Iowa Department of Natural Resources
Draft Title V Operating Permit Fact Sheet

This document has been prepared to fulfill the public participation requirements of 40 CFR Part 70 and 567 Iowa Administrative Code (IAC) 24.107(6). 40 CFR Part 70 contains operating permit regulations pursuant to Title V of the Clean Air Act.

The Iowa Department of Natural Resources (DNR) finds that:

1. Magellan Pipeline Company, LP – Des Moines Terminal, located at 2503 SE 43rd Street, Des Moines, IA 50327 has applied to renew their Title V Operating Permit. The designated responsible official of this facility is Keith Faucett.
2. Magellan Pipeline Company, LP – Des Moines Terminal is a gasoline terminal/refined petroleum pipeline, (SIC 4613), (NAICS 486910). The facility consists of 104 significant emission points with potential emissions of:

Pollutant	**Abbreviation**	**Potential Emissions** (Tons per Year)
Particulate Matter (≤ 2.5 μm)	$PM_{2.5}$	1.93
Particulate Matter (≤ 10 μm)	PM_{10}	20.89
Particulate Matter	PM	20.89
Sulfur Dioxide	SO_2	1.85
Nitrogen Oxides	NO_x	33.44
Volatile Organic Compounds	VOC	392.92
Carbon Monoxide	CO	11.74
Lead	Lead	0.00
Hazardous Air Pollutants[(1)]	HAP	24.40

[(1)] May include the following: benzene, ethylbenzene, hexane, toluene, 2,2,4-Trimethylpentane, and xylene (mixed isomers).

3. Magellan Pipeline Company, LP – Des Moines Terminal submitted a Title V Operating Permit renewal application on November 20, 2022 and any additional information describing the facility on December 11, 2023. Based on the information provided in these documents, DNR has made an initial determination that the facility meets all the applicable criteria for the issuance of an operating permit specified in 567 IAC 24.107.
4. DNR has complied with the procedures set forth in 567 IAC 24.107, including those regarding public notice, opportunity for public hearing, and notification of EPA and surrounding state and local air pollution programs.

DNR procedures for reaching a final decision on the draft permit:

1. The public comment period for the draft permit will run from April 10, 2025 through May 9, 2025. During the public comment period, anyone may submit written comments on the permit. Mail signed comments to Riley Plagge at the Polk County address shown below. The beginning date of this public comment period also serves as the beginning of the U.S. Environmental Protection Agency's (EPA) 45-day review period, provided the EPA does not seek a separate review period.
2. Written requests for a public hearing concerning the permit may also be submitted during the comment period. Any hearing request must state the person's interest in the subject matter, and the nature of the issues proposed to be raised at the hearing. DNR will hold a public hearing upon finding, on the basis of requests, a significant degree of relevant public interest in a draft permit. Mail hearing requests to Riley Plagge at the DNR address shown below.
3. DNR will keep a record of the issues raised during the public participation process, and will prepare written responses to all comments received. The comments and responses will be compiled into a responsiveness summary document. After the close of the public comment period, DNR will make a final decision on the renewal application. The responsiveness summary and the final permit will be available to the public upon request.

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   Air Quality Division
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DNR concludes that:

1. DNR has authority under 455B.133 Code of Iowa to promulgate rules contained in 567 IAC Chapters 20-35, including, but not limited to, rules containing emission limits, providing for compliance schedules, compliance determination methods and issuance of permits.
2. DNR has the authority to issue operating permits for air contaminant sources and to include conditions in such permits under 455B.134 Code of Iowa.
3. The emission limits included in this permit are authorized by 455B.133 Code of Iowa and 567 IAC Chapters 20-35.
4. DNR is required to comply with 567 IAC Chapter 24 in conjunction with issuing a Title V Operating Permit.
5. The issuance of this permit does not preclude the DNR from pursuing enforcement action for any violation.

Title V Application Review Notes R4

Applicant:	**Magellan Pipeline Company, LP – Des Moines Terminal**
SIC Code:	**4613**
City:	Des Moines
County:	Polk
EIQ#:	92-6788
Facility#:	77-01-114
Permit #:	98-TV-019R4
Reviewer:	Riley Plagge
Date:	4/3/2025

Facility Identification

Facility Name:	**Magellan Pipeline Company, LP – Des Moines Terminal**
Facility Location:	2503 SE 43rd St., Des Moines, IA 50327
Responsible Official:	Keith Faucett
Phone:	(918) 574-7911

The Part 70 Title V Operating Permit for Magellan Pipeline Company, LP – Des Moines Terminal. The facility is a gasoline terminal/refined petroleum pipeline. Magellan Pipeline Company, LP – Des Moines Terminal has the following significant emission units (EU):

- Truck Loading Rack (EU 1), with a primary John Zink Vapor Recovery Unit (CE 2 / EP 1) and backup Vapor Combustion Unit (CE 1 / EP 1B) is permitted under Polk County AQD Construction Permit #s 2656 Modified and 1250 Modified #7.
- 55 petroleum product storage tanks (EUs / EPs: 2-46, 58a, 62-64, 69, 79-83) are permitted under Polk County AQD Construction Permit # 2363 Modified #7.
- 6.46 MMBtu/hr natural gas-fired heater/fractionator (EU 51 / EP 51) is permitted under Polk County AQD Construction Permit #0627.
- Railcar Loading Rack (EU 56 / EP 56) is permitted under Polk County AQD Construction Permit # 1229 Modified.
- Transmix Distillation Unit (fractionator) (EU 72 / EP 72) is permitted under Polk County AQD Construction Permit # 2001.
- Butane Unloading and Blending Operations including (2) 55,000 gallon storage tanks, (2) 65,000 gallon storage tanks, (2) butane-truck loading positions, (1) knock-out tank (EU 73 / EP 73) is permitted under Polk County AQD Construction Permit # 2111 Modified #3.
- Ethanol Rail Loading Rack (EU 74 / EP 74) is permitted under Polk County AQD Construction Permit # 2142.
- Tank 902 – Spherical Low-Pressure Mainline Relief Tank (EU 75 / EP 75) is grandfathered.
- Tank roof landings (EU 76 / EP 76) is permitted under Polk County AQD Construction Permit # 2363 Modified #7.
- Control Room Sub-Slab Remediation Vent (EU 77 / EP 77) is permitted under Polk County AQD Construction Permit # 2190.

