 33-15-15	Yes
Restriction of Odorous Air Contaminants	NDAC 33-15-16	Yes
Restriction of Fugitive Emissions	NDAC 33-15-17	Yes
Stack Heights	NDAC 33-15-18	Yes
Visibility Protection	NDAC 33-15-19	No
Acid Rain Program	NDAC 33-15-21	No
Emission Standards for HAP for Source Cateogories	NDAC 33-15-22	Yes
Fees	NDAC 33-15-23	Yes
Standards for Lead-based Paint Activities	NDAC 33-15-24	No
Regional Haze Requirements	NDAC 33-15-25	No

Program / Standard	Code	Applicability
NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)	40 CFR 50	Yes
NEW SOURCE REVIEW (NSR)	40 CFR 52	Yes
STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES, known as New Source Performance Standards (NSPS)	40 CFR 60	Yes
SUBPART A - General Provisions	40 CFR 60	Yes
SUBPART Db — Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (§§ 60.40c - 60.48c)	40 CFR 60	No
SUBPART Dc — Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (§§ 60.40c - 60.48c)	40 CFR 60	Yes
SUBPART Ja — Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007 (§§ 60.100a - 60.109a)	40 CFR 60	Yes
SUBPART Kb – Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced after July 23, 1984 (§§ 60.110a - 60.115a)	40 CFR 60	Yes
SUBPART 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 (§§ 60.480a - 60.489a)	40 CFR 60	Yes[1]
SUBPART GGGa — Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006 (§§ 60.590a - 60.593a)	40 CFR 60	Yes
SUBPART IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	40 CFR 60	Yes
SUBPART NNN – Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations	40 CFR 60	Yes[2]
SUBPART QQQ — Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems (§§ 60.690 - 60.699)	40 CFR 60	Yes
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPs)	40 CFR 61	Yes
SUBPART A - General Provisions	40 CFR 61	Yes
SUBPART J — National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene (§§ 61.110 - 61.112)	40 CFR 61	Yes
SUBPART V — National Emission Standard for Equipment Leaks (Fugitive Emission Sources) (§§ 61.240 - 61.247)	40 CFR 61	Yes
SUBPART FF — National Emission Standard for Benzene Waste Operations (§§ 61.340 - 61.359)	40 CFR 61	Yes
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES (also known as Maximum Achievable Control Technology -MACT- standards and Generally Available Control Technology -GACT- standards)	40 CFR 63	Yes[3]

Program / Standard	Code	Applicability
SUBPART A - General Provisions	40 CFR 63	Yes
SUBPART ZZZZ -National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines	40 CFR 63	No[4]
SUBPART BBBBBB - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminal, Bulk Plant and Pipeline Facilities	40 CFR 63	Yes
SUBPART JJJJJJ -National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources	40 CFR 63	No[5]
Risk Management Programs for Chemical Accidental Release Prevention	40 CFR 68	Yes
Title V Operating Permit	40 CFR 70	No
Compliance Assurance Monitoring	40 CFR 64	No
Acid Rain Requirements	40 CFR 72	No
Stratospheric Ozone Protection Requirements	40 CFR 82	No
Mandatory Greenhouse Gas Reporting	40 CFR 98	Yes

[1] Applicable portions referenced in 40 CFR 60 Subpart GGGa .
[2] Applicable to process units in which LPG, light Naphtha and Gasoline range compounds are generated as a product, co-product, by-product or intermediate.
[3] Only those Subparts applicable to Area Sources of HAPs.
[4] NDAC 33-15-22 has only adopted those provisions applicable to major sources of HAPs. The proposed Davis Refinery qualifies as an Area Source of HAPs.
[5] NDAC 33-15-22 has only adopted those provisions applicable boilers with a heat input of ten million Btu per hour or more.

10.2 STATE OF NORTH DAKOTA AIR QUALITY RULES

This section details the applicability to the proposed Davis Refinery of the State of North Dakota Air Pollution Control Rules codified in NDAC Chapters 33-15-01 through 33-15-25. Refer to Section 11 of this permit application for compliance demonstration for the North Dakota Air Pollution Control Rules.

10.2.1 General Provisions (33-15-01)

The general provisions of chapter 33-15-01 addresses the following: entry onto premises, authority, variances, circumvention, severability, land use plans and zoning regulations, measurement of air contaminants, shutdown and malfunction of an installation, requirements for notification, time schedule for compliance, prohibition of air pollution, “confidentiality" of records, enforcement, and compliance certifications. Meridian will be subject to the provisions of this chapter and will comply with the provisions of the chapter after construction of the proposed Davis Refinery.

10.2.2 Ambient Air Quality Standards (33-15-02)

The purpose of the State of North Dakota Ambient Air Quality Standards ***("AAQS")*** is to establish levels of air quality for the maintenance of public health and welfare and to provide guidance to governmental and other parties interested in abating air pollution. The North Dakota SIP identifies the emissions control requirements the state will rely upon to attain and/or maintain the primary and secondary NAAQS. Consequently, NDDoH has adopted in NDAC 33-15-02, as mandated by North Dakota Century Code 23-25-03.2 and 23-25-03-3, Ambient Air Quality Standards affecting petroleum refineries which are equal to NAAQS under the CAA.

10.2.3 Restriction of Emission of Visible Air Contaminants (33-15-03)

The provisions of this chapter prohibit new sources from producing visible emissions of greater than 20 percent opacity, with the exception that 40 percent opacity is permissible for not more than one 6-minute period per hour. As a new source, the proposed Davis Refinery is subject to the restrictions of 33-15-03.

10.2.4 Emissions of Particulate Matter Restricted (33-15-05)

The provisions of 33-15-05-01 regulate particulate matter from "*any operation, process, or activity from which particulate matter is emitted except the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials.*" The catalyst handling and regeneration at the CRUs elemental sulfur handling from the SRU, thermal oxidizer and flares, as well as the emergency diesel generator and the diesel engine driven backup firewater pumps will be subject to the provisions of 33-15-05-01.

The provisions of 33-15-05-02 regulate particulate matter from indirect heating equipment *"in which fuel, including any products or byproducts of the manufacturing process, is burned for the primary purpose of producing steam, hot water, hot air, or other indirect heating of liquids, gases, or solids and, in the course of doing so, the products of combustion do not come into direct contact with process materials."* However, it exempts fuel burning equipment in which a gaseous fuel is burned alone or in combination with other gaseous fuels. At the proposed Davis Refinery, the process heaters and boilers, meet

the definition of indirect heating units, however, since they are fired on refinery fuel gas, are exempt from the provisions of 33-15-05-02.

10.2.5 Emissions of Sulfur Compounds Restricted (33-15-06)

This chapter applies to any installation in which fuel is burned, in which the SO_2 emissions are substantial due to the sulfur content of the fuel burned, and in which the fuel is burned primarily to produce heat. This chapter is not applicable to installations which are subject to a SO_2 emission limit under Chapter 33-15-12, Standards of Performance for New Stationary Sources. The proposed Davis Refinery is subject to the requirements of 40 CFR 60 Subpart Ja at its process heaters, boilers, flares, thermal oxidizers, refinery process vents and sulfur recovery units, and the requirements of 40 CFR 60 Subpart IIII at its emergency diesel generator and firewater diesel backup pumps, therefore, it is not subject to the provisions of this chapter.

10.2.6 Control of Organic Compounds Emissions (33-15-07)

The provisions of this chapter establish requirements for the construction of facilities that generate organic compounds and vapors and the manner of organic compounds and vapors disposal. The proposed Davis refinery will be subject to requirements outlined this chapter for water treatment facilities, tanks, loading facilities, pumps and compressors, organic vapors and H_2S emission control (via vapor recovery or flaring).

10.2.7 Control of Air Pollution from Internal Combustion Engines (33-15-08)

The provisions of this chapter prohibit the operation of any internal combustion engine from any source which emits *"any unreasonable and excessive smoke, obnoxious or noxious gases, fumes or vapor"*. The emergency diesel generator and the firewater diesel backup pumps will be driven by internal combustion engines which are subject to compliance with this chapter.

10.2.8 Prevention of Air Pollution Emergency Episodes (33-15-11)

The provisions of this chapter pertain to the NDDoH declaring an air pollution emergency and its effect on the operations of sources of regulated air contaminants. When an air pollution emergency episode is declared by the Department, Meridian shall comply with the requirements contained in this chapter.

10.2.9 Standards of Performance for New Stationary Sources (33-15-12)

The North Dakota Standards of Performance for New Stationary Sources adopt in whole or in part the Federal NSPS regulations in 40 CFR 60. NDAC 33-15-12 identifies the applicable requirements of the Federal NSPS regulations adopted by the State. Consequently, the proposed Davis Refinery will be subject to the following provisions of NSPS:

Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Subpart Ja – Standards of Performance for Petroleum Refineries

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

Subpart GGGa – Standards of Performance for Equipment Leaks of VOC Emissions in Petroleum Refineries

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart QQQ – Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems.

10.2.10 Emission Standards for Hazardous Air Pollutants (33-15-13)

The North Dakota Emission Standards of Hazardous Air Pollutants adopt in whole or in part the Federal NESHAPs in 40 CFR 61. NDAC 33-15-13 identifies the applicable requirements of the Federal NESHAP regulations adopted by the State. Consequently, the proposed Davis Refinery will be subject to the following provisions of 40 CFR 61:

Subpart J – National Emissions Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene

Subpart V – National Emissions Standards for Equipment Leaks (Fugitive Emission Sources)

Subpart FF – National Emissions Standards for Benzene Waste Operations

10.2.11 Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate (33-15-14)

The Davis Refinery is a *"designated air contaminant source"* under NDAC 33-15-14-01; therefore, a permit to construct a new stationary source of air contaminants subject to regulation or "regulated NSR pollutants". Major sources are defined in accordance with Section 112 of the Federal Clean Air Act as those with a PTE any air contaminant subject to regulation in excess of 100 TPY, or any single HAP in excess of 10 TPY or combined HAPs in excess of 25 TPY. In accordance with the definitions of 33-15-14-06, air contaminant subject to regulation does not include greenhouse gases as defined in 40 CFR 86.1818-12(a). As allowed under the provisions of 33-15-14-06 minor sources are those that do not exceed the major source thresholds under their physical and operational design, including the effect of add-on pollution controls.

In accordance with the allowable provisions of 33-15-14, and based on the PTE of regulated NSR pollutants from the proposed Davis Refinery, under its physical and operational design and including the effect of add-on air pollution control equipment, Meridian is pursuing a PTC for the proposed Davis Refinery which includes proposed synthetic minor emission limits for regulated air contaminants.

Once the permit to construct is granted, and in accordance with the provisions of 33-15-14-03, Meridian must apply for a permit to operate the proposed Davis Refinery at least thirty days prior to the start-up of routine operations. In order to satisfy this requirement, Meridian need only submit a thirty-day prior notice of proposed startup and satisfy compliance requirements for a Minor Source Permit to Operate.

10.2.12 Prevention of Significant Deterioration of Air Quality (33-15-15)

The North Dakota Prevention of Significant Deterioration ***("PSD")*** regulations adopt in whole or in part the Federal PSD regulations. NDAC 33-15-15 identifies the applicable requirements of the Federal PSD regulations adopted by the State. As previously discussed, the proposed Davis Refinery qualifies as a Synthetic Minor Source and thus the facility is not subject to the ambient impacts analysis requirements of the PSD program.

10.2.13Restriction of Odorous Air Contaminants (33-15-16)

In areas located outside a city or outside the area over which a city has exercised extraterritorial zoning as defined in ND Century Code 40-47-01.1, a person may not discharge into the ambient air any objectionable odorous air contaminant that measures seven odor concentration units or higher outside the property boundary where the discharge is occurring. The Davis Refinery is subject to the provisions of chapter 33-15-07 for controls of organic compound and H_2S emissions and furthermore is required to be well-controlled for emissions to meet the Minor Synthetic Source levels provisions of chapter 33-15-14, so odorous emissions from the proposed Davis Refinery are not anticipated.

10.2.14Restriction of Fugitive Emissions (33-15-17)

This chapter restricts fugitive emissions from any source without taking reasonable precautions to prevent such emissions from causing air pollution. The proposed Davis Refinery is a designated source of air pollution, and as such, quantifiable fugitive emissions must be accounted for in the refinery-wide PTE estimation and must be controlled to ensure the proposed synthetic minor emission limits for CO, SO2, NOx, VOCs and HAPs are met.

10.2.15Stack Heights (33-15-18)

The general provisions of this chapter restrict the use of stack heights above good engineering practices (GEP) as well as other dispersion techniques to affect the concentration of a pollutant in the ambient air. Stack heights at the proposed Davis Refinery will not exceed GEP or use other dispersion techniques described in 33-15-18-01 to affect the degree of emission limitation required.

10.2.16Visibility Protection (33-15-19)

New major sources as defined in Chapter 33-15-15 are required to demonstrate to NDDoH that the actual emissions of visibility-impairing pollutants from the source, including fugitive emissions, will not cause or contribute to adverse impact on visibility within any federal Class I area if such pollutants are emitted in significant quantities. The proposed

Davis Refinery qualifies as a Minor Synthetic Source and as such not subject to the provisions of this chapter.

10.2.17 Acid Rain Program (33-15-21)

The proposed Davis Refinery is not subject to the Acid Rain Program provisions of 40 CFR Part 72-28, and consequently, not subject to the provisions of North Dakota's Acid Rain Program.

10.2.18 Emissions Standards for Hazardous Air Pollutants for Source Categories (33-15-22)

The North Dakota Emission Standards for Hazardous Air Pollutants for Source Categories adopt in whole or in part the Federal MACT regulations in 40 CFR 63. NDAC 33-15-17 identifies the applicable requirements of the Federal MACT regulations adopted by the State. Considering the proposed Davis Refinery qualifies as a Minor Synthetic Source it will only be subject to the applicable Area Source provisions of 40 CFR 63:

BBBBBB – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities

10.2.19 Fees (33-15-23)

Meridian is responsible for a $350 filing fee for construction permit applications, plus any additional fees based on actual processing costs.

