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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3298
Plant ID No.:	103-00114
Applicant:	Tri-State Petroleum Corporation (Tri-State)
Facility Name:	Bulk Plant #302
Location:	98 South Main Street New Martinsville, Wetzel County, WV 26155
SIC Code:	5171 - Wholesale Trade - Nondurable Goods - Petroleum Bulk Stations & Terminals
NAICS Code:	424710 - Petroleum Bulk Stations and Terminals
Application Type:	Construction
Received Date:	February 16, 2016
Engineer Assigned:	John Legg
Fee Amount:	$1,000.00
Date Received:	February 17, 2016 (1st Application Submitted) June 9, 2016 (2nd Application Submitted)
Complete Date:	March 29, 2016 (Emailed Affidavit of 2nd Newspaper Publication Received at DAQ)
Due Date:	September 9, 2016 (Based on re-starting the clock on June 9, 2016)
Applicant Ad Date:	1st Ad - Date Unknown 2nd Ad - March 15, 2016
Newspaper:	1st Ad - Unknown 2nd Ad - *Charleston Gazette*
UTM's Coordinates:	Easting: 511.445 • Northing: 4,387.612 • Zone: 17N
Lat/Long Coordinates:	39.638215° Latitude • -80.866619 Longitude
Description:	Construction of a bulk petroleum fuel storage and transfer facility.

DESCRIPTION OF PROCESS

From permit application R13-3298, Attachment G:

Overview

Tri-State is a distributor of gasoline and diesel fuel. Gasoline and diesel (on-road and off-road) are delivered to three (3) Aboveground Storage Tanks (AST) at the site by fuel suppliers. Tri-State then loads the fuel to their own delivery service trucks and delivers the fuel to their customers. The fuel is then placed in the customers' fuel tanks for use on the customers' industrial properties.

Table 1: Tank Capacities and Fuels Stored at Tri-State's Bulk Plant #302, New Martinsville, WV.

Tank ID	Tank Storage Capacity (gallons)	Stored Fuel
TK1	12,000	Unleaded Gasoline
TK2	12,000	On-Road Diesel
TK3	15,000	Off-Road Diesel

Table 2: Emission Units Table (Attachment I in Permit Application R13-3298) for Tri-State's Bulk Plant #302, New Martinsville, WV..

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type and Date of Change	Control Device
TK1	TK1	Gasoline AST (Aboveground Storage Tank)	2015	12,000 gallon	November 2015	None
TK2	TK2	On-Road Diesel AST	2015	12,000 gallon	November 2015	None
TK3	TK3	Off-Road Diesel AST	2015	12,000 gallon	November 2015	None
LO	LO	Fuel Loadout	2015	Gravity Feed Only	November 2015	None
VA	VA	Vehicle Activity	2015	Not Applicable (NA)	NA	None
FL	FL	Fugitive Leaks	2015	NA	NA	None

Fuel Delivery & Unloading (to Tri-State Tanks)

Fuel is delivered in loads of up to 8,500 gallons of gasoline and 7,500 gallons for diesels. The delivery trucks pull onto the loading/unloading pad and connect to the tank fill lines. The delivery trucks use their own on-board pump to transfer the fuel to Tri-State's elevated tanks. There are no vapor return lines on any of the delivery trucks. Vapor is released as the tanks are filled. The maximum tank filling rate is 260 gallons per minute but can be slowed down by throttling the delivery truck pump.

Customer Fuel Loading (from Tri-State Tanks)

Fuel trucks which are being filled from Tri-State's tanks are filled by gravity flows. The horizontal storage tanks are elevated and slightly slanted to allow fuel flow from the tanks to the trucks. A submerged fill line is placed into the truck's tank to within six (6) inches of the bottom of the tank. The truck's tank is filled with the required quantity of fuel for delivery to the customer. Typically, loads range in size depending on the customer's needs. Truck's tank can hold from 2,720 to 4,200 gallons for diesel and 2,800 to 4,500 gallons for gasoline. While the truck's tank is being filled, the vapor is released from the fill port. The fuel flow is gravity flow and has been timed at approximately 50 gallons per minute; however, the flow may vary depending on conditions at the site.