- Truck Rack Sub-Slab Remediation Vent (EU 78 / EP 78) is permitted under Polk County AQD Construction Permit # 2191.
- 5,000 barrel (210,000 gallon) Biodiesel Storage Tank (EU BDT1 / EP BD1) is permitted under Polk County AQD Construction Permit # 2349.
- Biodiesel Offloading System (EU BDOL / EP BD2) is permitted under Polk County AQD Construction Permit # 2349.
- Two (2) 21,000 gallon portable frac tanks (EU PFT / EP PFT) are permitted under Polk County AQD Construction Permit # 2255 Modified.
- Six (6) portable emergency generators (EUs / EP s P1-P6) are permitted under Polk County AQD Construction Permit # 3872.
- The following units are significant but do not have an associated construction permit:
    - Fugitive Emissions (valves, pumps, and flanges) (EU 48)
    - Seventeen (17) Bulk Additive Storage Tanks (EUs 49-1 – 49-17)
    - Oil and Water Separator System (Sumps and Water Tanks) (EU 50)
    - 1.75 MMBtu/hr natural gas-fired boiler (EU 52)
    - Emergency Use Only LPG Flare (EU 54)
    - Ethanol Unloading Disconnects (EU 57)
    - Q Grade Filter Drainage (EU 67)

Title V Major Source Status by Pollutant:

Pollutant	Major for Title V?
PM_{10}	☐
SO_2	☐
NO_x	☐
VOC	☒
CO	☐
Lead	☐
Individual HAP	☐
Total HAPs	☐

The following amendments have been made to the Title V permit:

1. TV Permit number has been updated to 98-TV-019R4 (pp. 1, 5, 9, 14 and footer).

2. Table of Contents page numbers updated (p. 2-3).

3. Facility Description and Equipment List updated. All emission units previously listed in the insignificant activities list were moved to significant unit equipment list. (p. 5-8).

4. Polk County Construction Permit number 2363 Modified #6 was replaced with 2363 Modified #7 (pp. 5-7, 11, 33-34, 39-41).

5. Polk County Construction Permit number 3872 was incorporated (pp. 8, 63-66).

6. Plant-wide condition B adjusted to require sampling only when a new or previously unsampled gasoline grade is loaded at the Truck Loading Rack (p. 12).

7. Plant-wide conditions F-G adjusted to include an 85% trigger for daily recordkeeping (p. 12).

8. NSPS and NESHAP language updated to reflect current CFR language:

   - 40 CFR 63 Subpart BBBBBB (pp. 15-21, 25-27, 39-41)
   - 40 CFR 63 Subpart XX (pp. 15, 25)
   - 40 CFR 60 Subpart Kb (pp. 35-39)

9. The Eτ equation requirement from §63.420 (40 CFR 63 Subpart R) was removed from the Title V permit because the facility is not subject to subpart R. This requirement is still in Polk County Construction Permits 2190 and 2191, but has been removed from the Title V because it is not applicable (pp. 53, 55)

10. Emission Point pages added for the following emission points:

    - EP 48, 49, 50, 57, & 67 (pp. 67-68)
    - EP 52 (pp. 69-70)
    - EP 54 (pp. 71-72)

11. General Conditions were updated (pp. 73-87).

12. Appendix A (Web Links to Applicable Regulations) was updated (p. 88).

13. Appendix B (Executive Order 10 (EO10) Rules Crosswalk) was added (p. 89).

Emission Estimations

Emission Values

PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	VOC	CO	Lead	Total HAPs
Potential Emissions								
20.89	20.89	1.93	1.85	33.44	329.29	11.74	9.40	24.40
Actual Emissions 2023[(1)]								
0.00	0.00	0.00	0.09	2.74	171.34	1.58	0.00	8.82

[(1)]The actual emissions (tons) reported for the 2023 calendar year.

Applicable Rules and Regulations

1. Emission Limits and Conditions:
   a. The following plant-wide emission limits apply:

i. VOC: 392.92 tons/yr
ii. Single HAPs: 9.4 tons/yr
iii. Total HAPs: 24.4 tons/yr

