PROPOSED

PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT NO. 0066-03-C
Permit Renewal Application No. 0066-09

Applicant: Tesoro Hawaii, LLC
Facility: Hilo Terminal No. 3
Located At: 607 Kalanianaole Avenue Hilo, Hawaii

***Mailing Address:** 431 Kuwili Street, 2nd Floor
Honolulu, Hawaii 96817

Coordinates: UTM: 284239 meters East and 2182881 meters North (load rack)

Equipment:

a. 420,000 gallon internal floating roof Tank No. 3708, with primary seal and optional secondary seal;
b. 420,000 gallon internal floating roof Tank No. 4279, with primary seal and optional secondary seal;
c. 1,680,000 gallon internal floating roof Tank No. 4298, with primary seal and optional secondary seal;
d. 159,600 gallon internal floating roof Tank No. 4299, with primary seal and optional secondary seal;
e. Bottom loading load rack with two (2) loading stations and four (4) total combined load arms;
f. John Zink vapor collection system with 3,600 gallon per minute vapor recovery unit, model no. MR-2x184DT, job no. 99145.

Responsible Official: Mr. Wade K. Nakashima
Title: Manager, Supply and Distribution Hawaii
Phone: (808) 547-3830
Address: *See Above

Contact:	Mr. Jack Clayton	**Contact:**	Ms. Rose Chu
Title:	Hilo Terminal Supervisor	**Title:**	Environmental Compliance Administrator
Phone:	(808) 961-3177	**Phone:**	(808) 547-3817
Address:	607 Kalanianaole Avenue Hilo, Hawaii 96720	**Address:**	*See Above

1. Background.

1.1 Tesoro Hawaii, LLC has submitted a permit application to renew its covered source permit for Hilo Terminal No. 3 for operating a tank farm and loading rack. The load rack uses a vapor recovery system to control volatile organic compounds (VOCs) when loading tank truck cargo tanks. Load rack throughput is limited to 210,240,000 gallons per year. The applicant does not propose any changes to the load rack's throughput limit. The standard industrial classification code for this facility is 5171 (Petroleum Bulk Stations and Terminals).

1.2 Tesoro requested that this terminal be designated Hilo Terminal No. 3 instead of Hilo Terminal No. 2. Tesoro owns three distribution facilities in the same vicinity that are described as follows:

a. Hilo Terminal No. 3 at 607 Kalanianaole Avenue is currently in operation under CSP No. 0066-03-C. Tesoro bought an old Tosco terminal at this site and renovated the terminal to distribute naphtha in 1998. The Tosco terminal was permitted under NSP No. 0075-01-N which has been closed.
b. Hilo Terminal No. 2 at 595 Kalanianaole Avenue is not in operation. Tesoro was going to modify this terminal to build Hilo Terminal No. 3, however, decided to renovate the old Tosco terminal instead. Hilo Petroleum Terminal No. 2 is not in operation. The terminal was permitted under NSP No. 0066-01-N which has been closed.
c. Hilo Terminal No. 1 at 701 Kalanianaole Avenue handles jet and diesel fuel. This terminal is exempt from permit requirements because the fuels distributed at the facility are low vapor pressure fuels. An air permit exemption for this terminal was granted by the Clean Air Branch (CAB) in 1997.

1.3 Permitted Tanks at the facility are listed as follows:

Tank No.	Capacity (gallons)	Type
3708	420,000	internal floating roof with primary seal and optional secondary seal
4279	420,000	internal floating roof with primary seal and optional secondary seal
4298	1,680,000	internal floating roof with primary seal and optional secondary seal
4299	159,600	internal floating roof with primary seal and optional secondary seal

1.4 There are three (3) tanks that are out of service that are listed as follows:

Tank No.	Capacity (gallons)	Capacity (barrels)	Type
2727	390,600	9,300	vertical fixed roof
3119	42,000	1,000	vertical fixed roof
3738	1,050,000	25,000	vertical fixed roof