Fuel Throughputs

The total yearly fuel throughput being requested is 500,000 gallons for gasoline, 750,000 gallons of on-road diesel, and 1,500,000 gallons of off-road diesel. Tri-State also requests a daily throughput limit on gasoline of less than 20,000 gallons per day to remove the applicability of 40CFR63, Subpart BBBBBB.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The writer reviewed Tri-State's emissions calculations in Attachment N of the application and found the calculations to be logical and correct.

Emissions were estimated from the tanks, truck loading, equipment leaks, and vehicle activity:

- Tank emissions of volatile organic compounds (VOC), including speciated emissions and hazardous air pollutants (HAPS), were estimated using Tanks 4.0.9.

- The vapor results from Tanks 4.0.9 have also been used to speciate the vapor emissions from truck loading and leak sources.

- AP-42, Section 5.2.2.1.1 was used to estimate VOC emissions from loading trucks.

- AP-42, Section 5, Protocol for Equipment Leaks Emission Estimates, Table 2-2 was used to estimate VOC emissions from leaks on the gasoline and diesel system based on source counts of the types of fittings. These VOC emissions were then speciated based on the vapor charateristics from the tank emissions estimates.

- Vehicle emissions for traveling on the roadway to deliver and remove fuel from the site are based on AP-42, Section 13.2.1 for paved roadways. The trucks travel approximately 160 feet on paved areas to deliver and remove the fuel. Ancillary vehicle activities, such as parking of trucks or other vehicles at the site for storage while not being used, have not been estimated.

Table 3: Estimated VOC and HAP Emissions from Tri-State's Bulk Plant #302, New Martinsville, WV.

Source	Tank Volume	Activity	Pollutant	Throughput (gpy)	Emissions	
					(lb/hr)	(ton/yr)
TK1	12,000	Gasoline Storage	VOC	500,000	75.61	1.97
			HAP Total		1.77	0.05
TK2	12,000	On-Road Diesel Storage	VOC	750,000	0.13	0.01
			HAP Total		0.01	0.001
TK3	12,000	Off-Road Diesel Storge	VOC	1,500,000	0.12	0.01
			HAP Total		0.01	0.001
GL	NA	Gasoline Loading	VOC	500,000	22.20	1.23
			HAP Total		0.52	0.03
DL	NA	Diesel Loading	VOC	2,250,00	0.05	0.02
			HAP Total		0.005	0.002
GF	NA	Gasoline Fugitive - Leaks	VOC	---	0.10	0.43
			HAP Total	---	0.003	0.01

Table 3: Estimated VOC and HAP Emissions from Tri-State's Bulk Plant #302, New Martinsville, WV.

Source	Tank Volume	Activity	Pollutant	Throughput (gpy)	Emissions	
					(lb/hr)	(ton/yr)
DF	NA	Diesel Fugitive -Leaks	VOC	---	0.01	0.04
			HAP Total	---	0.01	0.04
VOC & HAP Totals for Facility			VOC	---	98.22	3.71
			Benzene	---	0.52	0.02
			Cumene (Isopropyl Benzene)	---	0.01	0.000
			Ethyl Benzene	---	0.04	0.002
			Hexane	---	0.48	0.02
			Toluene	---	0.57	0.02
			Xylenes	---	0.17	0.001
			2,2,4 Trimethylpentane (isooctane)	---	0.54	0.02
			HAP Total	---	2.32	0.10

Table 4: Estimated Total Paved Roadway Emissions (Tank Trucks Delivering and Removing Fuel) for Tri-State's Bulk Plant #302, New Martinsville, WV.

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PM	0.036	0.008	0.036	0.008
PM10	0.008	0.002	0.008	0.002
PM2.5	0.003	0.002	0.003	0.002

MATERIAL SAFETY DATA SHEET (MSDS)

Attachment H of the permit application contained three (3) MSDSs for:

- Marathon Petroleum Regular Unleaded Gasoline
- Marathon No. 2 High Sulfur Fuel Oil Dyed 3000 ppm Sulfur Max (Fuel Oil No.2 Non-Road Use)
- Marathon No. 2 Ultra Low Sulfur Diesel 15 ppm Sulfur Max (Fuel Oil No.2 On-Road Use)

Gasoline: A complex combination of hydrocarbons consisting of parafins, cycloparaffins, aromatic and olefinic hydrocarbons having molecular chains ranging in length from 4 to 10 carbons. May contain small amounts of dye and other additives (> 0.02%) which are not considered hazardous at the concentration used.