b. Emission limits for individual emission points:
   i. Polk County AQD Construction Permit # 2656 Modified limits emissions from the Truck Loading Rack with John Zink Vapor Recovery Unit (EU 1 / CE 2 / EP 1):
      1. VOC: 72.10 tons/yr, 5 milligrams of total organic compounds per liter of gasoline loaded
      2. HAP: 3.75 tons/yr
   ii. Truck Loading Rack with Zeeco Model TFC-D-10 Vapor Combustor Unit (EU 1 / CE 1 / EP 1B):
      1. Polk County AQD Construction Permit # 1250 Modified #7 limits emissions from the unit:
         a. NO_x: 0.30 lb/hr, 1.30 tons/yr
         b. VOC: 15.73 tons/yr
         c. CO: 0.76 lb/hr, 3.32 tons/yr
         d. Total HAP: 0.896 tons/yr
      2. 567 IAC 23.3(2)"a" and Polk County Board of Health Rules and Regulations Chapter V, Article VI, Section 5-14(b) limit PM emissions from the unit: 0.10 gr/dscf. In TPY, this equals: (0.1 gr/dscf)(515 scf/min)(60 min/hr)(1 lb/7,000gr) = *1.93 ton/yr. Since the VCU is normally not operated, and is only operated when the VRU is down for maintenance/repairs/emergencies, this PTE is considered to be conservative.
         *Note that this value was different in the previous Title V review notes because the incorrect flow rate was used for the calculations at that time (acfm was used rather than scfm).
      3. 567 IAC 23.3(3)"e" and Polk County Board of Health Rules and Regulations Chapter V, Article IX, Section 5-27 limit SO_2 emissions from the unit: 500 ppmv.
   iii. Transmix Fractionator (EU 51 / EP 51):
      1. Polk County AQD Construction Permit # 0627 limits emissions from the unit:
         a. NO_x: 0.594 lb/hr, 2.60 tons/yr
         b. VOC: 0.162 lb/hr, 0.710 tons/yr
         c. CO: 0.239 lb/hr, 1.05 tons/yr
      2. 567 IAC 23.3(2)"b" and Polk County Board of Health Rules and Regulations Chapter V, Article VI, Section 5-15(b) limit PM emissions from the unit: 0.6 lb/MMBtu as this is an indirect-fired unit. In TPY, this equals:
         = (0.6 lb/MMBtu)(6.46 MMBtu/hr) = 3.88 lb/hr = 16.98 tons/yr
      3. 567 IAC 23.3(3)"e" and Polk County Board of Health Rules and Regulations Chapter V, Article IX, Section 5-27 limit SO_2 emissions from the unit: 500 ppmv. In TPY, this equals:
         (6.46 MMBtu/hr)(scf/0.001028 MMBtu) = 6,284.05 scf/hr

(500 ppmv)(6284.05 scf/hr)(0.0749 lb/scf)(8760 hours/yr) (ton/2000 lb) = 1.03 tons/yr
Note: 500 ppmv = code allowable (parts/1,000,000); 001028 MMBtu/scf is the weighted US average HHV of natural gas; 0.0749 lb/scf is the standard density of air.

iv. Polk County AQD Construction Permit # 1229 Modified limits emissions from the Railcar Loading Rack (EU 56 / EP 56):
    1. VOC: 2.089 tons/yr
    2. Total HAP: 0.109 tons/yr
v. Polk County AQD Construction Permit # 2001 limits emissions from the Transmix Distillation Unit (fractionator) (EU 72 / EP 72):
    1. VOC: 3.65 tons/yr
    2. Hexane: 0.06 tons/yr
    3. Total HAP: 0.19 tons/yr
vi. Polk County AQD Construction Permit # 2111 Modified #3 limits emissions from the Butane Unloading and Blending Operations (EU 73 / EP 73): VOC: 3.45 tons/yr.
vii. Polk County AQD Construction Permit # 2142 limits emissions from the Ethanol Rail Loading Rack (EU 74 / EP 74):
    1. VOC: 14.582 tons/yr
    2. Total HAP: 0.214 tons/yr
viii. Polk County AQD Construction Permit # 2190 limits emissions from the Control Room Sub-Slab Remediation Vent (EU 77 / EP 77):
    1. VOC: 6.73 tons/yr
    2. Total HAP: 0.14 tons/yr
ix. Polk County AQD Construction Permit # 2191 limits emissions from the Truck Rack Sub-Slab Remediation Vent (EU 78 / EP 78):
    1. VOC: 1.08 tons/yr
    2. Total HAP: 0.03 tons/yr
x. Polk County AQD Construction Permit # 2349 limits emissions from the Biodiesel Storage Tank (Tank 153) (EU BDT1 / EP BD1):
    1. VOC: 1.39 tons/yr
xi. Polk County AQD Construction Permit # 2349 limits emissions from the Biodiesel Offloading System (EU BDOL / EP BD2):
    1. VOC: 0.32 tons/yr
xii. Polk County AQD Construction Permit # 2255 Modified limits emissions from the (2) 21,000 gallon portable frac tanks (EU PFT / EP PFT):
    1. VOC: 0.71 tons/yr (individual tank) and 1.42 tons/yr (both tanks combined)
xiii. Polk County AQD Construction Permit # 3872 limits emissions from the six (6) portable emergency generators (EUs / EPs P1-P6):
    1. PM/PM_{10}: 1.98 tons/yr, 0.10 gr/dscf
    2. SO_2: 1.85 tons/yr, 0.5 lb/MMBtu
    3. NO_x: 27.86 tons/yr
    4. VOC: 2.26 tons/yr
    5. CO: 6.00 tons/yr