2. Applicable Requirements

2.1 Hawaii Administrative Rules (HAR)

Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1, Air Pollution Control
Subchapter 1, General Requirements
Subchapter 2, General Prohibitions
§11-60.1-31 Applicability
§11-60.1-31 Storage of Volatile Organic Compounds
§11-60.1-41 Pump and Compressor Requirements
Subchapter 5, Covered Sources
Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
§11-60.1-111 Definitions
§11-60.1-112 General Fee Provisions for Covered Sources
§11-60.1-113 Application Fees for Covered Sources

§11-60.1-114 Annual Fees for Covered Sources
§11-60.1-115 Basis of Annual Fees for Covered Sources
Subchapter 8, New Source Performance Standards
§11-60.1-161 New Source Performance Standards

2.2 40 Code of Federal Regulations (CFR), Part 60 – New Source Performance Standards (NSPS), 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 is applicable to Tank Nos. 3708, 4279, 4298, and 4299 . Subpart Kb is applicable because these tanks were reconstructed after 1984, are greater than 151 m^3 (greater than 40,000 gallons), and will be storing product with a true vapor pressure greater than 0.507 psi (e.g., naphtha, gasoline, and ethanol).

2.3 40 CFR, Part 60 – NSPS, Subpart XX, Standards of Performance for Bulk Gasoline Terminals is applicable to Hilo Terminal 3 because the bottom loading load rack was constructed after December 17, 1980.

2.4 40 CFR Part 63, Subpart BBBBBB – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities is applicable because the facility's gasoline throughput is greater than 20,000 gallons per day. The average daily product throughput at the facility for 2008 and 2009 was 73,066 gallons and 64,957 gallons for 2008 and 2009, respectively. Pursuant to 40 CFR §63.11087(f) gasoline storage tanks are in compliance with Subpart BBBBBB because all permitted tanks are subject to 40 CFR Part 60, Subpart Kb. Also, the facility is designated a bulk gasoline terminal because the gasoline throughput is greater than 20,000 gallons per day.

2.5 The Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the facility do not exceed reporting levels pursuant to 40 CFR 51 (see table below).

CERR APPLICABILITY			
Pollutant	**Emissions (TPY)**	**CERR Triggering Levels (TPY)**	
		1 year cycle (Type A sources)	**3 year cycle (Type B sources)**
VOC	66.5	≥ 250	≥ 100

2.6 A best available control technology analysis (BACT) analysis is required for new sources or modifications to existing sources that would result in a significant emissions increase as defined in HAR, Section 11-60.1. There are no changes proposed for the permit renewal that increase emissions. As such, BACT is not applicable.

2.7 The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are greater than the major source level; and (5) not otherwise be exempt from CAM. Although the load rack relies on a vapor recovery unit to achieve compliance with the federal VOC standard required by 40 CFR, Subpart XX and has potential pre-control emissions greater than the

major source level for VOCs, CAM is not applicable to the load rack because the terminal is not a major source.

2.8 Prevention of significant deterioration (PSD) does not apply because emissions from the terminal are less than major source thresholds as defined in HAR Subchapter 7, Prevention of Significant Deterioration Review.

2.9 The facility is a synthetic minor source because the throughput limitation of 210,240,000 gallons per year based on loading an 8,000 gallon tank truck every twenty (20) minutes restricts emissions to below major source thresholds. Maximum capacity of the terminal is 3,600 gallons per minute based on the capacity of the vapor recovery system (1,892,160,000 gallons/year).

3. Insignificant Activities

3.1 The terminal has the following insignificant activities:

a. Oil water separator with 300 gallon skimmed oil tank and 300 gallon skimmed water tank qualifies for an insignificant activity pursuant to HAR §11-60.1-82(f)(7).
b. A 1,000 gallon waste-water storage tank is exempt pursuant to HAR §11-60.1-82(f)(7).