10.2.20 Standards for Lead-Based Paint Activities (33-15-24)

This chapter specifies requirements for activities related to lead -based paint. The proposed Davis Refinery does not include any lead-based paint activities and thus is not subject to these requirements.

10.2.21 Regional Haze Requirements (33-15-25)

This chapter contains requirements for Best Available Retrofit Technology ***("BART")***-eligible sources, namely, fossil-fuel-fired steam electric plants. The proposed Davis Refinery is not a BART-eligible source and therefore not subject to the requirements of this chapter.

10.3 CODE OF FEDERAL REGULATIONS

10.3.1 National Ambient Air Quality Standards

Primary NAAQS define levels of air quality that the US EPA deems necessary to protect the public health. Secondary NAAQS define levels of air quality that the US EPA judges necessary to protect the public welfare (i.e., wildlife, national monuments, vegetation, visibility, and property values) from any known, or anticipated adverse effects of a pollutant.

As part of the PSD analysis, major sources or modifications of air pollution are required to demonstrate compliance with the NAAQS for pollutants emitted in a significant amount. The proposed Davis Refinery the PTE for NSR pollutants is less than SERs, further analysis -is unnecessary.

10.3.2 New Source Performance Standards (40 CFR 60)

An NSPS is applicable to certain categories of affected facilities that are constructed, modified, or reconstructed and that meet other applicability criteria on or after a compliance date upon which a relevant subpart applies. The following sections provide a summary of NSPS applicability and emission limits for petroleum refineries. Refer to Section 11 of this permit application for compliance demonstration for NSPS.

Subpart A – General Provisions

If an individual NSPS subpart is applicable to a project, the general provisions of NSPS Subpart A also apply.

Subpart Db – Standards of Performance for Industrial-Commercial- Institutional Steam Generating Units

No individual steam generating combustion unit at the proposed refinery will have a heat input capacity of 100 MMBtu/hr or greater; therefore, 40 CFR 60 Subpart Db does not apply.

Subpart Dc – Standards of Performance for Small Industrial-Commercial- Institutional Steam Generating Units

This subpart is only applicable to steam generating units that have a heat input capacity of 10-100 million Btu/hr and commence construction after June 9, 1989. The units subject to Subpart Dc include the refinery's Utility Steam Boilers.

Subpart Ja – Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced after May 14, 2007

This subpart applies to fuel gas combustion devices at petroleum refineries. Subpart Ja defines "petroleum refinery" as *"any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, asphalt (bitumen) or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives."* Since the facility produces products through distillation of petroleum, it is subject to this subpart. The units subject to regulation under this subpart include refining units (ADUs, VDU, Hydrotreaters, CRUs, Isomerization, Alkylation) process heaters, flares, fluid catalytic cracking unit and the thermal oxidizer of the sulfur recovery unit.

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

This subpart applies to each storage tank with a capacity greater than 75 cubic meters (approximately 19,800 gallons) used to store volatile organic liquids, except that the subpart does not apply to storage tanks with a capacity greater than or equal to 151 cubic meters (approximately 39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 cubic meters but less than 151 cubic meters storing a liquid with a maximum true vapor pressure less than 15.0 kPa. Based upon these criteria, tanks storing Crude Oil, are subject to Subpart Kb. Tanks associated with the Gasoline blending pool are regulated in accordance with 40 CFR 63 Subpart BBBBBB.

Subpart GGGa – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commences after November 7, 2006

Subpart GGGa applies to valves, pumps, pressure relief devices, etc. in VOC service at petroleum refineries. Therefore, equipment at the facility will be subject to this subpart. The subpart establishes standards for equipment as well as leak detection and repair requirements and references requirements in 40 CFR 60, Subpart 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.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The provisions of this subpart are applicable to owners, and operators of stationary compression ignition ***("CI")*** internal combustion engines ***("ICE")***. The emergency generator engine and backup firewater pump engines are subject to the requirements of this subpart.

Subpart NNN – Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

Subpart NNN applies to distillation units part of process units, that produce any of the chemicals listed in § 60.667 (e.g., Butanes, Pentanes, Benzene, Hexanes, Toluenes, Xylenes) as a product, co-product, by-product, or intermediate, for which construction, modification, or reconstruction commenced after December 30, 1983.

Distillation Unit has the meaning given is 40 CFR 60.661 *"device or vessel in which distillation operations occur, including all associated internals (such as trays or packing) and accessories (such as reboiler, condenser, vacuum pump, steam jet, etc.), plus any associated recovery system."*

Process unit has the meaning given is 40 CFR 60.661 *"equipment assembled and connected by pipes or ducts to produce, as intermediates or final products, one or more of*

the chemicals in 60.667. A process unit can operate independently if supplied with sufficient fuel or raw materials and sufficient product storage facilities."

This subpart establishes standards that limit the emissions from vent streams associated with the operation of the subject process units and include requirements for the monitoring of emissions. The process units within the proposed Davis Refinery which are associated with the generation of LPG, light naphtha and gasoline range compounds as a product, co-product, by-product, or intermediate, are subject to the applicable provisions of this subpart. These process units include ADUs and VDU, NHT, CRU, BSU and HYK.

Supbart QQQ – Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems

Subpart QQQ applies to wastewater systems at petroleum refineries for which construction, modification, or reconstruction is commenced after May 4, 1987. The affected facilities of the Davis Refinery to which Subpart QQQ applies are individual drain systems and oil-water separators. Each oil-water separator tank, slop oil tank, storage Stormwater sewer systems and wastewater treatment system ancillary equipment that does not come in contact with or store oily wastewater, is not subject to these requirements.

10.3.3 National Emission Standards for Hazardous Air Pollutants (40 CFR 61)

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) are contained within 40 CFR 61. Part 61 applies to owners or operators of stationary sources for which a standard is prescribed under this part. Refer to Section 11 of this permit application for compliance demonstration with NESHAPs.

Subpart J – National Emissions Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene

The provisions of this subpart apply to each of the following sources that are intended to operate in benzene service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart.

Subpart V – National Emissions Standards for Equipment Leaks (Fugitive Emission Sources)

The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart.

Subpart FF – National Emissions Standards for Benzene Waste Operations

Subpart FF applies to petroleum refineries and certain other industrial facilities and prescribes waste and water quality management to reduce benzene emissions from waste streams. The provisions of this subpart apply to individual drain systems used to convey process wastewater from a process unit, product storage tank, or waste management unit to a waste management unit. Individual drain systems include all process drains and common junction boxes, together with their associated sewer lines and other junction boxes, down to the receiving wastewater treatment system. Waste that is contained in a segregated stormwater sewer system and any gaseous stream from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system, are exempt from compliance with the provisions of this subpart. The proposed wastewater treatment system is subject to these requirements.

10.3.4 National Emission Standards for Hazardous Air Pollutants for Source Categories (40 CFR 63)

40 CFR 63 establishes national emission standards for source categories that emit HAPs above major source thresholds. It also establishes national emission standards for area source which are defined as *"any stationary source of hazardous air pollutants that is not a major source as defined in this part"*. 40 CFR 63 is also known as Maximum Achievable Control Technology (MACT) standards for Major Sources and Generally Available Control Technology (GACT) standards for Area Sources. The major source thresholds are 10 TPY for any single HAP and/or 25 TPY of all combined HAPs. Based on its PTE the Davis Refinery qualifies as an area source of HAPs and thus only applicable GACT

standards have been reviewed. Refer to Section 11 of this permit application for compliance demonstration with GACT standards:

Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE)

The RICE NESHAP requirements for an engine depend on whether the facility is a major source or an area source of HAP. The requirements also depend on factors including the engine size and type, construction date, and application (non-emergency or emergency). However, the State of North Dakota has only adopted in their Air Pollution Control Rules (NDAC Chapter 15) the requirements that are applicable to major sources of HAPs. Because the emergency generator and backup firewater pump will be driven by new emergency engines located at an Area Source of HAPs, the proposed Davis Refinery is not subject to the provisions of 40 CFR 63 Subpart ZZZZ.

Subpart BBBBBB – National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities

This subpart establishes national emission limitations and management practices for HAPs emitted from area source gasoline distribution bulk terminals, bulk plants, and pipeline facilities. This subpart also establishes requirements to demonstrate compliance with the gasoline handling facilities emission limitations and management practices. The proposed refinery is subject to 40 CFR 63 Subpart BBBBBB because the facility includes a gasoline bulk terminal.

Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources

The provisions of this subpart apply to industrial, commercial, or institutional boiler as defined in § 63.11237, that is located at, or is part of, an area source of hazardous air pollutants (HAP). Only the requirements that are applicable to boilers with a heat input of ten million BTU per hour or more have been adopted by the State of North Dakota in its Emission Standards for HAPs for Source Categories (NDAC 33-15-22). Gas boilers are specifically excluded from the requirements of Subpart JJJJJJ. Since the boilers at the

proposed Davis Refinery are fired on gas (either refinery gas or natural gas), the requirements of this subpart are not applicable.

10.3.5 Chemical Accident Prevention Provisions (40 CFR Part 68)

The Risk Management Program (RMP) for Chemical Accidental Release Prevention applies to facilities that produce, process, store, or use any regulated toxic or flammable substance in excess of the thresholds listed in 40 CFR 68.130. The Davis Refinery will produce, process and store of LPG, gasoline and RMP-regulated flammable substances in amounts above threshold quantities. Meridian will comply with the provisions RMP applicable to the facility.

10.3.6 Compliance Assurance Monitoring (40 CFR Part 68)

The North Dakota Compliance Assurance Monitoring ("***CAM***") provisions adopt in whole or in part the Federal CAM requirements of 40 CFR 64. NDAC 33-15-14 applies to individual emission units located at major sources, on a pollutant by pollutant basis, termed pollutant specific emissions unit ("***PSEU***"). The CAM rule exempts the permittee from the additional monitoring requirements in situations in which continuous compliance monitoring is already specified in an operating permit.

In general, CAM applies to emission units meeting the following criteria:

- The emission unit is subject to an emission limit or standard (including limits and standards contained in the SIP) for an air pollutant regulated by Part 70;
- Compliance with the applicable limit or standard is achieved through the use of add-on control equipment; and
- The emission unit has pre-controlled potential emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the Part 70 major source level for that pollutant.

While the proposed Davis Refinery would not be a Major Source, some PSEUs at the proposed refinery meet the three criteria subjecting an emission unit to the CAM provisions of 40 CFR Part 64. This includes the storage facilities, and loading facilities which are already subject to the compliance monitoring requirements of 40 CFR 63 Subpart BBBBBB. Further, for storage facilities not subject to this subpart Meridian will

comply with the inspection, recordkeeping and monitoring requirements of 40 CFR 60 Subpart Kb.

10.3.7 Acid Rain provisions (40 CFR PARTS 72-78)

The acid rain provisions of the Clean Air Act are applicable to utilities and other facilities that combust fossil fuel to generate electricity for wholesale or retail sale. The proposed Davis Refinery will not generate electricity for wholesale or retail sale, therefore the acid rain provisions are not applicable to the proposed facility.

10.3.8 Mandatory Greenhouse Gas Reporting (40 CFR 98)

A facility that contains any source category that is listed in Table A-3 of this subpart in any calendar year starting in 2010. For these facilities, the annual GHG report must cover stationary fuel combustion sources (40 CFR 98 Subpart C), miscellaneous use of carbonates (40 CFR 98 Subpart U), and all applicable source categories listed in Table A-3 and Table A-4 of this subpart.

Petroleum refineries are a source category subject to the Mandatory Greenhouse Gas Reporting rule regardless of the quantity of actual GHG emissions from the source. In accordance with 40 CFR Part 98.2, the proposed Davis Refinery will be subject to the monitoring, recordkeeping, and reporting requirements of actual CHG emissions from the CRU; blowdown systems; storage tanks; process equipment components (compressors, pumps, valves, pressure relief devices, flanges, and connectors) in gas service; tanker truck, and rail loading operations; flares; and sulfur recovery plants; as defined in 40 CFR Part 98, Subpart Y – Petroleum Refineries; in addition to the monitoring, recordkeeping, and reporting requirements of actual CHG emissions for General Stationary Fuel Combustion Sources (40 CFR Part 98 Subpart C), Industrial Wastewater Treatment (40 CFR Part 98, Subpart I), and Suppliers of Petroleum Products (40 CFR Part 98, Subpart MM).

11 COMPLIANCE WITH THE AIR TOXICS POLICY

The Air Toxics Policy is compliant with the residual risk provisions of the Clean Air Act and is applicable to all new or modified air contaminant sources, as designated in NDAC 33-15-14-01 of the North Dakota Air Pollution Control Rules, which are required to submit an application for a PTC under NDAC 33-15-14-02.

As detailed in Section 10 of this permit application, the proposed Davis Refinery is subject to certain State regulations and Federal regulations, as adopted by the State of North Dakota, that impose emission standards and operational limits from the refinery's processing units and equipment. The following sections detail the applicable emission standards and operational limit requirements and details Meridian's intended demonstration of compliance with the applicable regulations. Therefore, only the emissions standards of the applicable regulatory requirements are addressed in this section.

11.1 AMBIENT AIR QUALITY STANDARDS (33-15-02)

To determine compliance with AAQSs, air dispersion modeling of the emission sources associated to the proposed Davis Refinery was conducted. The modeling was conducted in accordance with the Division of Air Quality Criteria Pollutant Modeling Requirements for a Permit to Construct, Site Specific Guidance issued in June 2016 by the Department for the Davis Refinery and other Departments and EPA guidance and policy documents, and the pre-application dispersion modeling protocol dated August 2016 and related comments of the Department received in a memo dated September 16, 2016. The of the the Air Dispersion Modeling indicate that the potential emissions from the proposed Davis Refinery do not exceed significance levels for impacts to adjacent properties and will therefore not cause an exceedance of either the AAQS or the PSD Class I increment levels and Air Quality Related Values for the Theodore Roosevelt Memorial National Park. The results of the Air Dispersion Modeling are summarized in Section 12 of this permit application.