2. Facility Wide Opacity: Less than 20% opacity – Polk County Board of Health Rules and Regulations: Chapter V, Article IV, Section 5-9.
    a. EP 1 is limited to <20% by Polk County AQD Construction Permit # 2656 Modified.
    b. EP 1B is limited to <20% by Polk County AQD Construction Permit # 1250 Modified #7.
    c. EP 56 is limited to No Visible Emissions by Polk County AQD Construction Permit # 1229 Modified.
    d. EP 72 is limited to No Visible Emissions by Polk County AQD Construction Permit # 2001.
    e. EP 73 is limited to No Visible Emissions by Polk County AQD Construction Permit # 2111 Modified #3.
    f. EP 74 is limited to No Visible Emissions by Polk County AQD Construction Permit # 2142.
    g. EPs P1-P6 are limited to <20% by Polk County AQD Construction Permit # 3872.
3. Title IV: Not applicable at this time.
4. Subject to 112(r) Prevention of Accidental Releases? No
   Note: facility's application states "yes" but there is no evidence they are subject to this.
5. PSD: Source is major (PSD) for VOC (392.92 TPY) and will need to submit a PSD permit application when a qualifying change is made, i.e., applying for a significant increase of any PSD regulated pollutant.
6. NAAQS: Facility is located in an attainment area. Air modeling is not required at this time.
7. Stratospheric ozone: the only ozone depleting chemicals (regulated by 40 CFR 82) at the facility are those used for air conditioning. 40 CFR 82, Subpart F, applies to the disposal of appliances containing Class I or Class II substances (i.e. air conditioners).
8. CAM: Not applicable at this time.
9. NESHAP: Yes
   The facility is an area HAP source with plant-wide limits of 9.4 tons/yr for Single HAP (SHAP) and 24.4 tons/yr for Total HAP (THAP) as required by Polk County AQD Construction Permit #s 2656 Modified and 2363 Modified #7. DNR determined there are 6 HAPs emitted in the gasoline handled by the facility: benzene, ethylbenzene, hexane, toluene, 2,2,4-trimethylpentane, and xylenes. Sampling is required to determine the liquid phase concentrations of each HAP, and the liquid phase concentration is used to calculate the vapor phase HAP content in weight percent. Each HAP emitted can be further calculated as a percentage of VOC emitted. The facility is then required to calculate 12-month rolling SHAP and THAP emissions to demonstrate that the limits of 9.4 and 24.4 tons/yr are not exceeded. See plant-wide conditions of the permit for more information.
    a. <u>40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines:</u>
       The six (6) portable emergency generators (EUs / EPs P1-P6) are of the source category, but are not subject to 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines, because each of these units is a non-road engine as defined 40 CFR §1068.30. As such, they do not meet the definition of a "stationary internal combustion engine" in §63.6675 at this time. If a generator remains or it

is expected to remain at a location for more than 12 consecutive months, then it will become a "stationary internal combustion engine," and therefore, subject to NESHAP Subpart ZZZZ. The web link to NESHAP Subpart ZZZZ has been placed in the Title V permit's Appendix A.

b. 40 CFR 63 Subpart BBBBBB (6B) – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities:
    i. The Truck Loading Rack with John Zink Vapor Recovery Unit (EU 1 / EP 1) is subject to 40 CFR 63 Subpart BBBBBB (6B) – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. Applicable requirements were placed in Polk County AQD Construction Permit 2656 Modified and transferred into the Title V permit. The web link to NSPS Subpart BBBBBB has been placed in the Title V permit's Appendix A.
    ii. The Truck Loading Rack with Zeeco Model TFC-D-10 Vapor Combustor Unit (EU 1 / EP 1B) is subject to 40 CFR 63 Subpart BBBBBB (6B) – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. Applicable requirements were placed in Polk County AQD Construction Permit #1250 Modified #7 and transferred into the Title V permit. The web link to NSPS Subpart BBBBBB has been placed in the Title V permit's Appendix A.
    iii. The 55 petroleum product storage tanks and tank roof landings (EUs / EPs 2-46, 58a, 62-64, 69, 76, 79-83) is subject to 40 CFR 63 Subpart BBBBBB (6B) – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. Applicable requirements were placed in Polk County AQD Construction Permit # 2363 Modified #7 and transferred into the Title V permit. The web link to NSPS Subpart BBBBBB has been placed in the Title V permit's Appendix A.

10. NSPS: Yes

a. 40 CFR Part 60 Subpart K – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978:
Tanks 1507 (EU 45 / EP 45), 1508 (EU 46 / EP 46) are subject to 40 CFR 60 Subpart K – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978. Applicable requirements were placed in Polk County AQD Construction Permit # 2363 Modified #7 and transferred into the Title V permit.

b. 40 CFR 60 Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984:
Tanks 1150 (EU 62 / EP 62), 1151 (EU 63 / EP 63), 1152 (EU 64 / EP 64), 2700 (EU 80 / EP 80), 2701 (EU 81 / EP 81), 2702 (EU 82 / EP 82), 2703 (EU 83 / EP

83) are subject to 40 CFR 60 Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. Applicable requirements were placed in Polk County AQD Construction Permit # 2363 Modified #7 and transferred into the Title V permit.

c. 40 CFR 60 Subpart XX: Standards of Performance for Bulk Gasoline Terminals
    i. The Truck Loading Rack with John Zink Vapor Recovery Unit (EU 1 / EP 1) is subject to 40 CFR 60 Subpart XX: Standards of Performance for Bulk Gasoline. Applicable requirements were placed in Polk County AQD Construction Permit 2656 Modified and transferred into the Title V permit. The web link to NSPS Subpart BBBBBB has been placed in the Title V permit's Appendix A.
    ii. The Truck Loading Rack with Zeeco Model TFC-D-10 Vapor Combustor Unit (EU 1 / EP 1B) is subject to 40 CFR 60 Subpart XX: Standards of Performance for Bulk Gasoline. Applicable requirements were placed in Polk County AQD Construction Permit #1250 Modified #7 and transferred into the Title V permit. The web link to NSPS Subpart BBBBBB has been placed in the Title V permit's Appendix A.

d. 40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
The six (6) portable emergency generators (EUs / EPs P1-P6) are of the source category, but are not subject to 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, because each of these units is a non-road engine as defined 40 CFR §1068.30. As such, they do not meet the definition of a "stationary internal combustion engine" in §60.4219 at this time. If a generator remains or it is expected to remain at a location for more than 12 consecutive months, then it will become a "stationary internal combustion engine," and therefore, subject to NSPS Subpart IIII. The web link to NESHAP Subpart ZZZZ has been placed in the Title V permit's Appendix A.