4. Alternate Operating Scenarios

4.1 No alternate operating scenarios were proposed for the permit renewal.

5. Project Emissions

5.1 Potential emissions from the bottom loading load rack with vapor recovery were based on the following:

a. Maximum permitted throughput of 5,005,714 bbls/yr (210,240,000 gal/yr) based on loading an 8,000 gallon tank truck every twenty (20) minutes;
b. Loading of naphtha into tank trucks as worst-case scenario;
c. Maximum VOC emission of thirty-five (35) mg per liter of product loaded based on federal standard for total organic compounds (TOCs);
d. A VOC emission factor of eight (8) mg/liter for leakage from tank truck when loading tank trucks based on a November 7, 2001 memo regarding EPA Emission Factors for Tank Truck Loading;
e. Vapor mass fractions of pollutants for naphtha were multiplied by the total VOC emissions to determine HAP emissions; and
f. Potential VOC/HAP emissions are summarized as follows:

Bottom Loading Load Rack Emissions		
Pollutant	**Vapor Mass Fraction**	**Emission (TPY)**
VOC	----------	37.7[a]
Benzene	0.0172	0.648
Ethyl benzene	0.0024	0.090
Hexane	0.1224	4.614
Toluene	0.0440	1.659
Xylene (-m)	0.0012	0.045
Xylene (-p,-o)	0.0010	0.038
Total HAPs-----→		7.1

a: VOC emission from VRU:

(35 mg/liter)(210,240,000 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 30.724 TPY

b: VOC emission from VRU:

(8 mg/liter)(210,240,000 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 7.023 TPY

5.2 Internal floating roof tank emissions were determined with EPA's Tanks program. Emissions were based on a total combined gasoline throughput for the tanks of 365,005,704 gallons per year. The gasoline throughput was assumed to be approximately 91,250,000 gallons for each of the four tanks. The applicant assumed that each tank stored gasoline with a Reid vapor pressure of 11 psi as worst-case scenario. Vapor mass fractions of pollutants from data for gasoline were multiplied by the total VOC emission to determine HAP emissions. Potential VOC/HAP emissions are summarized as follows:

Internal Floating Roof Tank Emissions						
Pollutant	**Vapor Mass Fraction**	**Emission (TPY)**				**Total Average Emissions (TPY)**
		Tank 3708	**Tank 4279**	**Tank 4298**	**Tank 4299**	
VOC	----------	7.33	6.02	10.58	4.84	28.8
Benzene	0.0172					0.495
Ethyl benzene	0.0024					0.069
Hexane	0.1224					3.525
Toluene	0.0440					1.267
Xylene (-m)	0.0012					0.035
Xylene (-o,-p)	0.0010					0.029
Total HAPs--------→						5.4

5.3 Equipment leaks emissions were determined based on New Equipment Leak Emission Factors for Petroleum Refineries, Gasoline Marketing, and Oil & Gas Production, February1995 [EPA-453/R-95-017], Table 2.3. Emission factors were selected from the light liquid group for pump seals, valves, and connectors. The number of pumps, valves, and connectors were based on information from a previous permit application review. Vapor weight fractions of pollutants from data for gasoline were multiplied by the total VOC emissions to determine HAP emissions. Emission estimates are summarized below as follows:

Equipment Leak Emissions					
Pollutant	**Vapor Mass Fraction**	**Emission (TPY)**			**Total Emissions**
		[a]Pump Seals	**[b]Valves**	**[c]Connectors**	
VOC	------	0.021	0.015	0.006	0.042
Benzene	0.0172				0.00072
Ethyl benzene	0.0024				0.00010
Hexane	0.1224				0.00514
Toluene	0.0440				0.00185
Xylene (-m)	0.0012				0.00005
Xylene (-o, -p)	0.0010				0.00004
				Total HAPs---------→	0.008

a: (4 pump seals)(5.4E-04 kg/hr – seal)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.021 TPY VOC
b: (37 valves)(4.3E-05 kg/hr – valve)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.015 TPY VOC
c: (88 connectors)(8.0E-06 kg/hr – connector)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.006 TPY VOC