11.2 OPACITY LIMITS (NDAC 33-15-03)

Opacity limitations are provided for in State regulations through NDAC 33-15-03 which restricts emissions of visible air contaminants. It is expected that the proposed Davis Refinery will be compliant with the 20 percent opacity standard since emission units at will fire natural gas or refinery fuel gas, which are considered to not cause opacity concerns from combustion. Therefore, the proposed Davis Refinery will be considered to operate in compliance with the opacity standard, unless otherwise noted by visual observation.

In any case, Meridian will demonstrate compliance with the above State regulations by ensuring emission units at the proposed Davis Refinery are designed to meet the limitations imposed in NDAC 33-15-03, which apply at all times, except as allowed by NDAC 33-15-03-04. All non-flare sources will comply with an opacity limit of 20% except for one six-minute period per hour when 40% opacity is permissible. The refinery flares will comply with an opacity limit of 20% except for one six-minute period per hour when 60% opacity is permissible.

11.3 PARTICULATE MATTER RESTRICTIONS (CHAPTER 33-15-05)

Only the provisions of NDAC 33-15-05-01 are applicable to the proposed Davis Refinery. Catalyst handling and regeneration at the CRU, elemental sulfur handling from the SRU, thermal oxidizer and flares, as well as the emergency diesel generator and the diesel engine driven backup firewater pumps are subject to the emission limitations in Table 3 of NDAC 33-15-05-01. The equipment affected by these provisions will be designed to meet the most stringent limitations between NDAC 33-15-05-01 and the provisions of NSPS Subpart Ja.

11.4 SULFUR COMPOUNDS RESTRICTIONS (CHAPTER 33-15-06)

This chapter is not applicable to installations which are subject to an SO_2 emission limit under Chapter 33-15-12, Standards for Performance for New Stationary Sources, or to installations which burn pipeline quality natural gas. Refineries have SO_2 emission limits under 40 CFR Part 60 Subpart NSPS Ja; therefore, the proposed Davis Refinery is exempt from compliance with Chapter 33-15-06.

11.5 CONTROL OF AIR POLLUTION FROM VEHICLES AND OTHER INTERNAL COMBUSTION ENGINES (CHAPTER 33-15-08)

This chapter restricts the operation of internal combustion engines which emit from any source unreasonable and excessive smoke, obnoxious or noxious gas, fumes or vapor. The emergency generator and backup firewater pump engines are subject to this chapter's requirements, and will demonstrate compliance through designs compliant with the requirements of 40 CFR Part 60 Subpart NSPS IIII.

11.6 CONTROL OF ORGANIC COMPOUNDS EMISSIONS (33-15-07)

The provisions of this chapter establish requirements for organic compound facilities and the disposal of organic compounds. The proposed Davis refinery will be subject to requirements outlined this chapter for water treatment facilities, tanks, loading facilities, pumps and compressors, and emission control of organic vapors and H_2S (via vapor recovery or flaring). Meridian will comply with the provisions of this chapter through:

- Oily water treatment system compliant with 40 CFR 60 Subpart QQQ and 40 CFR 61 Subpart FF.
- Storage tanks meeting or exceeding the requirements of 40 CFR 60 Subpart Kb, even if not subject to the requirements of this subpart. Gasoline pool storage tanks will be IFR tanks meeting the requirements of 40 CFR 63 Subpart BBBBBB. Crude oil, gasoline pool, jet fuel and light slop tanks will be IFR tanks fitted with double seals, and gasketed fittings, with access hatches that will be bolted down when closed. Only Diesel, VGO and Fuel Oil tanks will be fixed roof tanks. All storage tanks with be fitted with and filled through a submerged fill pipe, even though diesel and heavier product storage tanks tanks including heavy slops are not subject to the provisions of Subpart Kb.
- Truck loading facilities compliant with 40 CFR 63 Subpart BBBBBB.
- Rotating pumps and compressors in VOC service compliant with 40 CFR 60 Subparts GGGa and VVa, and 40 CFR 61 Subparts J and V.
- Blowdown and flare system compliant with 40 CFR 60.18.

11.7 NEW SOURCE PERFORMANCE STANDARDS (NDAC 33-15-12)

As discussed in Section 10.3.2, the proposed Davis Refinery will be subject to NSPS. This section details compliance demonstration for NSPS that are applicable to the proposed Davis Refinery. Meridian will comply with all general provisions of NSPS (Subpart A), including all applicable recordkeeping and notifications requirements.

11.7.1 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60 Subpart Dc)

Subpart Dc applies to each steam generating unit, defined as a device that combusts any fuel or byproduct/waste and produces steam or heats any heat transfer medium, that commences construction, reconstruction, or modification after June 9, 1989, and has a heat input capacity of 100 MMBtu or less, but greater than or equal to 10 MMBtu/hr. The proposed Davis Refinery steam generation boilers (202-PK-0201A, 202-PK-0201B, 202-PK-0201C) will fire exclusively on refinery fuel gas. Therefore, only the recordkeeping requirements of Subpart Dc apply. Meridian will demonstrate compliance with the NSPS by using fuel certification records and maintaining records of the amount of fuel combusted by the steam boilers during each calendar month. No other emission standards of apply to these units.

11.7.2 Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commences after November 7, 2006 (40 CFR Subpart GGGa)

Subpart GGGa applies to valves, pumps, pressure relief devices, etc. in VOC service at petroleum refineries. The subpart establishes standards for equipment as well as leak detection and repair requirements and references requirements in 40 CFR 60, Subpart VVa Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. Meridian will demonstrate compliance with this subpart via implementation of pumps in VOC service with double mechanical seals, enhanced valve packing, no open ended lines and connection of pressure relief devices, sampling connecting systems, surge control vessels and bottoms receivers to closed-vent systems routed to fuel gas or flare in accordance with this subpart and 40 CFR 61 Subparts

J and V. Further, in order to meet or exceed the requirements of 40 CFR 60 Subpart VVa, and those of 40 CFR 61 Subparts J and V, Meridian has elected to comply with the more stringent leak definitions of 40 CFR 63 Subpart H through the implementation of an LDAR program with a screen value of 500 ppm as currently recommended by EPA instead of the 2,000 to 10,000 ppmv leak definitions of NSPS.

In EPA's estimations the implementation of a facility LDAR program can reduce emissions by at least 63% at Petroleum Refineries[1]. The implementation of any LDAR program is expected to alter not only the prevalence of leaks, but the relative magnitude of leaks above the action level. Furthermore, the lower the leak action level an LDAR program uses, the relative magnitude and number of leaks is expected to be much less than for facilities that use a higher screening level or do not have an LDAR program.

Meridian's proposed LDAR program assumes monitoring and directed maintenance with a maximum leak definition of 500 ppmv for all components other than compressors. Meridian's facility integrity management system for the Davis Refinery will include the use of advanced monitoring methods such as differential light absorption and ranging (DIAL) or optical gas imaging (OGI) technology that can visualize gas leaks using ultra-sensitive passive infrared sensing technology, as part of, and complementing, its proposed LDAR program to improve operational and safety practices so that leaks can be identified more efficiently and fixed soon as practicable.

Based on the level of LDAR program proposed for the Davis Refinery; the frequence of monitoring and the lower the leak action level, Meridian's proposed LDAR should achieve fugitive emissions reductions equivalent to those attainable under the Texas Commission on Environmental Quality (TCEQ) approved 28LAER program. Fugitive emissions control efficiencies under the TCEQ 28LAER program and leak detection thresholds are summarized in the following table.

[1] EPA's Leak Detection and Repair: A Best Practices Guide, October 2007. EPA-305-D-07-001

		LDAR Program equivalent to TCEQ 28LAER	Leak Threshold (ppmv/h)
Valves	Gas	97%	500
	Light Liquid	97%	500
	Heavy Liquid	0%	500
Pumps	Light Liquid	85%	500
	Heavy Liquid	85%	500
Compressors		85%	10000
Pressure Relief Gas Valves		97%	500
Flanges	Gas	97%	500
	Light Liquid	97%	500
	Heavy Liquid	30%	500
Sampling Connections		97%	500

11.7.3 Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007 (40 CFR 60 Subpart Ja)

Subpart Ja applies to fuel gas combustion devices at petroleum refineries. In the case of the proposed Davis Refinery, this subpart applies to:

- Fuel Gas Combustion Devices (process heaters from ADUs, VDU, NHT, CRU, DHT, HYK)
- SRU (process vents and thermal oxidizer)
- Flares

A summary of requirements of NSPS Subpart Ja which will apply to the proposed Davis Refinery and the compliance demonstration methods proposed are included in the table below, and are further described in the text section that follows.

40 CFR 60 Subpart Ja Applicable Requirements

Source	Regulatory Citation	Emission/Work Practice Standard	Average Period	Compliance Demonstration
Fuel Gas Combustion Devices	40 CFR 60.102a(g)(1)	RSC: 20 ppmvd @ 0% O_2 or H_2S: 162 ppmv[1]	3-hour rolling average basis	Operation of CEMS[1] per §60.107a(a) and methods/procedures per §60.104a(i)&(j)
		RSC: 8 ppmvd @ 0% O_2 or H_2S: 60 ppmv[1]	365 successive calendar day rolling average basis	
	40 CFR 60.102a(g)(2)[2]	NOx[3]: 40 ppmvd @ 0% O_2 or 0.040 lb/MMBtu HHV basis	30-day rolling average basis	Biennial performance testing and methods/procedures per §60.104a(i)(6)&(7)
		NOx[4]: 60 ppmvd @ 0% O_2 or 0.060 lb/MMBtu HHV basis		
	40 CFR 60.103a(c)(2)	Root Cause Analysis / Corrective Action Analysis	N/A	40 CFR 60.103a(d)&(e)
Sulfur Recovery Unit	40 CFR 60.102a(f)(2)(i)	RSC: 2,500 ppmvd @ 0% O_2	12-hr rolling average basis	Operation of RSC CEMS per §60.106a(a)(1) and methods/procedures per 60.104a(h)
	40 CFR 60.103a(c)(3)	Root Cause Analysis / Corrective Action Analysis	N/A	40 CFR 60.103a(d)&(e)
Flares	40 CFR 60.103a(h)	H_2S: 162 ppmv[5]	3-hour rolling average basis	Operation of CEMS[1] per §60.107a(e) and methods/procedures per §60.104a(j)
	40 CFR 60.103a(c)-(e)	Flow Monitoring	N/A	§60.107a(f)
	40 CFR: 60.103a(a)	Flare Monitoring Plan	N/A	40 CFR 60.103a(b)
	40 CFR 60.103a(c)(1)	Root Cause Analysis / Corrective Action Analysis	N/A	40 CFR 60.103a(d)&(e)

1. Rule provides for different methods of CEMS, to be decided during detailed engineering.
2. Fuel Gas Combustion Devices greater than 40 MMBtu/hr
3. NOx limits for natural draft process heaters
4. NOx limits for forced draft process heaters
5. Process upset gases or fuel gas released to flare are exempt from this limit.

Fuel Gas Combustion Devices excluding Flares

For each fuel gas combustion device excluding flares, Meridian shall comply with all applicable limits established by 40 CFR 60.102a(g)(l). To this effect, Meridian will comply with either provision below.

a. Not discharge or cause the discharge of any gases into the atmosphere that contain SO_2 in excess of 20 ppmv (dry basis, corrected to zero percent excess air) determined on a 3-hour rolling average basis and SO_2 in excess of 8 ppmv (dry basis, corrected to zero percent excess air), determined on a 365-day successive calendar day rolling average basis; or

b. Not burn in any fuel gas combustion device any fuel gas that contains H_2S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis and H_2S in excess of 60 ppmv determined daily on a 365 successive calendar day rolling average basis.

For each fuel gas combustion device excluding flares, with a capacity greater than 40 MMBtu/hr, Meridian shall comply with all applicable limits established by 40 CFR 60.102a(g)(l). To this effect, Meridian will comply with either provision below.

a. For natural draft process heaters:
   - Not discharge to the atmosphere any emissions of NOx in excess of 40 ppmv (dry basis, corrected to zero percent excess air) determined daily on a 30-day rolling average basis
   - Not discharge to the atmosphere any emissions of NOx in excess of 0.040 pounds per million British thermal units (lb/MMBtu) higher heating value basis determined daily on a 30-day rolling average basis.

b. For forced draft process heaters:
   - Not discharge to the atmosphere any emissions of NOx in excess of 60 ppmv (dry basis, corrected to zero percent excess air) determined daily on a 30-day rolling average basis

- Not discharge to the atmosphere any emissions of NOx in excess of 0.060 pounds per million British thermal units (lb/MMBtu) higher heating value basis determined daily on a 30-day rolling average basis.

Meridian will comply with the following fuel fired heaters emission monitoring requirements of 40 CFR 60 Subpart Ja, including the applicable requirements of 40 CFR 60.107a(a) and (c):

a. Install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration by volume (dry basis, zero percent excess air) of NOx emissions into the atmosphere. The monitor must include an 0_2 monitor for correcting the data for excess air. Monitoring of NOx emissions must also meet all applicable requirements of 40 CFR 60.107a(c)

b. For each fuel gas combustion device subject to an $S0_2$ or H_2S limit, Meridian will comply with either provision below.

- Install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration (dry basis, zero percent excess air) of sulfur dioxide emissions into the atmosphere. The monitor must include an oxygen monitor for correcting the data for excess air. Monitoring of sulfur dioxide emissions must also meet all applicable requirements of 40 CFR 60 Subpart Ja, including the applicable requirements of 40 CFR 60.107a(a)(1).

- Install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration by volume (dry basis) of hydrogen sulfide in the fuel gases before being burned in any fuel gas combustion device. Monitoring of hydrogen sulfide emissions must also meet all applicable requirements of 40 CFR 60 Subpart Ja, including the applicable requirements of 40 CFR 60.107a(a)(2).