Periodic Monitoring and other Monitoring Considerations

1. PM, PM_{10}, $PM_{2.5}$:
    a. (EU 1 / CE 1 / EP 1B), the Vapor Combustion Unit (VCU) combusts natural gas and fugitive petroleum product vapors from terminal loading operations and the remediation system. The VCU has a potential to emit that indicates it is uncontrolled minor for PM (1.93 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
    b. (EU 51 / EP 51), the Transmix Fractionator (natural gas-fired heater) has a potential to emit that indicates it is uncontrolled minor for PM (16.98 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
    c. (EUs / EPs P1-P6), the six (6) portable emergency generators have a potential to emit that indicates it is uncontrolled minor for PM/PM_{10} (1.98 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

2. VOC:

A plant-wide VOC emission limit is in place (392.92 tons/yr).

a. (EU 1 / CE 2 / EP 1), the Truck Loading Rack with the Vapor Recovery Unit (VRU) has a potential to emit that indicates it is uncontrolled major for VOC (3,773.59 tons/yr), and controlled significant (72.10 tons/yr). EU 1 has an allowable concentration limit of 5 mg VOC/liter of gasoline loaded. Under DNR's Monitoring Guidance Policy, one (1) stack test (per Title V permit life span) and an Agency O&M Plan are required. A CAM Plan is also indicated. Compliance with NESHAP Subpart BBBBBB and NSPS Subpart XX fulfill all monitoring requirements and therefore an Agency O&M Plan and CAM Plan will not be required for (EU 1 / CE 2 / EP1). A Method 21 initial compliance test was conducted 8/19/2015 on the VRU, with results of 95 ppm TOC (500 ppm limit) and 1.1 mg/ liter loaded (5 mg/ liter loaded limit). These results show a wide margin of compliance, so another test will not be required during this permit term.

b. (EU 1 / CE 1 / EP 1B), the Truck Loading Rack with the Vapor Combustion Unit (VCU) has a potential to emit that indicates it is uncontrolled major for VOC (314.60 tons/yr), and controlled minor (15.73 tons/yr). EU 1 has an allowable concentration limit of 35 mg VOC/liter of gasoline loaded. One (1) stack test (per Title V permit life span), a Facility O&M Plan, and a CAM Plan are indicated for VOC. However, compliance with NESHAP Subpart BBBBBB and NSPS Subpart XX fulfill all monitoring requirements, therefore, a Facility O&M Plan and CAM Plan will not be required for (EU 1 / CE 1 / EP 1B). A Method 21 initial compliance test was conducted 6/3/2015 on the VCU, with results of 10 ppm TOC (500 ppm limit) and 16.6 mg/liter loaded (35 mg/liter loaded limit). These results show a wide margin of compliance, so another test will not be required during this permit term. No testing is also warranted because the VCU (CE 1) is not normally operated. The VCU shall only be used when the VRU (CE 2) is down for maintenance, repairs, and/or emergencies, per Polk County AQD Construction Permit #1250 Modified #7.

c. (EUs / EPs 2-46, 58a, 62-69, 76, 79-83), the 55 petroleum product storage tanks and tank roof landings are part of the plant-wide emission limit for VOC (392.92 tons/yr). Polk County AQD Construction Permit #2363 Modified #7 contains monitoring requirements sufficient to ensure compliance with the emission limit. CAM will not be required, and no additional monitoring is warranted.

d. (EU 51 / EP 51), the Transmix Fractionator (natural gas-fired heater) has a potential to emit that indicates it is uncontrolled minor for VOC (0.7096 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

e. (EU 56 / EP 56), the Railcar Loading Rack has a potential to emit that indicates it is an uncontrolled minor for VOC (2.089 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

f. (EU 72 / EP 72), the Transmix Distillation Unit (fractionator) has a potential to emit that indicates it is an uncontrolled minor for VOC (3.65 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

g. (EU 73 / EP 73), the Butane Unloading and Blending Operations has a potential to emit that indicates it is an uncontrolled minor for VOC (3.45 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

h. (EU 74 / EP 74), the Ethanol Rail Loading Rack has a potential to emit that indicates it is an uncontrolled minor for VOC (14.582 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
i. (EU 75 / EP 75), the Spherical Low-Pressure Mainline Relief Tank (Tank 902) has a potential to emit that indicates it is an uncontrolled minor for *VOC (11.29 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
*Note: the source of this number is the Title V renewal application.
j. (EU 77 / EP 77), the Control Room Sub-Slab Remediation Vent has a potential to emit that indicates it is an uncontrolled minor for VOC (6.73 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
k. (EU 78 / EP 78), the Truck Rack Sub-Slab Remediation Vent has a potential to emit that indicates it is an uncontrolled minor for VOC (1.08 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
l. (EU BDT1 / EP BD1), the Biodiesel Storage Tank (Tank 153) has a potential to emit that indicates it is an uncontrolled minor for VOC (1.39 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
m. (EU BDOL / EP BD2), the Biodiesel Offloading System has a potential to emit that indicates it is an uncontrolled minor for VOC (0.32 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
n. (EU PFT / EP PFT), the (2) 21,000 gallon portable frac tanks have a potential to emit that indicates it is uncontrolled minor for VOC (1.42 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
o. (EUs / EPs P1-P6), the six (6) portable emergency generators have a potential to emit that indicates it is uncontrolled minor for VOC (2.26 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

3. $\underline{SO_x}$:
a. (EU 51 / EP 51), the Transmix Fractionator (natural gas-fired heater) has a potential to emit that indicates it is uncontrolled minor for SO_x (1.03 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
b. (EUs / EPs P1-P6), the six (6) portable emergency generators have a potential to emit that indicates it is uncontrolled minor for SO_2 (1.85 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