5.4 Worst-case yearly emissions of VOCs and HAPs from Hilo Petroleum Terminal No. 3 are as follows:

Facility Emissions				
Pollutant	**Emissions (TPY)**			**Total Emissions (TPY)**
	Bottom Loading Load Rack	**Internal Floating Roof Tanks**	**Equipment Leaks**	
VOCs	37.7	28.8	0.04	66.5
HAPS	7.1	5.4	0.008	12.5

6. Air Pollution Controls

6.1 Emissions from the loading rack are controlled by a model no. MR-2x184DT John Zink vapor recovery unit. The system has two activated carbon vessels that recover hydrocarbon vapors from loading truck cargo tanks. The carbon adsorption vessels alternate in operation every fifteen (15) minutes. Vapors from loading cargo tanks are recovered, condensed, and pumped back to the product supply tank.

6.2 Tank Nos. 3708, 4279, 4298, and 4299 require internal floating roofs and tank seal systems to control VOC and HAP emissions from storing gasoline as worst-case scenario.

7. Air Quality Assessment

7.1 An ambient air quality impact assessment is not required for the terminal because air modeling is not required for VOCs.

8. Significant Permit Conditions

8.1 The maximum product throughput of the bottom loading load rack shall not exceed 210,240,000 gallons per rolling twelve-month (12-month) period.

Reason for 8.1: This condition is based on the throughput limit proposed by the applicant for operating the load rack.

8.2 Specify 40 CFR Part 60, Subpart XX and 40 CFR Part 60, Subpart BBBB requirements for the terminal which include:

a. 35 mg/l total organic compound (TOC) limit in Subpart XX for the load rack;
b. 250,000 gallon per day loading threshold for gasoline that will trigger Option 1 of Table 2 in Subpart BBBBBB if the gasoline loading threshold is exceeded;
c. Submerged fill pipe requirement from Subpart BBBBBB of no more than six (6) inches from the bottom of a cargo tank; and
d. Leak inspection and repair from Subpart BBBBBB for equipment in gasoline service.

Reason for 8.2: Incorporate pursuant to Paragraphs 2.3 and 2.4 of the permit application review.

8.3 Tanks greater than 40,000 gallons in capacity storing VOL with a true vapor pressure equal to or greater than 1.5 psia (e.g., transmix, denatured ethanol, naphtha, aviation gasoline, motor gasoline, etc.) shall be either pressurized to prevent vapor or gas loss to the atmosphere or designed and equipped with one of the following vapor loss control devices:

a. A floating roof as specified in HAR §11-60.1-39 (a)(1);
b. A vapor recovery system as specified in HAR §11-60.1-39 (a)(2); or
c. Other equipment or means of equal efficiency for purposes of air pollution control as may be approved by the Department of Health.

Reason for 8.8: The condition was incorporated to ensure tanks greater than 40,000 gallons in capacity are equipped with adequate controls to prevent vapor losses to the atmosphere. Available information from monitoring reports for other terminals (see permit application review 0078-05 for Chevron) indicate true vapor pressures above 1.5 psia for denatured ethanol (2.20 – 2.57 psia), transmix (6.66 -8.33 psia), naphtha (4.09 – 4.75 psia), and gasoline (6.45 -8.21 psia).

9. Conclusions and Recommendation

9.1 Actual emissions should be less than those estimated for this facility because the terminal does not operate on a continuous basis. The terminal is equipped with a vapor recovery unit to control VOC emissions from the load rack. Permitted tanks at the facility will use

internal floating roofs and tank seal systems to reduce VOC emissions from storing gasoline as worst-case scenario. Recommend issuance of the permit subject to incorporation of the significant permit conditions. The thirty-day (30-day) public comment period and forty-five-day (45-day) review by the Environmental Protection Agency will be initiated simultaneously.

Mike Madsen 10-17-2012