Paraffin Hydrocarbon : Also called alkane, any of the saturated hydrocarbons having the general formula C_nH_{2n+2}, C being a carbon atom, H a hydrogen atom, and n an integer. The paraffins are major constituents of natural gas and petroleum. Paraffins containing fewer than 5 carbon atoms per molecule are usually gaseous at room temperature, those having 5 to 15 carbon atoms are usually liquids, and the straight-chain paraffins having more than 15 carbon atoms per molecule are solids. Branched-chain paraffins have a much higher octane number rating than straight-chain paraffins and, therefore, are the more desirable constituents of gasoline. The hydrocarbons are immiscible with water. All paraffins are colorless.

Cycloparaffins: A hydrocarbon with a molecule containing a ring of carbon atoms joined by single bonds.

Aromatic Hydrocarbons: Aromatic hydrocarbons, also called aromatic compounds, are compounds that contain benzene as a part of their structure. Benzene is a cyclic hydrocarbon with the formula C_6H_6.

Olefinic Hydrocarbons: The group of hydrocarbon compounds that has one or more double or triple bonds between carbon atoms in the linear chain. Ethylene, C_2H_4, is the smallest olefin.

No. 2 Fuel Oil/ Diesel: A complex mixture of parafins, cycloparaffins, olefins and aromatic hydrocarbons having molecular chains ranging in length from C11 through 20. May contain a trace amount of benzene (<0.01%). Can contain small amounts of dye and other additives (< 0.15%) which are not considered hazardous at the concentration used.

Reid vapor pressure (RVP) - Is a common measure of the volatility of gasoline. It is defined as the absolute vapor pressure exerted by a liquid at 100 °F (37.8 °C) as determined by the test method ASTM-D-323. The test method applies to vapor pressure of gasoline, volatile crude oil, and other volatile petroleum products, except liquefied petroleum gases. RVP is stated in units of psi but would be more correct to be stated as psig as ASTM-D-323 is measuring the gauge pressure of the sample in a non-evacuated chamber.

The matter of vapor pressure is important relating to the function and operation of gasoline powered, especially carbureted, vehicles. High levels of vaporization are desirable for winter starting and operation and lower levels are desirable in avoiding vapor lock during summer heat. Fuel cannot be pumped when there is vapor in the fuel line (summer) and winter starting will be more difficult when liquid gasoline in the combustion chambers has not vaporized. Thus, oil refineries manipulate the Reid Vapor Pressure seasonally specifically to maintain gasoline engine reliability.

The Reid vapor pressure (RVP) differs slightly from the true vapor pressure (TVP) of a liquid due to small sample vaporization and the presence of water vapor and air in the confined space of the test equipment. That is, the RVP is the absolute vapor pressure and the TVP is the partial vapor pressure.

SITE INSPECTION

The writer did not inspect Tri-State's Bulk Plant #302, located in New Martinsville, WV facility. Although Tri-State did not have a Rule 13 permit before the submission of this permit application (R13-3298), the facility had been inspected numerous times in the past by the Division of Air Quality (DAQ).

The facility was last inspected on November 17, 2015 by Doug Hammell who give the facility the in-compliance code of 30. It was noted during the inspection that Steel City, a contractor, was replacing the old vertical tanks with three new horizontal tanks at the time of the inspection.

Directions as provided in the permit application (page 2) are as follows:

From the intersection of State Route 2 and State Route 7 proceed approximately 0.10 miles north and turn left on Harlan Drive. Travel approximately 0.5 miles on Harlan Drive to the intersection of Harlan Drive and Main Street where site is located.

REGULATORY APPLICABILITY

Applicable Rules

The following state and federal rules were reviewed and are thought to be applicable to Tri-State Petroleum's proposed bulk gasoline storage facility:

45CSR4: To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors.

No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to objectionable odor at any location occupied by the public.

Tri-State handles gasoline and diesel fuel that have objectionable odors if not handled correctly.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation.

The proposed facility submitted a permit application on 2/17/16 and re-submitted an extensively revised application on 6/9/16. The second application was deemed to be complete on the date it was submitted. The company paid an $1,000.00 application fee which was received on 2/18/16 and ran two legal advertisements in the newspaper (1st ad - date and newspaper unknown; 2nd - 3/15/16 in the Charleston Gazette). The newspaper affidavit of publication for the 2nd advertisement was submitted to the DAQ on 3/29/16.