4. $\underline{NO_x}$:
a. (EU 1 / CE 1 / EP 1B), the Truck Loading Rack with the Vapor Combustion Unit (VCU) has a potential to emit that indicates it is uncontrolled minor for NO_x (1.30 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
b. (EU 51 / EP 51), the Transmix Fractionator (natural gas-fired heater) has a potential to emit that indicates it is uncontrolled minor for NO_x (2.602 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
c. (EUs / EPs P1-P6), the six (6) portable emergency generators have a potential to emit that indicates it is uncontrolled minor for NO_x (27.86 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

5. CO:

a. (EU 1 / CE 1 / EP 1B), the Truck Loading Rack with the Vapor Combustion Unit (VCU) has a potential to emit that indicates it is uncontrolled minor for CO (3.32 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
b. (EU 51 / EP 51), the Transmix Fractionator (natural gas-fired heater) has a potential to emit that indicates it is uncontrolled minor for CO (1.047 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
c. (EUs / EPs P1-P6), the six (6) portable emergency generators have a potential to emit that indicates it is uncontrolled minor for CO (6.00 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

6. HAP:

A plant-wide Single HAP (SHAP) emission limit is in place (9.4 tons/yr), and a Total HAP (THAP) emission limit is in place (24.4 tons/yr).

a. (EU 1 / CE 2 / EP 1), the Truck Loading Rack with the Vapor Recovery Unit (VRU) has a potential to emit that indicates it is uncontrolled major for HAPs *(187.50 tons/yr), and controlled minor (3.75 tons/yr). Under DNR's Monitoring Guidance Policy, a Facility O&M Plan and one (1) stack test (per Title V permit life span) are indicated for HAPs (Benzene, Hexane, toluene, 2,2,4-Trimethylpentane, and Xylenes). Polk County AQD Construction Permit #2656 Modified has no HAP short term limits for the VRU (EU 1 / CE 2 / EP 1). This makes the stack testing requirement non-applicable for HAPs. Monitoring will be accomplished through compliance with NESHAP Subpart BBBBBB and NSPS Subpart XX. The facility O&M Plan and CAM Plan will not be required, since compliance with NESHAP BBBBBB and NSPS XX will ensure compliance with the HAP emission limits.
   *Note: This number was obtained assuming a control efficiency of the VRU of 98%.
b. (EU 1 / CE 1 / EP 1B), the Truck Loading Rack with the Vapor Combustion Unit (VCU) has a potential to emit that indicates it is uncontrolled major for HAPs *(44.8 tons/year), and controlled minor (0.896 tons/yr). Under DNR's Monitoring Guidance Policy, a Facility O&M Plan and one (1) stack test (per Title V permit life span) are indicated for HAPs (Benzene, Hexane, toluene, 2,2,4-Trimethylpentane, and Xylenes). Polk County AQD Construction Permit # 1250 Modified #7 has no HAP short term limits for the VCU (EU 1 / CE 1 / EP 1B). This makes the stack testing requirement non-applicable for HAPs. Monitoring will be accomplished through compliance with NESHAP Subpart BBBBBB and NSPS Subpart XX. The facility O&M Plan and CAM Plan will not be required, since compliance with NESHAP BBBBBB and NSPS XX will ensure compliance with the HAP emission limits. Additionally, the VCU shall only be used when the VRU (CE 2) is down for maintenance, repairs, and/or emergencies, per Polk County AQD Construction Permit #1250 Modified #7.
   *Note: This number was obtained assuming a control efficiency of the VCU of 98%.

c. (EUs / EPs 2-46, 58a, 62-69, 76, 79-83), the 55 petroleum product storage tanks and tank roof landings are part of the plant-wide emission limit for SHAP (9.4 tons/yr) and THAP (24.4 tons/yr). Polk County AQD Construction Permit #2363 Modified #7 contains 40 CFR 63 Subpart BBBBBB applicable requirements and monitoring requirements sufficient to ensure compliance with the emission limit. CAM will not be required, and no additional monitoring is warranted.
d. (EU 56 / EP 56), the Railcar Loading Rack has a potential to emit that indicates it is an uncontrolled minor for THAP (0.109 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
e. (EU 72 / EP 72), the Transmix Distillation Unit (fractionator) has a potential to emit that indicates it is an uncontrolled minor for SHAP (0.06 tons/yr) and THAPs (0.19 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
f. (EU 74 / EP 74), the Ethanol Rail Loading Rack has a potential to emit that indicates it is an uncontrolled minor for THAP (0.214 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
g. (EU 75 / EP 75), the Spherical Low-Pressure Mainline Relief Tank (Tank 902) has a potential to emit that indicates it is an uncontrolled minor for *THAP (0.592 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
*Note: the source of this number is the Title V renewal application.
h. (EU 77 / EP 77), the Control Room Sub-Slab Remediation Vent has a potential to emit that indicates it is an uncontrolled minor for THAP (0.14 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.
i. (EU 78 / EP 78), the Truck Rack Sub-Slab Remediation Vent has a potential to emit that indicates it is an uncontrolled minor for THAP (0.03 tons/yr). Under DNR's Monitoring Guidance Policy, no additional monitoring is required.