Sulfur Recovery Unit

The SRU at the proposed Davis Refinery will be an affected facility and subject to Subpart Ja. The rated capacity of the SRU is approximately 10 long ton/day. For the purpose of

applicability determination of the provisions of Subpart Ja, the SRU is considered to be a sulfur recovery plant with a capacity less than 20 long tons/day with a reduction control system followed by incineration. Therefore, Meridian shall comply with all applicable limits established by 40 CFR 60.102a(f)(2)(i) which require that the SRU not discharge or cause the discharge of any gases into the atmosphere in excess of 2,500 ppm by volume of reduced sulfur compounds calculated as ppm SO_2 by volume (dry basis) at zero percent excess air, determined on a 12-hour rolling average basis. In addition, Meridian will install, operate, calibrate, and maintain an instrument for continuously monitoring and recording the concentration (dry basis, zero percent excess air) of any SO_2 emissions into the atmosphere. The monitor will include an O_2 monitor for correcting the data for excess air.

Flare System

The proposed Davis Refinery Flare system will be designed and operated in accordance with the requirements of NDAC 33-15-12-02, and 40 CFR 60.18 (NSPS Subpart A).

a. The flares shall be operated with a flame present at all times when emissions may be vented to the flare. The presence of a flame will be monitored using a thermocouple or any other equivalent device approved by NDDoH.

b. The flares shall be operated with no visible emissions except for periods not to exceed a total of five minutes during any two consecutive hours. Reference Method 22 of 40 CFR 60, Appendix A will be used to determine compliance with the visible emissions provision.

c. The flare system (enclosed flare 207-FL-0701, and emergency elevated flares 207-FL-0703 and 207-FL-0704) shall not bum any fuel gas that contains H_2S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis. The combustion in a flare of process upset gases released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this limit. Natural gas will be provided to the flare pilots to ensure H_2S limitations are met at any other time.

d. Emergency acid gas flare 207-FL0702 is being proposed to manage process upset gases or fuel gas that is released to the flare system as a result of relief valve

leakage or other emergency malfunctions from the sour water unit and sulfur recovery unit. Since the intended operation of the sour gas flare meets the exemption requirements, it is exempt from the H_2S limit 162 ppmv determined hourly on a 3-hour rolling average basis. Natural gas will be provided to the flare pilots to ensure H_2S limitations are met at any other time.

For enclosed flare 207-FL-0701 and emergency acid flare 207-FL-0702 Meridian will comply with the emission monitoring requirements of 40 CFR 60 Subpart Ja, including the applicable requirements of 40 CFR 60.107a(e) and (f):

a. Install, operate, calibrate a continuous parameter monitoring system to measure and record the flow rate of gas discharged to the flare. Flare gas flow monitoring must also meet all applicable requirements of 40 CFR 60 Subpart Ja, including the applicable requirements of 40 CFR 60.107a(f).

b. Install, operate, calibrate, and maintain an instrument for continuously monitoring and recording the concentration of H_2S in gas discharged flare according to the requirements of 40 CFR 60.107a(e)(2)(i) through (iii) and collect and analyze samples of the gas and calculate total sulfur concentrations as specified in 40 CFR 60.107a(e)(2)(iv) through (ix).

c. Install, operate, calibrate and maintain an instrument for continuously monitoring and recording the concentration of total reduced sulfur in gas discharged to the flare in 40 CFR 60.107a(e) for assessing the root cause analysis threshold for the flare.

In accordance with the emission monitoring requirements of 40 CFR 60 Subpart Ja flares 207-FL-0703 and 207-FL-0704 which are classified as secondary emergency flares are not required to be fitted with continuous flow monitors. Instead, Meridian will install, operate, calibrate and maintain, a CPMS to measure and record the pressure in the flare gas header between the knock-out pot and water seal and to measure and record the water seal liquid level in accordance with the emission monitoring provisions of 40 CFR 60.107a(g).

Meridian will develop and implement a written flare management plan upon startup of the proposed Davis Refinery listing all refinery process units, ancillary equipment, and fuel gas systems connected to each flare. The flare management plan will include a flare

minimization assessment that at a minimum will consider the minimization alternatives in 40 CFR 60.103a(a)(2) and/or the procedures in 40 CFR 60.103a(a)(5) though (a)(7), with the exception of those that cannot reasonably be implemented by the start-up date, and which will be implement in accordance with a proposed schedule provided in the flare management plan. Additionally, the plan will include the information described in 40 CFR 60.103a(a)(l) through (a)(7).

In addition to work practice standards including a flare management plan and a root cause analysis and corrective action analysis for certain discharges, the flare system will be subject to an H_2S limit of 162 ppm (3-hr rolling avg. basis). The PTE calculation provided in this application are based on this standard.

Root Cause Analysis and Corrective Action Analysis

Each fuel gas combustion device, flare, and sulfur recovery plant shall conduct a root cause analysis and corrective action analysis for each of the conditions specified in 40 CFR 60.103a(c)(l) through (c)(3). The root cause analysis and corrective action analysis must be completed by the schedule provided in 40 CFR 60.103a(d) and shall implement the corrective actions in accordance with 40 CFR 60.103a(e).

The rated capacity of the SRU is approximately 10 long ton/day. For the purpose of applicability determination of the provisions of Subpart Ja, the SRU is considered to be a sulfur recovery plant with a capacity less than 20 long tons/day with a reduction control system followed by incineration. Therefore, Meridian shall comply with all applicable limits established by 40 CFR 60.102a(f)(2)(i) which require that the SRU not discharge or cause the discharge of any gases into the atmosphere in excess of 2,500 ppm by volume of reduced sulfur compounds calculated as ppm SO_2 by volume (dry basis) at zero percent excess air, determined on a 12-hour rolling average basis. In addition, Meridian will install, operate, calibrate, and maintain an instrument for continuously monitoring and recording the concentration (dry basis, zero percent excess air) of any SO_2 emissions into the atmosphere. The monitor will include an O_2 monitor for correcting the data for excess air.

NSPS- Subpart Ja - Emissions Testing

The initial performance tests required by 40 CFR 60.8 for Subpart Ja limits will be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated, but no later than 180 days after start-up of each affected facility.

11.7.4 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 (40 CFR 60 Subpart Kb)

Meridian will have new storage vessels subject to Subpart Kb as follows:

"storage vessel either with a design capacity greater than or equal to 151 m 3 containing a [volatile organic liquid] VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m 3 but less than 151 m 3 containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa. This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m 3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa"

Only the storage tanks in crude oil service and light slops, are subject to the provisions of this subpart. Storage tanks in gasoline pool/naphtha service are subject to the provisions of 40 CFR 63 Subpart BBBBBB – Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. Other storage vessels will either have a capacity less than the applicability threshold or will serve a material that has a maximum true vapor pressure (TVP) less than the applicability threshold are therefore not subject to the requirements of this subpart. Regardless of the applicability of 40 CFR Subpart Kb to the storage tanks of the proposed Davis Refinery, tank emissions from crude oil, gasoline pool, jet fuel, and light slop tanks will be well controlled in order to ensure the proposed synthetic minor emission limits for VOCs and VHAPs are met.

To demonstrate compliance with 40 CFR 60 Subpart Kb, Meridian has elected storage tanks not in gasoline pool service such as crude oil, jet fuel and light slops will comply, although not subject to the standard, with the more stringent design, operating, inspection, record keeping and reporting requirements of IFR tanks in accordance with 40 CFR 63 Subpart WW – National Emission Standards for Storage Vessels – Control Level 2. IFR tanks will be fitted with double seal and wiper design, with both primary and secondary seals being liquid-mounted, deck fittings will be gasketed, and access hatches will be designed to be bolted or fastened when closed.

Fixed roof tanks storing Diesel, heavy slops, VGO and Fuel Oil will be the only tanks with atmospheric vents at the proposed Davis Refinery. For fixed roof tanks, Meridian will comply with the inspection procedures of §60.113b, reporting and recordkeeping requirements of §60.115b and monitoring requirements of §60.116.

11.7.5 Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems (40 CFR 60 Subpart QQQ)

The proposed Davis Refinery is subject to the provisions of Subpart QQQ. Affected facilities include individual drain systems (40 CFR 60.692-2) and oil-water separators (40 CFR 60.692-3). Meridian will design a wastewater system that will meet the standards and include the necessary control methods specified in this subpart to demonstrate compliance with the proposed synthetic minor source limits for VOCs and HAPs. A summary of the key Subpart QQQ provisions which Meridian will comply with are provided below:

Citation	Summary
§60.692-2(a)	All process drains shall be equipped with water seal controls, inspected monthly for low water levels
§60.692-2(b)	All junction boxes shall be equipped with a tight seal cover and an open vent pipe and shall be inspected semi- annually to assure cover is in place and seal is tight.
§60.692-2(c)	Unburied sewer lines shall be enclosed to not have any visual gaps or cracks, and should be inspected semi-annually.

§60.692-3(a-b)	Oil-water separators shall be installed with a fixed roof that completely covers the separator tank, is equipped and operated with a closed vent system and control device, and shall by inspected semi-annually.
§60.692-5(b-e)	Vapor recovery system shall be designed and operated to recover the VOC emissions with an efficiency of 95 percent or greater.

11.7.6 Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII)

The emergency generator and backup firewater pumps will be new diesel-fired emergency compression ignition internal combustion engine constructed after the applicable trigger dates established in NSPS Subpart IIII, and therefore are subject to the provisions of this subpart. Meridian will comply with NSPS Subpart IIII by purchasing compression ignition internal combustion engines which comply with the applicable emission standards for of NSPS Subpart IIII for the intended service.

11.8 RESTRICTION OF HAZARDOUS AIR POLLUTANTS EMISSIONS (CHAPTER 33-15-13)

As discussed in Section 10.3.3, the proposed Davis Refinery will be subject to NESHAPs adopted by the State of North Dakota. This section details compliance demonstration for NESHAPs that are applicable to the proposed Davis Refinery.

11.8.1 National Emissions Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene (40 CFR 61 Subpart J)

This subpart establishes standards that limit fugitive emissions and include requirements for the monitoring of emissions from vent streams associated with the operation of the process units which could be potential sources of fugitive emissions of Benzene. The process units within the proposed Davis Refinery subject to this subpart include those associated with the generation of light naphtha and gasoline range compounds. Meridian will demonstrate compliance with this subpart by compliance with Subpart V – National Emissions Standards for Equipment Leaks (Fugitive Emission Sources)

11.8.2 National Emissions Standards for Equipment Leaks (Fugitive Emission Sources) (40 CFR 61 Subpart V)

The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant ***("VHAP")*** service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart. Meridian will demonstrate compliance with this subpart via implementation of pumps in VOC service with double mechanical seals, as well as by connection of pressure relief devices, sampling connecting systems, surge control vessels and bottoms receivers to closed-vent systems routed to fuel gas or flare in accordance with this subpart, and implementation of an automated LDAR as described in Section 11.7.2 above.

11.8.3 National Emissions Standards for Benzene Waste Operations (40 CFR 61 Subpart FF)

The proposed oily water treatment system and individual drain lines that convey process waste water to the oily water treatment system are subject to these requirements. Process wastewater means water which comes in contact with benzene during manufacturing or processing operations conducted within a process unit. Process wastewater is not organic wastes, process fluids, product tank drawdown, cooling tower blowdown, steam trap condensate, or landfill leachate. Waste that is contained in a segregated stormwater sewer system and any gaseous stream from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system, are exempt from compliance with the provisions of this subpart.

Meridian will demonstrate compliance with this subpart via segregation of stormwater systems from process wastewater streams, individual closed-drain systems to convey process wastewater from the process units to the oily water treatment system, and covered oily water tanks and separators in compliance with the most stringent requirements of NSPS Subpart QQQ, and those of this subpart to order to ensure the proposed synthetic minor emission limits for VOCs and VHAPs are met by the proposed Davis Refinery.

A summary of the key Subpart FF definitions is provided below:

Closed-vent system means a system that is not open to the atmosphere and is composed of piping, ductwork, connections, and, if necessary, flow inducing devices that transport gas or vapor from an emission source to a control device.

Control device means an enclosed combustion device, vapor recovery system, or flare.

Cover means a device or system which is placed on or over a waste placed in a waste management unit so that the entire waste surface area is enclosed and sealed to minimize air emissions. A cover may have openings necessary for operation, inspection, and maintenance of the waste management unit

Fuel gas system means the offsite and onsite piping and control system that gathers gaseous streams generated by facility operations, may blend them with sources of gas, if available, and transports the blended gaseous fuel at suitable pressures for use as fuel in heaters, furnaces, boilers, incinerators, gas turbines, and other combustion devices located within or outside the facility. The fuel is piped directly to each individual combustion device, and the system typically operates at pressures over atmospheric.

Oil-water separator means a waste management unit, generally a tank or surface impoundment, used to separate oil from water. An oil-water separator consists of not only the separation unit but also the forebay and other separator basins, skimmers, weirs, grit chambers, sludge hoppers, and bar screens that are located directly after the individual drain system and prior to additional treatment units such as an air flotation unit, clarifier, or biological treatment unit. Examples of an oil-water separator include an API separator, parallel-plate interceptor, and corrugated-plate interceptor with the associated ancillary equipment.

No detectable emissions means less than 500 parts per million by volume (ppmv) above background levels, as measured by a detection instrument reading in accordance with the procedures specified in § 61.355(h) of this subpart.

Segregated stormwater sewer system means a drain and collection system designed and operated for the sole purpose of collecting rainfall runoff at a facility, and which is segregated from all other individual drain systems.

A summary of the key Subpart FF provisions which Meridian will comply with are provided below:

Citation	Summary
§61.342(c)(1)	For each waste stream that contains benzene, remove or destroy the benzene contained in the waste using a treatment process or wastewater treatment system that complies with the standards of this subpart.
§61.342(d)(2)	Process wastewater shall be treated to achieve a total annual benzene quantity from facility process wastewater less than 1 Mg/yr (1.1 ton/yr).
§ 61.343(a)(1)	For each tank in which the waste stream is placed install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the tank to a control device.
§ 61.346	For individual drain systems install, operate, and maintain on each drain system opening a cover and closed-vent system that routes all organic vapors vented from the drain system to a control device.
§ 61.347	For each oil-water separator install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the tank to a control device.
§ 61.348	The treatment process must either remove benzene from the waste stream to less than 10 ppmw, or has a 99% mass basis benzene removal efficiency, or a destroys benzene in the waste stream by incinerating the waste in a combustion unit with a 99% efficiency.
§ 61.349(a)(1)	For each closed-vent system and control device install, operate, and maintain a closed-vent system designed to operate with no detectable emissions.