45CSR22: Air Quality Management Fees Program.

The facility was deemed to be a non-major source. The Fee Classification was identified as being: 6D - Petroleum Storage and Distribution.

Rules Thought Not to be Applicable

The following state regulations were reviewed are thought **not to be applicable** to the proposed facility:

45CSR16: Standards for Performance for New Stationary Sources.

40CFR60 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.

All three of the proposed storage tanks are less than 19,811 gallons each (75 cubic meters) and therefore are not subject to 40CFR60 Subpart Kb.

45CSR30: Requirements for Operating Permits.

Criteria pollutants are well below the 100 tpy limit per individual criteria pollutants that triggers Title V. HAP emissions are well below the 10 tpy limit for individual HAP emissions and 25 tpy limit for aggregated HAP emissions limit that triggers Title V.

45CSR34: Standards for Hazardous Air Pollutants.

40CFR63, Subpart BBBBBB - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities.

The State of West Virginia did not take delegation of this subpart. The facility needs to work with the USEPA to determine if this subpart is applicable to their facility.

Tri-State voluntarily limited gasoline throughput for gasoline storage tank TK1 to less than 20,000 gallons per day to insure that 40 CFR 63, Subpart BBBBBB does not apply.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Gasoline and diesel fuel are stored and transferred by the facility. These fuels contain numerous Hazardous Air Pollutants (HAP) as can be seen below in Table 5. Total HAPs emissions from the facility, however, are estimated to be quite small, only 0.10 ton/yr.

Gasoline Composition Information

Name	CAS Number	HAP?	Weight %
Gasoline	86200-81-5	No	100
Toluene	108-88-3	Yes	1 - 15
Xylene (mixed isomers)	1330-20-7	Yes	2 - 10
1,2,4-Trimethylbenzene	95-63-6	No	1 - 5
Benzene	71-43-2	Yes	0.5 - 3.5
n-Hexane	110-54-3	Yes	0 - 3
Ethylbenzene	100-41-4	Yes	0.5 - 2.0
Naphthalene	91-20-3	Yes	0.1 - 0.5

AIR QUALITY IMPACT ANALYSIS

Tri-State's New Martinsville, WV facility is considered to be an non-major source. No impact analysis study was conducted for the source.

MONITORING OF OPERATIONS

The following requirements related to monitoring and record-keeping are contained in permit R13-3298:

4.1.1. Storage tank throughputs shall not exceed the following limitations:

Emission Unit ID	Material (Fuel) Stored in Tank	Tank Capacity (gallons)	Throughput* (gal/yr)
TK1	Gasoline	12,000	500,000
TK2	On-Road Diesel	12,000	750,000
TK3	Off-Road Diesel	15,000	1,500,000

* Based on a rolling 12-month total.

4.1.2. Gasoline throughput for Storage Tank TK1 shall be less than 20,000 gallons per day.

4.4.4. The permittee shall maintain a certified record of the throughput of each tank for which throughput limits were established in section 4.1.1 (gasoline and diesel; annual throughput) and section 4.1.2 (gasoline; daily throughput) of this permit. This record shall be maintained on site for a period of not less than five (5) years and certified by a Responsible Official. This data shall be submitted to the Secretary of the Division of Air Quality (DAQ) or his/her duly authorized representative upon request.

4.4.5. *Reserved*

4.4.6. For all fuel shipments to or from the facility, the permittee shall document for the record any and all piping connection, valve, seal, etc. leaks between the tank truck and fuel storage tank.

The above records are to be maintained on site for a period of not less than five (5) years and certified by a Responsible Official. This data shall be submitted to the Secretary of the DAQ or his/her duly authorized representative upon request.

4.4.7. The permittee shall keep a log giving the date, time and subject matter of all maintenance work performed at the facility specifically related to the bulk storage and loadout operations.

The above log shall be maintained on site for a period of not less than five (5) years and certified by a Responsible Official. This data shall be submitted to the Secretary of the DAQ or his/her duly authorized representative upon request.

RECOMMENDATION TO DIRECTOR

Tri-State's request for an air permit for the construction and operation of a gasoline and diesel fuel storage and transfer facility (Bulk Plant #302) located at 98 South Main Street, New Martinsville, WV meets the requirements of all applicable rules and therefore should be granted said construction permit (R13-3298).

John C Legg

John Legg
Permit Writer

June 29, 2016

June 29, 2016