7. Opacity:
The facility is limited to less than 20% opacity as per Polk County Board of Health Rules and Regulations, Chapter V, Article IV, Section 5-9. The following emission units' opacity is limited by their respective Polk County AQD construction permits:
a. (EU 1 / CE 2 / EP 1), Truck Loading Rack with John Zink Vapor Recovery Unit is limited to <20% opacity as per Polk County AQD Construction Permit # 2656 Modified.
b. (EU 1 / CE 1 / EP 1B), Truck Loading Rack with Zeeco Model TFC-D-10 Vapor Combustor Unit is limited to <20% opacity as per Polk County AQD Construction Permit # 1250 Modified #7.
c. (EU 56 / EP 56), Railcar Loading Rack is limited to No Visible Emissions as per Polk County AQD Construction Permit # 1229 Modified. None would be expected, as this is a VOC only source. No additional monitoring warranted.
d. (EU 72 / EP 72), Transmix Distillation Unit (fractionator) is limited to No Visible Emissions as per Polk County AQD Construction Permit # 2001. None would be expected, as this is a VOC only source. No additional monitoring warranted.
e. (EU 73 / EP 73), Butane Unloading and Blending Operations is limited to No Visible Emissions as per Polk County AQD Construction Permit # 2111 Modified

#3. None would be expected, as this is a VOC only source. No additional monitoring warranted.

f. (EU 74 / EP 74), Ethanol Rail Loading Rack limited to No Visible Emissions as per Polk County AQD Construction Permit # 2142. None would be expected, as this is a VOC only source. No additional monitoring warranted.
g. (EUs / EPs P1-P6), the six (6) portable emergency generators are limited to <20% opacity as per Polk County AQD Construction Permit # 3872.

Plant-Wide VOC/HAP Emission Estimations/Calculations:

Plant-Wide VOC and HAP Limits:
To ensure compliance with the plant-wide limits of 392.92 tons/yr of VOC, 9.4 tons/yr of SHAP, and 24.4 tpy of THAP, the facility is required to document the actual VOC and HAP emissions on a 12-month rolling basis, rolled monthly.

Methodology for VOC emissions (losses) are described below and the HAP emissions are calculated as percentages of the VOC emissions based on HAP component concentration sampling results. The methodology of converting the HAP sampling results in liquid phase to vapor phase is described below. The vapor phase HAP concentration can be used to calculate the HAP emissions as the percentages of the VOC emissions.

The facility HAP emissions shall not exceed 9.4 tons/yr for SHAP and 24.4 tons/yr for THAP from the significant units (those listed in the Equipment List of the permit). Total HAP potentials from the insignificant units (those listed in the Insignificant Equipment List) are 0.15 tons/yr. Therefore, plant-wide HAP emissions are ensured to below the major source HAP thresholds of 10 tons/yr for SHAP and 25 tons/yr for THAP.

VOC Emissions (Losses) Calculations:

- Truck Loading Rack (EP 1) is the largest source of potential emissions at the facility. AP-42 Chapter 5.2: Transportation and Marketing of Petroleum Liquids, Equation 1 was used to determine the emission factor to calculate the potential emissions for the transfer rack:

$$L_L = 12.46 \times \frac{SPM}{T}$$

Where:
L_L = loading loss factor (lb/1000-gal-loaded)
S = saturation factor (dimensionless)
P = true vapor pressure at the average loading temperature (psia)
M = vapor molecular weight (lb/lb-mol)
T = annual-average bulk storage temperature (°R) (°F + 460)
= 51.64 °F

The facility has indicated that the loading rack is vapor-balanced, therefore the S factor according to Table 5.2 is 1.00, regardless of submerged loading or splash loading. However, the facility has indicated that the unit is submerged loading. The true vapor

pressure and vapor molecular weight is dependent on material loaded. The temperature to be used in this equation is stated in the Title V permit, 51.64 °F.

The Vapor Recovery Unit (VRU) recovers VOC vapors and the Vapor Combustion Unit (VCU) combusts VOC vapors from the loading rack. The VCU shall only be used when the VRU is down for maintenance, repairs, and/or emergencies.

As described on Page 5.2-6 of AP-42, the vapor collection efficiency can be assumed to be 98.7% for tank trailers passing the leak test specified by the New Source Performance Standards (NSPS). Therefore, loading loss factor for uncaptured VOC is:

$$L_L(uncaptured) = L_L \times (1 - 0.987)$$

- Railcar Loading Rack (EP 56) potential emissions for the railcar loading rack are estimated assuming that all fuels loaded are diesel fuel. Potential VOC emissions are estimated using the loading-loss equation from AP-42, Section 5.2, as follows:

$$L_L = 12.46 \times \frac{SPM}{T}$$

Where:
L_L = loading loss factor (lb/1000-gal-loaded)
S = saturation factor (dimensionless)
P = true vapor pressure at the average loading temperature (psia)
M = vapor molecular weight (lb/lb-mol)
T = annual-average bulk storage temperature (°R) (°F + 460)

It is assumed that relative to actual process conditions, the calculated emission actor may have a 30% margin of error. Accounting for this assumption, the loading loss factor becomes:
HAP emissions from the railcar loading rack are estimated using the gasoline-vapor HAP concentrations used for the loading rack.
Ethanol is denatured with natural gasoline prior to loading into railcars. Potential emissions from loading ethanol and its denaturant are estimated using the loading-loss equation from AP-42, Section 5.2, as follows:

$$L_L = 12.46 \times \frac{SPM}{T}$$

Where:
L_L = loading loss factor (lb/1000-gal-loaded)
S = saturation factor (dimensionless)
P = true vapor pressure at the average loading temperature (psia)
M = vapor molecular weight (lb/lb-mol)
T = annual-average bulk storage temperature (°R) (°F + 460)
= 511.31 °R (51.64 °F)

- Bulk Storage Tanks VOC emissions from bulk storage tanks are estimated using TankESP and the following assumptions:
    - Gasoline has an annual average RVP of 13.0 psi.
    - All distillate fuels are jet kerosene.

- All fuel additives have the physical properties of jet naptha.