§ 61.349(a)(2)	For each closed-vent system and control device install, operate, and maintain a control device in the form of either: an enclosed combustion device or a vapor recovery system designed to destroy, recover or control VOCs with an efficiency of 95 weight percent or greater, or a flare system designed in accordance with the provisions of 40 CFR 60.18.
§ 61.349(b)	Each closed-vent system and control device shall be operated at all times when waste is placed in the waste management unit vented to the control device.

11.9 PERMITTING REQUIREMENTS (CHAPTER 33-15-14)

This chapter requires the facility to obtain a Permit to Construct and a Permit to Operate. In accordance with the allowable provisions of 33-15-14, and based on the PTE of regulated NSR pollutants from the proposed Davis Refinery, under its physical and operational design and including the effect of add-on air pollution control equipment, Meridian is pursuing a Permit to Construct for the proposed Davis Refinery which includes proposed synthetic minor emission limits for regulated air contaminants.

Once the permit to construct is granted, and in accordance with the provisions of 33-15-14-03, Meridian must apply for a permit to operate the proposed Davis Refinery at least thirty days prior to the start-up of routine operations. In order to satisfy this requirement, Meridian need only submit a thirty-day prior notice of proposed startup and satisfy compliance requirements for a Minor Source Permit to Operate.

11.10 RESTRICTION OF ODOROUS AIR CONTAMINANT EMISSIONS (CHAPTER 33-15-16)

The Davis Refinery is subject to the provisions of chapter 33-15-07 for controls of organic compound and H_2S emissions. The proposed Davis Refinery will demonstrate compliance with this chapter through compliance with the NSPS and NESHAPs applicable to the Davis Refinery which require the emission units to be well controlled to meet the proposed

synthetic minor emission limits for regulated air contaminants contained in this permit application.

11.11 RESTRICTION OF FUGITIVE EMISSIONS (CHAPTER 33-15-17)

The proposed Davis Refinery is a designated source of air pollution, and as such, quantifiable fugitive emissions are accounted for in the refinery-wide PTE estimation. In order to ensure the proposed synthetic minor emission limits for CO, SO2, NOx, VOCs and HAPs are met fugitive emissions must be controlled. Meridian will comply with this regulation via compliance with NSPS Subparts GGGa and VVa, NESHAP Subparts J and V, and MACT Standards Subpart BBBBBB, to prevent/limit the release of fugitive gaseous and particulate matter emissions from the refining processes, and by taking reasonable precautions for abating and preventing fugitive particulate emissions from roads within the facilities via speed controls and pavement in heavy traffic areas.

11.12 RESTRICTION OF HAZARDOUS AIR POLLUTANTS EMISSIONS FROM SOURCE CATEGORIES (CHAPTER 33-15-22)

As discussed in Section 10.3.4, the proposed Davis Refinery is a designated source of air pollution subject to MACT Standards applicable to Area Sources. This section details compliance demonstration for MACT Standards that are applicable to the proposed Davis Refinery. Meridian will comply with the applicable portions of the general provisions of the MACT Standards (Subpart A), as directed by each subpart applicable to the proposed Davis Refinery.

11.12.1 Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities (40 CFR 63 Subpart BBBBBB)

The proposed Davis Refinery includes a gasoline bulk terminal which is subject to the provisions of Subpart BBBBBB. This subpart establishes gasoline handling facilities emission limitations, management practices, monitoring, reporting and recordkeeping requirements. Meridian will demonstrate compliance with the provisions of this subpart by operating and maintaining at all times, the loading facilities, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.

In particular, Meridian will design, install and operate:

- Gasoline pool storage tanks (i.e. naphtha, reformate, gasoline) compliant with 40 CFR 63.1063, standard that Meridian has elected to comply with, although not subject to it, in order to ensure proposed synthetic minor source levels of VOCs can be met. The gasoline pool storage tanks will be IFR tanks fitted with double seal and wiper design, with both primary and secondary seals being liquid-mounted, deck fittings will be gasketed, and access hatches will be designed to be bolted or fastened when closed.
- Tank truck and railcar gasoline loading facilities compliant with 40 CFR 63.11085. The loading racks will be designed for submerged filling and with a vapor collection system to ensure TOC emissions during gasoline loading operations do not exceed 80 mg/l of gasoline loaded.

Citation	Summary
§63.11088(a)	Loading rack with a vapor collection system designed to collect the TOC vapors displaced from cargo tanks during product loading and prevent them from passing to another loading rack and to the atmosphere. Reduce emissions of TOC to less than or equal to 80 mg/l of gasoline loaded into gasoline cargo tanks at the loading rack. Limit the loading of gasoline into gasoline cargo tanks that are vapor tight
§63.11089	Perform a monthly leak inspection of all equipment in gasoline service.

11.13 SHUTDOWN/MALFUNCTION AND/OR DEVIATION FROM PERMIT REQUIREMENTS (NDAC 33-15-01-13.2 & 3)

To comply with the notification requirements of NDAC 33-15-01-13.2 for maintenance shutdowns of air pollution control equipment Meridian will give NDDoH at least 24-hour notice of its intent to shut down such equipment in cases in which the air contaminating source will continue operating while the control equipment is not in service. Such prior notice will identify the specific facility to be taken out of service, the expected length of time of air pollution control equipment shutdown, nature and estimated quantity of

emissions of air pollutants likely to be emitted, measures to minimize the length of the shutdown, and the reasons that it would be impossible or impractical to shut down the source operation during the maintenance period. This notification does not exempt Meridian from compliance with emissions allowable under the permit.

To comply with the notification requirements of NDAC 33-15-01-13.2 for malfunctions requirements that can be expected to last longer than 24 hours and cause the emission of air contaminants in violation of permit requirements or any other applicable rules and regulations, Meridian will notify the Department as soon as possible during normal working hours. The notification must contain a statement giving all pertinent facts, including the estimated duration of the breakdown, if applicable. NDDoH Air Quality Division shall be notified when the condition causing the malfunction has been corrected. Furthermore, when excess emissions result from an unavoidable malfunction, a written report providing sufficient information to demonstrate that an unavoidable equipment malfunction occurred, will be submitted to NDDoH within 30 days of the calendar quarter in which the malfunction occurred or within thirty days of a written request by the NDDoH, whichever is sooner.

When a failure of a CEMS occurs, an alternative method for measuring or estimating emissions is required. The facility will, as soon as practicable, resolve the failure of a CEMS, and conduct timely repairs. To comply with the requirements of NDAC 33-15-01-13.3, Meridian will rely upon an arithmetical average of the available historic data at similar load levels to substitute data for the period of CEMS data unavailability.

11.14 RECORDKEEPING (NDAC 33-15-14)

All records required by the PTC object of this permit application, including specific requirements of NSPS, NESHAP and MACT standards applicable to the proposed Davis Refinery, will be kept on file for a minimum period of five years. The records will be available for inspection by NDDoH upon request. The following records will be maintained:

- Performance test records and supporting information

- Monitoring data and supporting information as required by the permit and applicable regulations. Supporting information includes calibration and maintenance records and original data recordings for continuous monitoring systems.
- Results of all visible emissions observations and any corrective actions taken.
- Stack test results if required including field data, laboratory analysis data, and quality assurance data.
- Records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the regulated facilities; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
- Reports as required by the Permit to Construct or by the Permit to Operate.

11.15 REPORTING (NDAC 33-15-14)

Upon start of operations of the proposed Davis Refinery annual emission inventory reports will be submitted to the NDDoH, following NDDoH guidelines and approved formats, to comply with the various reporting requirements applicable under NSPS. These reports will include, but not be limited to, process information regarding the hours of operation and the amount and type of air contaminants emitted during the monitoring period, including excess emissions and monitoring systems performance report. Annual reporting will be submitted on January 30th of each year, covering the preceding 12-month reporting period. In addition, semi-annual reports will be submitted for reporting of continuous monitoring data in accordance with 40 CFR 60.7(c). Semi-annual reporting will be included with the annual report for the preceding 6-month reporting period from July through December, and on as a separate report on July 30 for the preceding 6-month reporting period from January through June.

11.16 FEES (NDAC 33-15-23)

Meridian will pay fees of $325 in accordance with NDAC 33-15-23. A check for the $325 filing fee is included with this application.

12 DISPERSION MODELING REQUIREMENTS FOR CRITERIA POLLUTANTS AND AIR TOXICS

12.1 SUMMARY OF CRITERIA POLLUTANT MODELING ANALYSIS

A statement addressing any dispersion modeling requirements for Criteria Pollutants or Air Toxics and the inclusion of any required modeling analysis with a complete method description in accordance with the State Air Quality Analysis Guide or Department guidance.

Modeling is often required for major sources dependent on the amount and types of pollutants emitted by the source. Some source types may be exempt from modeling if they meet the criteria for exemption. Based on the level of emissions that Meridian will emit, modeling typically would not be required to be conducted since the facility qualifies as a synthetic minor source under NDDoH regulations. However due to the high level of public interest in this project as well as due to the proximity of the site to the Theodore Roosevelt National Park which is a federal Class I airshed, the NDDoH has indicated that modeling is required to determine compliance with NDDoH and federal National Ambient Air Quality Standards (NAAQS).

Below are a few of the modeling policies that apply to construction permits:

- Air Dispersion Modeling Emergency Engines/Flares
- Criteria Pollutant Modeling Requirements for a Permit to Construct
- Dispersion Modeling Requirements for Compressor Engines and Glycol Dehydration Units
- Policy for the Control of Hazardous Air Pollutant Emissions in ND (Air Toxic Policy)

The main purpose of the air quality analysis is to demonstrate that new emissions emitted from a proposed stationary source or major modification, in conjunction with other applicable emissions increases and decreases from existing sources, will not cause or contribute to a violation of any applicable NAAQS or PSD increment.

Generally, the analysis will involve (1) an assessment of existing air quality, which may include ambient monitoring data and air quality dispersion modeling results, and (2)

predictions, using dispersion modeling, of ambient concentrations that will result from the applicant's proposed project and future growth associated with the project related to impacts to Class I and Class II areas as well as for compliance with PSD and NAAQS standards.

Class I areas are areas of special national or regional natural, scenic, recreational, or historic value for which the PSD regulations provide special protection. One way in which air quality degradation is limited in all Class I areas is by stringent limits defined by the Class I increments for sulfur dioxides, particulate matter and nitrogen dioxide. In addition, the Federal Land Manager (FLM) of each Class I area is charged with the affirmative responsibility to protect that area's unique attributes, expressed generically as air quality related values (AQRV's)/ Class II areas are essentially all other areas accessible to the public that are not formally defined as Class I areas.

As previously noted, based on its location near a Class I area, as well as the general level of public interest, the NDDoH required at least screen modeling analysis for both Class I and Class II National Ambient Air Quality Standards (NAAQS) Significant Impact Levels (SILs). Class I and Class II SIL modeling was conducted using the US EPA AERMOD model with results compared to SIL levels noted above. The modeling included analysis and results for both the Base Operating Scenario (full project build-out) as well as for the Alternative Operating Scenario (Phase I build-out only). The modeling results for both the Base and Alternative Operating Scenarios showed that all impacts were below Class I and Class II SILs. Therefore, under NDDoH and EPA guidelines, further dispersion modeling will not be required. The detailed modeling analysis and discussion are included in Exhibit D, the Modeling Analysis Report which is submitted under separate cover.

12.2 SUMMARY OF TOXICS ANALYSIS

The NDDoH Policy for the Control of Hazardous Air Pollutant Emissions in North Dakota (Air Toxics Policy) was used to estimate maximum off-property, ground- level ambient concentrations for HAPs normalized to 1 g/s. The normalized maximum concentrations were multiplied by the g/s emission rate of each HAP from each non-emergency point source.

Per the NDDoH Air Toxics Policy, a Tier III analysis is not specifically required unless results show impacts above MAAL or MICR results. However, since modeling for compliance with Significant Impact Levels for Class I and Class II areas was undertaken by Meridian, we completed a Tier III analysis, for combined HAPs and utilized the weighted concentration of the HAP emissions to compare to MICR and MAAL results. Results of the maximum off-property, ground-level ambient concentration of any air pollutant shows a MICR or hazard index below the maximum threshold values of 1.0 E-05 and 1.0, respectively. Detailed results of this analysis and related discussion is included in the Modeling Analysis Report for Meridian which is submitted under separate cover.