Emissions from all of the bulk storage tanks are based off annual turnovers of the thanks.

- Roof Landings emissions are calculated using the equations in AP-42 Chapter 7: Organic Liquid Storage Tanks, section 7.1.3.2.2 Roof Landings, which are as follows:

$$L_{TL} = L_{SL} + L_{FL}$$

Where:

L_{TL} = total losses during roof landings, lb per landing episode
L_{SL} = standing idle losses during roof landing, lb per landing episode
L_{FL} = filling losses during roof landing, lb per landing episode

The standing idle loss for an internal floating roof tank with a liquid heel is as follows:

$$L_{SL} = n_d K_E \left(\frac{PV_V}{RT}\right) M_V K_S$$

Where:

n_d = number of days that the tank stands idle
K_E = vapor space expansion factor (dimensionless)
P = true vapor pressure of the stock liquid (psia)
V_V = volume of the vapor space (ft^3)
R = ideal gas constant, 10.731 (psia-ft^3)(lb-mol °R)
T = temperature (°R)
M_V = stock vapor molecular weight (lb/lb-mol)
K_S = saturation factor (dimensionless)

The standing idle loss for an external floating roof tank with a liquid heel is as follows:

$$L_{SLwind} = 0.57 n_d D P^* M_V$$

Where:

L_{SLwind} = daily standing idle loss due to wind (lb per day)
n_d = number of days that the tank is standing idle (days)
D = tank diameter (ft)
P^* = a vapor pressure function (dimensionless)
M_V = stock vapor molecular weight (lb/lb-mol)

The filling losses for an internal floating roof tank with a liquid heel is listed below:

$$L_{FL} = \left(\frac{PV_V}{RT}\right) M_V S$$

Where:

P = true vapor pressure of the liquid within the tank (psia)
V_V = volume of the vapor space (ft^3)
R = ideal gas constant, 10.731 (psia-ft^3)(lb-mol °R)
T = average temperature of the vapor and liquid below the floating roof (°R)
M_V = stock vapor molecular weight (lb/lb-mol)
S = filling saturation factor (dimensionless)
= 0.60 for a full liquid heel
= 0.50 for a partial liquid heel

The filling losses for an external floating roof tank with a liquid heel is complex, and is listed in AP-42 Section 7.1.3.2.2 Roof Landings under equation 2-30.

The facility uses a calculation tool with the above parameters to determine the roof landing emissions.

- Fugitive emission estimates (EU 48 on the insignificant equipment list) from equipment in gasoline service are estimated using emission factors from Table 2-3 of *Protocol for Equipment Leak Estimates*, EPA-453/R-95-017 November 1995.

HAP Emissions Calculations:
HAP emissions due to handling gasoline (and other liquids) can be calculated based on VOC emissions and a weight percentage (in vapor phase) of the HAP component in the liquid. HAP vapor-phase concentration is calculated from the sampled HAP liquid-phase concentrations.

The facility sampled HAP concentrations in gasoline in 2017 and will be required to sample again when any new or previously un-sampled gasoline grade is loaded at the Truck Loading Rack (EU 1). Previously, the Title V had verbiage requiring the facility to sample for HAPs within 2 years of every Title V permit renewal. The purpose of this requirement was to ensure compliance with the plant-wide HAP limits (synthetic minor). The source of this requirement was not from a Polk County construction permit. The verbiage was based off that in construction permits for other Magellan facilities in Iowa (i.e., Coralville facility, #52-02-006; Sioux City facility, #97-01-118). The Coralville and Sioux City facilities' HAP requirements came from construction permits. As such, the 2 year requirement is attached to the construction permits for the aforementioned facilities, not the Title V permit renewals. With this in mind, the facility has requested to move to a modified sample plan that changes frequency from every time the Title V is renewed, to any time they introduce a new or previously un-sampled gasoline grade.

Iowa DNR/Polk County approved the following procedures to calculate the vapor-phase HAP concentration in gasoline (percent by weight) using the sampled liquid phase HAP concentration (percent by weight):

1. Sample the HAP content in liquid phase L_i (weight percent)
   For example, 2017 sampling shows gasoline in Tank 618 has 0.749% benzene, 7.758% n-hexane and 10.148% THAP.
2. Calculate liquid mol fraction of each HAP in gasoline $x_{i(liquid)}$

$$x_{i(liquid)} = \frac{L_i \rho_{liquid}}{M_i N_{liquid}}$$

Where:
ρ_{liquid} = liquid density
= 6 lb/gal for gasoline
M_i = HAP component's molecular weight
= 78.11 lb/lb-mol for benzene
= 86.17 lb/lb-mol for n-hexane
N_{liquid} = liquid's mols/gal

= 6 lb/gal gasoline (6 lb/gal / 92 lb/lb-mol = 0.0652 lb-mol/gal)

3. Calculate vapor pressure (VP_i) for each component based on Antoine's Coefficients in AP-42 Chapter 7.1

$$log_{10}VP_i = A - \frac{B}{C+T}$$

4. Calculate vapor mol fraction of each HAP x_i*(vapor)*

$$x_{i(vapor)} = \frac{x_{i(liquid)}VP_i}{VP_{liquid}}$$

Where:

VP_{liquid} = liquid total vapor pressure
= 5.7 psi for gasoline

5. Calculate weight percent (vapor phase) of each HAP W_i*(vapor)*

$$W_{i(vapor)} = \frac{x_{i(vapor)}M_i}{M_{liquid}}$$

Where:

M_{liquid} = liquid's vapor phase weight
= 62 lb/lb-mol for gasoline

6. Calculate emissions of each HAP and THAP emission is the sum of all single HAP emissions:

$$SHAP = W_{i(vapor)}VOC$$