Exhibit A: Application Forms

PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8516 (06-13)

SECTION A – FACILITY INFORMATION

Name of Firm or Organization ***Meridian Energy Group – Davis Refinery***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Applicant´s Name ***Tom Williams***		
Title ***VP of Planning & Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***

Country ***USA***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55"W***
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	Land Area at Facility Site ***261 Acres***	MSL Elevation at Facility ***2,685 feet***

SECTION B – GENERAL NATURE OF BUSINESS

Describe Nature of Business	North American Industry Classification System Number	Standard Industrial Classification Number (SIC)
Petroleum Refining	***324110***	***2911***
Petroleum Bulk Stations & Terminals	***42710***	***5171***

SECTION C – GENERAL PERMIT INFORMATION

Type of Permit?	Permit to Construct (PTC) ☒ Permit to Operate ☐
If application is for a Permit to Construct, please provide the following data:	
Planned Start Construction Date ***July 2017***	Planned End Construction Date ***December 2018 (Phase 1)***

SECTION D – SOURCE IDENTIFICATION AND CATEGORY OF EACH SOURCE INCLUDED ON THIS PERMIT APPLICATION

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
101-H-0101	***Atmospheric Distillation Unit #1 heater***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
102-H-0201	***Atmospheric Distillation Unit #2 heater***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
103-H-0301	***Vacuum Distillation Unit heater***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
105-H-0501	***Heavy Naphtha Hydrotreater heater #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
105-H-0502	***Heavy Naphtha Hydrotreater heater #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
105-H-0503	***Heavy Naphtha Hydrotreater heater #3***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
106-H-0601	***Reformer Unit heater #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
106-H-0605	***Reformer Unit heater #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
110-H-1001	***Distillates Hydrotreater heater***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
110-H-1002	***Distillates Hydrotreater heater***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
106-VS-0601	***Regenerator vent stack***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
112-H-1201	***Hydrocracker heater #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
112-H-1202	***Hydrocracker heater #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
122-H-2201	***SRU Thermal Oxidizer***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0202A	***High Pressure Steam Boiler 1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0202B	***High Pressure Steam Boiler 2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0202C	***High Pressure Steam Boiler 3***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0201A	***Medium Pressure Steam Boiler 1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0201B	***Medium Pressure Steam Boiler 2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
202-B-0201C	***Medium Pressure Steam Boiler 3***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
202-B-0201D	***Medium Pressure Steam Boiler 4***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0301	***Crude oil tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0302	***Crude oil tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0305	***Desulfurized Heavy Naphtha tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0306	***Reformate tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0307	***Reformate tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0308	***Gasoline tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0309	***Gasoline tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0311	***Jet Fuel tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0312	***Jet Fuel tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0313	***Straight Run Diesel tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0315	***Ultra Low Sulfur Diesel tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
203-T-0316	***Ultra Low Sulfur Diesel tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0323	***VGO tank***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0324	***Fuel Oil tank***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0331	***Light Naphtha tank #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0032	***Light Naphtha tank #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0333	***Light Slops tank***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
203-T-0334	***Heavy Slops tank***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
206WWT (Fugitive)	***Wastewater treatment plant***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
207-FL-1701	***Enclosed HC Operating Flare***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
207-FL-1702	***Acid Flare***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
207-FL-1703	***HC Emergency Flare #1***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
207-FL-1704	***HC Emergency Flare #2***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
208TL	***Truck Loading-Unloading System***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
212-P-1201 A/B/C	***Firewater Diesel Pump***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
215-CT-1501A	***Cooling Tower A***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
215-CT-1501B	***Cooling Tower B***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
215-CT-1501C	***Cooling Tower C***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
215-CT-1501D	***Cooling Tower D***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
215-CT-1501E	***Cooling Tower E***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
216-EG-1601 A/B/C	***Diesel/Natural gas-fired emergency generator set***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
FUG-1	***Process equipment leaks in VOC and Natural Gas service***	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

SECTION E-IDENTIFICATION OF AIR CONTAMINANTS

Check all which are emitted in measurable quantities into the atmosphere from any operation at facility			
☐Arsenic	☒Chlorine Compounds	☒Sulfur Compounds	☐Radioisotopes
☐Asbestos	☐Chromium Compounds	☒Hydrogen Sulfide	☒Visible Emissions
☐Beryllium	☐Fluoride Compounds	☒Odors	☒Particulates (specify)
☐Cadmium	☒Volatile Organic Compounds	☒Carbon Monoxide	☒Dust
☒Lead	☒Other Organic Compounds	☒Nitrogen Compounds	☐Silica
☒Mercury	☒Greenhouse Gases (CO_2e)	☐Pesticides	☒Other (specify)

Hazardous Air Pollutants (HAPs): Acetaldehyde, Acetone, Acrolein, Benzene, Biphenyl, Bromomethane, 1,3-Butadiene, Cumene, Dichlorobenzene, Ethylbenzene, Formaldehyde, Hexane, Methylene chloride, Methyl tertiary-butyl ether, Phenol, Styrene, Toluene, Trichlorofluoromethane, 2,2,4- Trimethylpentane, Xylene, Naphthalene, PAHs, Carbon disulfide, Hydrogen chloride, Hydrogen cyanide, Chlorine, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Manganese, Mercury, Nickel, Selenium.

Has Source Testing Been Done at the Facility? ☐Yes ☒No	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency

SECTION F1- ADDITIONAL FORMS

Indicate which of the following forms are attached and made part of the application	
☒Air Pollution Control Equipment (SFN 8532)	☒Fuel Burning Equipment Used for Indirect Heating (SFN 8518)
☐Construct/Operate Incinerators (SFN 8522)	☒Hazardous Air Pollutant (HAP) Sources (SFN 8329)
☐Natural Gas Processing Plants (SFN 11408)	☒Manufacturing or Processing Equipment (SFN 8520)
☐Glycol Dehydration Units (SFN 58923)	☒Volatile Organic Compounds Storage Tank (SFN 8535)
☒Flares (SFN 59652)	☒Internal Combustion Engines and Turbines (SFN 8891)
☐Rock, Sand, and Gravel Plants (SFN 8530)	☐Oil/Gas Production Facility Registration (SFN 14334)
☐Asphalt Concrete Plants (SFN 8526)	☐Grain, Feed, and Fertilizer Operations (SFN 8524)

SECTION F2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION

1.	***Supporting Emission Calculations (Emissions Inventory and BACT Analysis). Exhibits B and C***	4.	***Equipment Data Available from Vendors. (Part of Exhibit B)***
2.	***Tanks 4.09D Output files (Part of Exhibit B)***	5.	
3.	***Plot Plan and Block Flow Diagram. Exhibit E and F***	6.	

I, the undersigned applicant, am fully aware that statements made in this application and the attached exhibits and statements constitute the application for Permit(s) to Construct and/or Operate Air Contaminant sources from the North Dakota Department of Health and certify that the information in this application is true, correct and complete to the best of my knowledge and belief. Further, I agree to comply with the provisions of Chapter 23-25 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand the permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Signature of Applicant	Date 04/03/17

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	MSL Elevation at Facility ***2,685 feet***	Ref. Datum

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Process equipment leaks in VOC and Natural Gas service***		
Make ***N/A***	Model ***N/A***	Date Installed ***N/A***
Capacity (manufacturer's or designer's guaranteed maximum) ***N/A***	Operating Capacity (specific units) ***N/A***	
Brief description of operation of unit or process: ***VOC leaks (fugitive) from process equipment throughout the Refinery, emission point FUG-1, controlled by a strict Leak Detection and Repair (LDAR) Program with a threshold of 500 ppmv for leak detection, with automated corrective action.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
N/A	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
N/A	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr)		LP Gas (Gal/Yr)		Other (Specify)	
N/A		***N/A***		***N/A***	

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
FUG-1	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
FUG-1	***VOC***	***3.81***	***16.70***	***Emission factors from Tables 2-5, 2-6 and 2-7 of the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***
FUG-1	***HAPs***	***0.35***	***1.51***	

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR
HAZARDOUS AIR POLLUTANT (HAP) SOURCES
NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8329 (09-12)

SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Facility Address (Street & No. or Lat/Long to Nearest Second) ***37th Street / 46°52'45"N/103°14'55" W***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Number of Employees at Location ***TBD***	
Land Area at Plant Site ***261*** Acres (or) Sq. Ft.	MSL Elevation at Plant ***2,685 feet***	

Describe Nature of Business/Process

Petroleum Refining / Process Leaks (Fugitive) - FUG-1

SECTION B – STACK DATA

Inside Diameter (ft) ***N/A***	Height Above Grade (ft) ***N/A***	
Gas Temperature at Exit (°F) ***N/A***	Gas Velocity at Exit (ft/sec) ***N/A***	Gas Volume (scfm) ***N/A***
Basis of any Estimates (attach separate sheet if necessary) ***Emission factors from Tables 2-5, 2-6 and 2-7 of the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***		
Are Emission Control Devices in Place? If YES – Complete SFN 8532		Yes ☐ No ☒
Nearest Residences or Building ***Administrative building***	Distance (ft) ***N/A***	Direction ***N/A***
Nearest Property Line ***Fenceline***	Distance (ft) ***N/A***	Direction ***N/A***

SECTION C – EMISSION STREAM DATA

Source ID No. From SFN 8516 ***FUG-1***	Mean Particle Diameter (μm) ***N/A***
Flow Rate (scfm) ***N/A***	Drift Velocity (ft/sec) ***N/A***
Stream Temperature (°F) ***N/A***	Particulate Concentration (gr/dscf) ***N/A***
Moisture Content (%) ***N/A***	Halogens or Metals Present? ***No***
Pressure (in. Hg) ***N/A***	Organic Content (ppmv) ***N/A***
Heat Content (Btu/scfm) ***N/A***	O_2 Content (%) ***N/A***

SECTION D – POLLUTANT SPECIFIC DATA
(Complete One Box for Each Pollutant in Emission Stream)

Pollutant Emitted ***1,3-Butadiene***	Chemical Abstract Services (CAS) Number ***106-99-0***
Proposed Emission Rate (lb/hr) $\boldsymbol{2.63x10^{-4}}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***72.34 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***54.09***
Absorptive Properties -	

Pollutant Emitted ***2,2,4-trimethylpentane***	Chemical Abstract Services (CAS) Number ***540-84-1***
Proposed Emission Rate (lb/hr) $\boldsymbol{6.90\ x10^{-3}}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***1.50 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***114.22***
Absorptive Properties -	

Pollutant Emitted ***Benzene***	Chemical Abstract Services (CAS) Number ***71-43-2***
Proposed Emission Rate (lb/hr) $\boldsymbol{3.36x10^{-2}}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***3.73 in Hg @ 77 °F***

Solubility ***In water 1.79x10^{3} mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***78.11***
Absorptive Properties -	

Pollutant Emitted ***Biphenyl***	Chemical Abstract Services (CAS) Number ***95-52-4***
Proposed Emission Rate (lb/hr) ***2.40x10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***3.51x 10^{-4} in Hg @ 77 °F***
Solubility ***In water 0.0004 g/100mL @ 68 °F***	Molecular Weight (lb/lb-mole) ***154.21***
Absorptive Properties -	

Pollutant Emitted ***1,2,4- Trimethyl benzene***	Chemical Abstract Services (CAS) Number ***95-63-6***
Proposed Emission Rate (lb/hr) ***3.03x 10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.28 in Hg @ 111.92°F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***72.15***
Absorptive Properties -	

Pollutant Emitted ***Cumene***	Chemical Abstract Services (CAS) Number ***98-82-8***
Proposed Emission Rate (lb/hr) ***3.04x10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.17 in Hg @ 77°F***
Solubility ***61.3 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***120.19***
Absorptive Properties -	

Pollutant Emitted ***Ethylbenzene***	Chemical Abstract Services (CAS) Number ***100-41-4***
Proposed Emission Rate (lb/hr) ***2.17x10^{-2}***	Emission Source (describe) ***Fugitive***

Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.37 in Hg @ 77°F***
Solubility ***In water 0.014 g/100mL @ 59 °F***	Molecular Weight (lb/lb-mole) ***106.17***
Absorptive Properties -	

Pollutant Emitted ***Hexane***	Chemical Abstract Services (CAS) Number ***110-54-5***
Proposed Emission Rate (lb/hr) $6.83x10^{-2}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***5.90 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***86.1***
Absorptive Properties -	

Pollutant Emitted ***Naphthalene***	Chemical Abstract Services (CAS) Number ***91-20-3***
Proposed Emission Rate (lb/hr) $7.95x10^{-3}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.003 in Hg @ 77 °F***
Solubility ***In water 31 mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***128.17***
Absorptive Properties -	

Pollutant Emitted ***Toluene***	Chemical Abstract Services (CAS) Number ***108-88-3***
Proposed Emission Rate (lb/hr) $8.34x10^{-2}$	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***TBD***	Vapor Pressure (in. Hg @ °F) ***1.12 in Hg @ 77°F***
Solubility ***In water 526 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***92.14***
Absorptive Properties -	

Pollutant Emitted ***Xylene***	Chemical Abstract Services (CAS) Number ***95-47-6***
Proposed Emission Rate (lb/hr) ***$8.77x10^{-2}$***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.26 in Hg @ 77°F***
Solubility ***In water 178 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***106.16***
Absorptive Properties -	

Signature of Applicant 	Date 04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of
Health Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	MSL Elevation at Facility ***2,685 feet***	Ref. Datum

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Catalytic Reforming Unit***		
Make ***N/A***	Model ***N/A***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***8,760 bbl/d***	Operating Capacity (specific units) ***16,128 bbl/d***	
Brief description of operation of unit or process: ***Catalytic Reforming Unit (CRU) – Unit 106 in Continuous Catalytic Regeneration (CCR) configuration with emission points 106-H-0601 and 106-H-0605 for heaters and 106-VS-0601 regeneration emissions.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***TBD***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Heavy Naphtha	***181,464***	***66,699***	***TBD***	***181,464***	***NA***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
LPG	***TBD***	***TBD***	***TBD***	***TBD***	***TBD***
Light Reformate	***TBD***	***TBD***	***TBD***	***TBD***	***TBD***
Heavy Reformate	***TBD***	***TBD***	***TBD***	***TBD***	***TBD***
Hydrogen	***TBD***	***TBD***	***TBD***	***TBD***	***TBD***
Off gas	***TBD***	***TBD***	***TBD***	***TBD***	***TBD***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr)		LP Gas (Gal/Yr)		Other (Specify)	
N/A		***N/A***		***Refinery fuel gas: 5,172 lb/h***	

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
106-H-0601	***130***	***7.4***	***70,944.82***	***790.2***	***27.2***
106-H-0605	***42***	***2***	***2,953.89***	***790.2***	***15.7***
106-VS-0601	***40***	***4***	***347.92***	***110***	***25***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above				
		Amount		
Number	Pollutant	Pounds/Hr	Tons/Yr	Basis of Estimate
106-H-0601	*CO*	*3.83E+00*	*1.68E+01*	*Emission factors from Table 1.4-2. AP 42, Chapter 1: External Combustion Sources. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"*
106-H-0601	*Pb*	*6.71E-05*	*2.94E-04*	
106-H-0601	*PM 10 Total*	*5.48E-01*	*2.40E+00*	
106-H-0601	*PM 10 Filterable*	*1.37E-01*	*6.00E-01*	
106-H-0601	*PM 2.5 Total*	*5.48E-01*	*2.40E+00*	
106-H-0601	*PM 2.5 Filterable*	*1.37E-01*	*6.00E-01*	
106-H-0601	*PM 2.5 Condensable*	*4.11E-01*	*1.80E+00*	
106-H-0601	*NOx*	*8.62E-01*	*3.78E+00*	
106-H-0601	*SO_2*	*8.05E-02*	*3.53E-01*	
106-H-0601	*VOC*	*7.38E-01*	*3.23E+00*	
106-H-0601	*Metal HAPs*	*1.00E-03*	*4.38E-03*	
106-H-0601	*Organic HAPs*	*6.69E-02*	*2.93E-01*	

SECTION I – AIR CONTAMINANTS EMITTED (CONT.)

Known or Suspected - Use same identification number as above				
		Amoun		
Number	Pollutant	Pounds/Hr	Tons/Yr	Basis of Estimate
106-H-0605	CO	1.60E-01	6.99E-01	Emission factors from Table 1.4-2. AP 42, Chapter 1: External Combustion Sources. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"
106-H-0605	Pb	2.79E-06	1.22E-05	
106-H-0605	PM 10 Total	2.28E-02	9.99E-02	
106-H-0605	PM 10 Filterable	5.70E-03	2.50E-02	
106-H-0605	PM 2.5 Total	2.28E-02	9.99E-02	
106-H-0605	PM 2.5 Filterable	5.70E-03	2.50E-02	
106-H-0605	PM 2.5 Condensable	1.71E-02	7.49E-02	
106-H-0605	NOx	1.71E-01	7.49E-01	
106-H-0605	SO_2	3.35E-03	1.47E-02	
106-H-0605	VOC	3.07E-02	1.35E-01	
106-H-0605	Metal HAPs	4.17E-05	1.83E-04	
106-H-0605	Organic HAPs	2.79E-03	1.22E-02	
106-VS-0601	HAPs (regenerator)	1.58E-02	6.91E-02	*See Form SFN 8329 for 106-VS-0601 Regenerator HAPs emissions

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen Size)	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR
HAZARDOUS AIR POLLUTANT (HAP) SOURCES
NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8329 (09-12)

SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Facility Address (Street & No. or Lat/Long to Nearest Second) ***37th Street / 46°52'45"N/103°14'55" W***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Number of Employees at Location ***TBD***	
Land Area at Plant Site ***261*** Acres (or) Sq. Ft.	MSL Elevation at Plant ***2,685 feet***	

Describe Nature of Business/Process

Petroleum Refining / Continuous Reformer Unit

SECTION B – STACK DATA

Inside Diameter (ft) ***6.0***	Height Above Grade (ft) ***40.0***	
Gas Temperature at Exit (°F) ***110.0***	Gas Velocity at Exit (ft/sec) ***25.0***	Gas Volume (scfm) ***322.27***
Basis of any Estimates (attach separate sheet if necessary) ***Engineering Calculation Notes and emission factors from Table 5-6 of the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "BACT Analysis"***		
Are Emission Control Devices in Place? If YES – Complete SFN 8532	Yes ☐	No ☒
Nearest Residences or Building ***Utility building***	Distance (ft) ***1150.4 ft***	Direction ***Southwest***
Nearest Property Line ***Fenceline***	Distance (ft) ***933.7 ft***	Direction ***Northwest***

SECTION C – EMISSION STREAM DATA

Source ID No. From SFN 8516 ***106-VS-0601***	Mean Particle Diameter (μm) ***TBD***
Flow Rate (scfm) ***322.27***	Drift Velocity (ft/sec) ***25.0***
Stream Temperature (°F) ***790.2***	Particulate Concentration (gr/dscf) ***TBD***
Moisture Content (%) ***N/A***	Halogens or Metals Present? ***Halogens***
Pressure (in. Hg) ***TBD***	Organic Content (ppmv) ***2.67×10^{-8}***
Heat Content (Btu/scfm) ***TBD***	O_2 Content (%) ***N/A***

SECTION D – POLLUTANT SPECIFIC DATA
(Complete One Box for Each Pollutant in Emission Stream)

Pollutant Emitted ***Benzene***	Chemical Abstract Services (CAS) Number ***71-43-2***
Proposed Emission Rate (lb/hr) ***2.69×10^{-3}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***6.68×10^{-1}***	Vapor Pressure (in. Hg @ °F) ***3.73 in Hg @ 77 °F***
Solubility ***In water 1.79×10^{3} mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***78.11***
Absorptive Properties -	

Pollutant Emitted ***Naphthalene***	Chemical Abstract Services (CAS) Number ***91-20-3***
Proposed Emission Rate (lb/hr) ***2.35×10^{-5}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***3.66×10^{-3}***	Vapor Pressure (in. Hg @ °F) ***0.003 in Hg @ 77 °F***
Solubility ***In water 31 mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***128.17***
Absorptive Properties -	

Pollutant Emitted ***Toluene***	Chemical Abstract Services (CAS) Number ***108-88-3***
Proposed Emission Rate (lb/hr) ***2.69×10^{-3}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***6.86×10^{-1}***	Vapor Pressure (in. Hg @ °F) ***1.11 in Hg @ 77 °F***
Solubility ***In water 526 mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***92.14***
Absorptive Properties -	

Pollutant Emitted ***Xylene***	Chemical Abstract Services (CAS) Number ***95-47-6***
Proposed Emission Rate (lb/hr) ***4.70x10^{-3}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***8.84x10^{-1}***	Vapor Pressure (in. Hg @ °F) ***0.26 in Hg @ 77°F***
Solubility ***In water 178 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***106.16***
Absorptive Properties -	

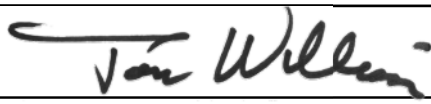
Pollutant Emitted ***Poly Aromatic Hydrocarbons (PAH)***	Chemical Abstract Services (CAS) Number ***N/A***
Proposed Emission Rate (lb/hr) ***1.62 x10^{-6}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***2.06x 10^{-4}***	Vapor Pressure (in. Hg @ °F) ***TBD***
Solubility ***TBD***	Molecular Weight (lb/lb-mole) ***TBD***
Absorptive Properties -	

Pollutant Emitted ***Hydrogen Chloride***	Chemical Abstract Services (CAS) Number ***7647-01-0***
Proposed Emission Rate (lb/hr) ***1.74x10^{-3}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Inorganic/ Vapor***
Concentration in Emission Stream (ppmv) ***9.50x 10^{-1}***	Vapor Pressure (in. Hg @ °F) ***1.39 in Hg @ 77 °F***
Solubility ***67.3 g/100 mL of water @ 86 °F***	Molecular Weight (lb/lb-mole) ***36.46***
Absorptive Properties -	

Pollutant Emitted ***Chlorine***	Chemical Abstract Services (CAS) Number ***7782-50-5***
Proposed Emission Rate (lb/hr) ***1.78x10^{-4}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Inorganic/ Vapor***
Concentration in Emission Stream (ppmv) ***5.00x10^{-2}***	Vapor Pressure (in. Hg @ °F) ***229.52 in Hg @ 77°F***
Solubility ***6.30 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***70.91***
Absorptive Properties -	

Pollutant Emitted ***Dioxin Toxic Equivalents (TEQ)b***	Chemical Abstract Services (CAS) Number ***N/A***
Proposed Emission Rate (lb/hr) ***3.83x10^{-9}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/ Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***TBD***
Solubility ***TBD***	Molecular Weight (lb/lb-mole) ***TBD***
Absorptive Properties -	

Pollutant Emitted ***Total Polychlorinated biphenyls (PCB)***	Chemical Abstract Services (CAS) Number ***1336-36-3***
Proposed Emission Rate (lb/hr) ***1.75 x10^{-6}***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/ Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***TBD***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***291.98***
Absorptive Properties -	

Signature of Applicant 	Date 04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***

County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***

Legal Description of Facility Site	MSL Elevation at Facility	Ref. Datum
Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W	***2,685 feet***	

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Sulfur Recovery Unit (SRU)***		
Make ***N/A***	Model ***N/A***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***11.2 ltons of sulfur / day***	Operating Capacity (specific units) ***11.2 ltons of sulfur / day***	
Brief description of operation of unit or process: ***LO-CAT® Sulfur Recovery technology (Unit 122), with two vents (from oxidizer and flash drum units), directed to a Thermal Oxidizer for a single emission point: 122-H-2201.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Acid and Sour Gas	***10.3 MMSCFD***	***TBD***	***TBD***	***3,759.5 MMSCF***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Elemental Sulphur	***1,045.3***	***TBD***	***TBD***	***4,088 lton***	***N/A***
Treated flue gas	***17,658***	***TBD***	***TBD***	***154,684,080 lb (3,745.3 MMACF)***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr)		LP Gas (Gal/Yr)		Other (Specify)	
N/A		***N/A***			

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
122-H-2201	***60***	***1.7***	***7,125.7 ACFM***	***414.5***	***50***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
122-H-2201	***VOC***	***0.377***	***1.65***	***Engineering data from vendor and Table 6-2 from Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***
122-H-2201	***SO_2***	***0.049***	***0.22***	

SECTION I – AIR CONTAMINANTS EMITTED (CONT.)

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
122-H-2201	***CO***	***0.539***	***2.360***	***Engineering data from vendor and Table 6-2 from Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***
122-H-2201	***NOx***	***0.118***	***0.518***	

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☐ No ☒ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR
HAZARDOUS AIR POLLUTANT (HAP) SOURCES
NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8329 (09-12)

SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Facility Address (Street & No. or Lat/Long to Nearest Second) ***37th Street / 46°52'45"N/103°14'55" W***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Number of Employees at Location ***TBD***	
Land Area at Plant Site ***261*** Acres (or) Sq. Ft.	MSL Elevation at Plant ***2,685 feet***	

Describe Nature of Business/Process

Petroleum Refining / Sulfur Recovering Unit / Oxidizer Vent (OV) and Flash Drum Vent (FDV), both directed to a thermal oxidizer (122-H-2201)

SECTION B – STACK DATA

Inside Diameter (ft) ***TBD***	Height Above Grade (ft) ***TBD***	
Gas Temperature at Exit (°F) ***125 (OV)/ 125 (FDV)***	Gas Velocity at Exit (ft/sec) ***TBD***	Gas Volume (scfm) ***3,725.69 (OV)/53.47 (FDV)***
Basis of any Estimates (attach separate sheet if necessary) ***Engineering data from vendor.***		
Are Emission Control Devices in Place? If YES – Complete SFN 8532		Yes ☒ No ☐
Nearest Residences or Building ***Utility building***	Distance (ft) ***618 ft***	Direction ***Southeast***
Nearest Property Line ***Fenceline***	Distance (ft) ***820 ft***	Direction ***Northwest***

SECTION C – EMISSION STREAM DATA

Source ID No. From SFN 8516 ***Not listed (directed to 122-H-2201)***	Mean Particle Diameter (μm) ***N/A***
Flow Rate (scfm) ***4,091 (OV)/ 58,7 (FDV)***	Drift Velocity (ft/sec) ***TBD***
Stream Temperature (°F) ***125 (OV)/ 125 (FDV)***	Particulate Concentration (gr/dscf) ***N/A***
Moisture Content (%) ***9.55%(OV)/ 5.88% (FDV)***	Halogens or Metals Present? ***None***
Pressure (in. Hg) ***29.92 (OV) / 50.28 (FDV)***	Organic Content (ppmv) ***0.39% molar (OV) / 81.46% molar (FDV)***
Heat Content (Btu/scfm) ***TBD***	O_2 Content (%) ***16.16% (OV)/ 0% (FDV)***

SECTION D – POLLUTANT SPECIFIC DATA
(Complete One Box for Each Pollutant in Emission Stream)

Pollutant Emitted ***Volatile Organic Compounds (VOC)***	Chemical Abstract Services (CAS) Number ***N/A***
Proposed Emission Rate (lb/hr) ***272.7 (OV) / 3.9 (FDV)***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***TBD***	Vapor Pressure (in. Hg @ °F) ***N/A***
Solubility ***-***	Molecular Weight (lb/lb-mole) ***N/A***
Absorptive Properties -	

Pollutant Emitted ***Hydrogen Sulfide***	Chemical Abstract Services (CAS) Number ***7783-06-4***
Proposed Emission Rate (lb/hr) ***- (OV) / - (FDV)***	Emission Source (describe) ***Process Point***
Source Classification (process point, process fugitive, area fugitive) ***Process Point***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Inorganic/Vapor***
Concentration in Emission Stream (ppmv) ***<1 ppmv (OV) / <10 ppmv (FDV)***	Vapor Pressure (in. Hg @ °F) ***1.55×10^{-7} in Hg @ 77 °F***
Solubility ***Insoluble in water; soluble in carbon disulfide***	Molecular Weight (lb/lb-mole) ***34.08***
Absorptive Properties -	

Signature of Applicant 	Date 04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8532 (09-12)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

SECTION A – GENERAL INFORMATION

Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B – FACILITY INFORMATION

Facility Name ***Davis Refinery / SRU Thermal Oxidizer***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Facility Location ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***		Source ID No. ***122-H-2201***

SECTION C – EQUIPMENT

Type: ☐ Cyclone ☐ Multicyclone ☐ Baghouse ☐ Electrostatic Precipitator ☐ Wet Scrubber ☐ Spray Dryer ☒ Other – Specify: ***Thermal Oxidizer***

Name of Manufacturer ***TBD***	Model Number ***TBD***	Date to Be Installed ***TBD***

Application: ☐ Boiler ☐ Kiln ☐ Engine ☒ Other – Specify: ***Process Vent***

Pollutants Removed	***VOC***	***H_2S***		
Design Efficiency (%)	***99.9***	***99.9***		
Operating Efficiency (%)	***TBD***	***TBD***		

Describe method used to determine operating efficiency:
TBD

SECTION D – GAS CONDITIONS

Gas Conditions			Inlet	Outlet
Gas Volume (SCFM; 68°F; 14.7 psia)			***4,149.7***	***4,301.3***
Gas Temperature (°F)			***125***	***414.5***
Gas Pressure (in. H_2O)			***TBD***	***406.8***
Gas Velocity (ft/sec)			***TBD***	***50***
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration		
	VOC	***ppmv***	***1.54% (molar)***	***16.0***
	SO_2	***ppmv***	***1.13 (H_2S)***	***1.15***
	CO	***ppmv***	***0***	***28.7***
	NO_x	***ppmv***	***0***	***3.84***
Pressure Drop Through Gas Cleaning Device (in. H_2O) ***TBD***				

Signature of Applicant	Date
	04/03/17

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	MSL Elevation at Facility ***2,685 feet***	Ref. Datum

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Truck Loading-Unloading System***		
Make ***N/A***	Model ***N/A***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***TBD***	Operating Capacity (specific units) ***TBD***	
Brief description of operation of unit or process: ***Truck Loading-Unloading Operations, emission point 208TL, equipped with vapor recovery or a dedicated flare for vapor control.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Butane/LPG	***2,000 bbl***	***2,000 bbl***	***2,000 bbl***	***730,000 bbl***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Gasoline	***9,100 bbl/d***	***9,100 bbl/d***	***9,100 bbl/d***	***3,321,500 bbl***	***N/A***
Diesel / Jet	***9,550 bbl/d***	***9,550 bbl/d***	***9,550 bbl/d***	***3,485,750 bbl***	***N/A***
Fuel Oil	***8,400 bbl/d***	***8,400 bbl/d***	***8,400 bbl/d***	***3,066,000 bbl***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr)		LP Gas (Gal/Yr)		Other (Specify)	
N/A		***N/A***		***N/A***	

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
208TL	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
208TL	***VOC***	***1.06***	***4.65***	***Emission factors from AP-42 Chapter 5, Table 5.2-5. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***			
ND Air Pollution Control Permit No. (If Applicable) ***N/A***			
Contact Person for Air Pollution Matters ***Tom Johnson***			
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***	
Facility Address (Street & No.) ***37th Street***			
City ***Belfield***	State ***ND***	ZIP Code ***58622***	
County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***	
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	MSL Elevation at Facility ***2,685 feet***	Ref. Datum	

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Wastewater Treatment Plant***		
Make ***N/A***	Model ***N/A***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***259,200 gal/d (180 gpm)***	Operating Capacity (specific units) ***216,000 gal/d (150 gpm)***	
Brief description of operation of unit or process: ***Wastewater Treatment Plant - 206WWT (Fugitive), BWON compliant***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Refinery wastewater (oily effluents)	***75,060***	***90,072***	***75,060***	***216,000 gal/d***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Treated wastewater	***60,048***	***72,058***	***60,048***	***172,800 gal/d***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr) ***N/A***		LP Gas (Gal/Yr) ***N/A***		Other (Specify) ***N/A***	

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
206WWT (Fugitive)	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
206WWT (Fugitive)	***VOC***	***3.32***	***14.54***	***Engineering data and * Table 7-8. Table 7-9. and Table 7-10 from the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***
206WWT (Fugitive)	***HAPs***	***1.65E-01***	***7.24E-01***	

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
Tom Wilson	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR
HAZARDOUS AIR POLLUTANT (HAP) SOURCES

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8329 (09-12)

SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygroup.inc***
Facility Address (Street & No. or Lat/Long to Nearest Second) ***37th Street / 46°52'45"N/103°14'55" W***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Number of Employees at Location ***TBD***	
Land Area at Plant Site ***261*** Acres (or) Sq. Ft.	MSL Elevation at Plant ***2,685 feet***	

Describe Nature of Business/Process

Petroleum Refining / WasteWater Treatment Plant - 206WWT (Fugitive)

SECTION B – STACK DATA

Inside Diameter (ft) ***N/A***	Height Above Grade (ft) ***N/A***	
Gas Temperature at Exit (°F) ***N/A***	Gas Velocity at Exit (ft/sec) ***N/A***	Gas Volume (scfm) ***N/A***
Basis of any Estimates (attach separate sheet if necessary) ***Engineering data and * Table 7-8. Table 7-9. and Table 7-10 from the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***		
Are Emission Control Devices in Place? If YES – Complete SFN 8532		Yes ☐ No ☒
Nearest Residences or Building ***Administrative building***	Distance (ft) ***1,434 ft***	Direction ***South***
Nearest Property Line ***Fenceline***	Distance (ft) ***963 ft***	Direction ***Northwest***

SECTION C – EMISSION STREAM DATA

Source ID No. From SFN 8516 ***206WWT (Fugitive)***	Mean Particle Diameter (μm)
Flow Rate (scfm) ***N/A***	Drift Velocity (ft/sec) ***N/A***
Stream Temperature (°F) ***N/A***	Particulate Concentration (gr/dscf) ***N/A***
Moisture Content (%) ***N/A***	Halogens or Metals Present? ***No***
Pressure (in. Hg) ***N/A***	Organic Content (ppmv) ***N/A***
Heat Content (Btu/scfm) ***N/A***	O_2 Content (%) ***N/A***

SECTION D – POLLUTANT SPECIFIC DATA
(Complete One Box for Each Pollutant in Emission Stream)

Pollutant Emitted ***2,2,4-trimethylpentane***	Chemical Abstract Services (CAS) Number ***540-84-1***
Proposed Emission Rate (lb/hr) ***$3.33x10^{-2}$***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic/Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***1.50 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***114.22***
Absorptive Properties -	

Pollutant Emitted ***Benzene***	Chemical Abstract Services (CAS) Number ***71-43-2***
Proposed Emission Rate (lb/hr) ***$7.68x10^{-3}$***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***3.73 in Hg @ 77 °F***
Solubility ***In water $1.79x10^{3}$ mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***78.11***
Absorptive Properties -	

Pollutant Emitted ***Biphenyl***	Chemical Abstract Services (CAS) Number ***95-52-4***
Proposed Emission Rate (lb/hr) ***$3.24x10^{-5}$***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***$3.51x\ 10^{-4}$ in Hg @ 77 °F***
Solubility ***In water 0.0004 g/100mL @ 68 °F***	Molecular Weight (lb/lb-mole) ***154.21***
Absorptive Properties -	

Pollutant Emitted ***Cresols***	Chemical Abstract Services (CAS) Number ***106-44-5***
Proposed Emission Rate (lb/hr) ***0***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.004 in Hg @ 77°F***
Solubility ***In water 2.15x10^{+4}@77°F***	Molecular Weight (lb/lb-mole) ***108.14***
Absorptive Properties -	

Pollutant Emitted ***Cumene***	Chemical Abstract Services (CAS) Number ***98-82-8***
Proposed Emission Rate (lb/hr) ***2.73x10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.17 in Hg @ 77°F***
Solubility ***61.3 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***120.19***
Absorptive Properties -	

Pollutant Emitted ***Ethylbenzene***	Chemical Abstract Services (CAS) Number ***100-41-4***
Proposed Emission Rate (lb/hr) ***5.95x10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.37 in Hg @ 77°F***
Solubility ***In water 0.014 g/100mL @ 59 °F***	Molecular Weight (lb/lb-mole) ***106.17***
Absorptive Properties -	

Pollutant Emitted ***Hexane***	Chemical Abstract Services (CAS) Number ***110-54-5***
Proposed Emission Rate (lb/hr) ***5.92x10^{-2}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***5.90 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***86.1***
Absorptive Properties -	

Pollutant Emitted ***Methyl tertiary-butyl ether***	Chemical Abstract Services (CAS) Number
Proposed Emission Rate (lb/hr) ***1.62x10^{-3}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***2.95 in Hg @ 154 °F***
Solubility ***In water 4.2 g/100mL @ 68°F***	Molecular Weight (lb/lb-mole) ***88.15***
Absorptive Properties -	

Pollutant Emitted ***Naphthalene***	Chemical Abstract Services (CAS) Number ***91-20-3***
Proposed Emission Rate (lb/hr) ***8.73x10^{-4}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.003 in Hg @ 77 °F***
Solubility ***In water 31 mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***128.17***
Absorptive Properties -	

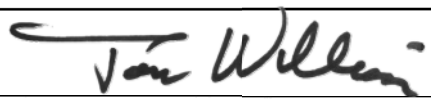
Pollutant Emitted ***Phenol***	Chemical Abstract Services (CAS) Number ***108-95-2***
Proposed Emission Rate (lb/hr) ***0***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.013 in Hg @ 77°F***
Solubility ***In water 1 g/15mL***	Molecular Weight (lb/lb-mole) ***94.11***
Absorptive Properties -	

Pollutant Emitted ***Styrene***	Chemical Abstract Services (CAS) Number ***100-42-5***
Proposed Emission Rate (lb/hr) ***1.14 x10^{-2}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.25 in Hg @ 77°F***
Solubility ***In water 300 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***104.15***
Absorptive Properties -	

Pollutant Emitted ***Toluene***	Chemical Abstract Services (CAS) Number ***108-88-3***
Proposed Emission Rate (lb/hr) ***1.93x10^{-2}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***1.11 in Hg @ 77 °F***
Solubility ***In water 526 mg/L @ 77 °F***	Molecular Weight (lb/lb-mole) ***92.14***
Absorptive Properties -	

Pollutant Emitted ***Xylene***	Chemical Abstract Services (CAS) Number ***95-47-6***
Proposed Emission Rate (lb/hr) ***2.32x10^{-2}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***0.26 in Hg @ 77°F***
Solubility ***In water 178 mg/L @ 77°F***	Molecular Weight (lb/lb-mole) ***106.16***
Absorptive Properties -	

Pollutant Emitted ***1,3-Butadiene***	Chemical Abstract Services (CAS) Number ***106-99-0***
Proposed Emission Rate (lb/hr) ***1.38x10^{-5}***	Emission Source (describe) ***Fugitive***
Source Classification (process point, process fugitive, area fugitive) ***Process Fugitive***	Pollutant Class and Form (organic/inorganic - particulate/vapor) ***Organic /Vapor***
Concentration in Emission Stream (ppmv) ***N/A***	Vapor Pressure (in. Hg @ °F) ***72.34 in Hg @ 68 °F***
Solubility ***Insoluble in water***	Molecular Weight (lb/lb-mole) ***54.09***
Absorptive Properties -	

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of
Health Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***
County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***
Legal Description of Facility Site ***Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W***	MSL Elevation at Facility ***2,685 feet***	Ref. Datum

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Cooling Tower A***		
Make ***Cooling Tower Depot, Inc.***	Model ***CFD-241820-5I-14***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***2,500 gpm***	Operating Capacity (specific units) ***2,500 gpm***	
Brief description of operation of unit or process: ***Water cooling tower, 2,500 gpm capacity, five cells in total, four operating one on standby, equipped with drift eliminators for a drift rate of 0.001%. Emission point 215-CT-1501A.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Warm water from various processes	***5,004,000***	***5,004,000***	***5,004,000***	***5,256,000,000 gal***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
N/A	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr) ***N/A***		LP Gas (Gal/Yr) ***N/A***		Other (Specify) ***N/A***	

SECTION H – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
215-CT-1501A	***26***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
215-CT-1501A	***VOC***	***9.00E-02***	***3.94E-01***	***Engineering data from vendor, and emission factors from Table 8-5 of the Emissions Estimation Protocol for Petroleum Refineries. See Document P-5715043-01-001-18042-I001 "EMISSIONS INVENTORY" and P-5715043-01-001-18035-I001 "Control Technology Review"***
215-CT-1501A	***PM 10***	***4.73E-01***	***2.07E+00***	

SECTION J – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☒ No ☐Yes – List Below See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device

SECTION K – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION L – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION M – MATERIAL STORAGE

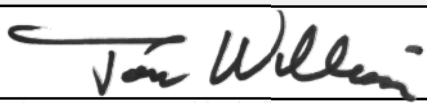
Does the input material or product from this process contain finely divided material which could become airborne? ☒No ☐Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

Signature of Applicant	Date
	04/03/17

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Health
Division of Air Quality
918 E Divide Ave., 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF AIR QUALITY
SFN 8520 (09-12)

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application		
Name of Firm or Organization ***Meridian Energy Group - Davis Refinery***		
Applicant's Name ***Tom Williams***		
Title ***VP of Planning &Permitting***	Telephone Number ***(707) 299-0182***	E-mail Address ***twilliams@meridianenergygroup.inc***
Mailing Address (Street & No.) ***2062 Business Center Drive, Suite 115***		
City ***Irvine***	State ***CA***	ZIP Code ***92612***

SECTION B - FACILITY INFORMATION

Facility Name ***Davis Refinery***		
ND Air Pollution Control Permit No. (If Applicable) ***N/A***		
Contact Person for Air Pollution Matters ***Tom Johnson***		
Title ***Vice President of Operations***	Telephone Number ***(409)795-0792***	E-mail Address ***tjohnson@meridianenergygrou***
Facility Address (Street & No.) ***37th Street***		
City ***Belfield***	State ***ND***	ZIP Code ***58622***

County ***Billings***	Latitude (Nearest Second) ***46°52'45"N***	Longitude (Nearest Second) ***103°14'55" W***

Legal Description of Facility Site	MSL Elevation at Facility	Ref. Datum
Property ID 07 0000 00165 000 in the SE 1/4 of Section 2, Twp 139N, Range 100W and Property ID: 07 0000 00162 000 in the NW1/4 and SW 1/4 of Section 1, Twp 139N, Range 100W	***2,685 feet***	

SECTION C – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) ***Cooling Tower A***		
Make ***Cooling Tower Depot, Inc.***	Model ***CFD-241820-5I-14***	Date Installed ***TBD***
Capacity (manufacturer's or designer's guaranteed maximum) ***2,500 gpm***	Operating Capacity (specific units) ***2,500 gpm***	
Brief description of operation of unit or process: ***Water cooling tower, 2,500 gpm capacity, five cells in total, four operating one on standby, equipped with drift eliminators for a drift rate of 0.001%. Emission point 215-CT-1501B.***		

SECTION D – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	***7***	***52***	***N/A***	***N/A***

SECTION E – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Warm water from various processes	***5,004,000***	***5,004,000***	***5,004,000***	***5,256,000,000 gal***	***N/A***

SECTION F – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
N/A	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***

SECTION G – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A					
Natural Gas (Thousand CF/Yr) ***N/A***		LP Gas (Gal/Yr) ***N/A***		Other (Specify) ***N/A***	

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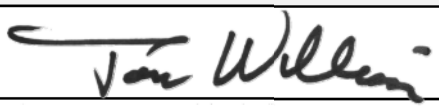
Signature of Applicant	Date
	04/03/17

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