

**STATE OF WASHINGTON**  
**ENERGY FACILITY SITING EVALUATION COUNCIL (EFSEC)**



**PERMIT XX-XXXX**

**Final Date: XXXX XX, XXXX**

Facility Name: Tesoro Savage Vancouver Energy Distribution Terminal

Physical Location: 5501 NW Old Lower River Road, Vancouver, WA 98660

PRELIMINARY DRAFT

**ENERGY FACILITY SITE EVALUATION COUNCIL**  
**1300 South Evergreen Park Drive SW**  
**PO Box 43172**  
**Olympia, WA 98504-3172**  
**Telephone: (360) 664-1345**

AIR OPERATING PERMIT #: EFSEC #XXXX

EFSEC Application No. 2013-0  
Docket: EF-131590

APPLICANT NAME:  
Tesoro Savage Petroleum Terminal, LLC (Vancouver Energy)

APPLICANT ADDRESS:  
110 Columbia Blvd, Vancouver, WA 98660

Contact Representative: Kelly Flint, Senior Vice President and Corporate Counsel

NATURE OF PROCESS: Petroleum Bulk Stations and Terminals

SIC/NAICS: 5171/424710

FACILITY CLASSIFICATION: Natural Minor

SWCAA #: XXX

EFFECTIVE DATE: <date>

EXPIRATION DATE: <date>

RENEWAL APPLICATION DUE: <date>

PERMIT ENGINEER:

\_\_\_\_\_  
Wess Safford – SWCAA

\_\_\_\_\_  
Date

REVIEWED BY:

\_\_\_\_\_  
Stephen Posner- EFSEC Manager

\_\_\_\_\_  
Date

APPROVED BY:

\_\_\_\_\_  
William L. Lynch- EFSEC Chair

\_\_\_\_\_  
Date

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## 1. Equipment/Activity Identification

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
1	Unloading Boiler #1 (Cleaver Brooks – 61.745 MMBtu/hr)	1	Low Sulfur Fuel (natural gas) Ultra-low NO <sub>x</sub> Burner	N/A
2	Unloading Boiler #2 (Cleaver Brooks – 61.745 MMBtu/hr)	1	Low Sulfur Fuel (natural gas) Ultra-low NO <sub>x</sub> Burner	N/A
3	Unloading Boiler #3 (Cleaver Brooks – 61.745 MMBtu/hr)	1	Low Sulfur Fuel (natural gas) Ultra-low NO <sub>x</sub> Burner	N/A
4	Storage Tank #1	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
5	Storage Tank #2	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
6	Storage Tank #3	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
7	Storage Tank #4	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
8	Storage Tank #5	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
9	Storage Tank #6	1	Internal Floating Roof (Mechanical Shoe / Rim Seal)	N/A
10	Marine Loading Rack	1	Submerged Fill, Vapor Capture, Vapor Combustion Units	8
11	Fire Pump #1 (TBD – ≤ 225 hp)	1	Ultra-low Sulfur Diesel 40 CFR 60, Subpart IIII	N/A
12	Fire Pump #2 (TBD – ≤ 225 hp)	1	Ultra-low Sulfur Diesel 40 CFR 60, Subpart IIII	N/A
13	Fire Pump #3 (TBD – ≤ 225 hp)	1	Ultra-low Sulfur Diesel 40 CFR 60, Subpart IIII	N/A

## 2. Approval Conditions

The following tables detail the specific requirements of this permit. In addition to the requirements listed below, equipment at this facility may be subject to other federal, state, and local regulations. The permit requirement number is identified in the left hand column. The text of the permit requirement is contained in the middle column. The emission unit, equipment, or activity to which the permit requirement applies is listed in the right hand column.

**2.1 Emission Limits**

No.	Emission Limits	Equipment/ Activity										
1.	<p>Visible emissions shall not exceed the values listed below for more than 3 minutes in any one hour period as determined by a Certified Observer in accordance with Ecology Method 9.</p> <table data-bbox="250 369 974 512"> <thead> <tr> <th><u>Emission Unit</u></th> <th><u>Opacity Limit</u></th> </tr> </thead> <tbody> <tr> <td>Diesel engine exhaust</td> <td>5% (regular operation) 20% (cold start-up)</td> </tr> <tr> <td>All other equipment</td> <td>0%</td> </tr> </tbody> </table> <p>A cold start-up period is defined as the time it takes the engine to attain normal operating temperature or 15 minutes from start-up, whichever is less.</p>	<u>Emission Unit</u>	<u>Opacity Limit</u>	Diesel engine exhaust	5% (regular operation) 20% (cold start-up)	All other equipment	0%	1-13				
<u>Emission Unit</u>	<u>Opacity Limit</u>											
Diesel engine exhaust	5% (regular operation) 20% (cold start-up)											
All other equipment	0%											
2.	<p>Combined emissions from the Unloading Boilers shall not exceed the following:</p> <table data-bbox="250 680 1023 861"> <thead> <tr> <th><u>Pollutant</u></th> <th><u>Emission Limit</u></th> </tr> </thead> <tbody> <tr> <td>NO<sub>x</sub></td> <td>4.16 tpy, 9 ppmv @ 3% O<sub>2</sub>, 1-hr avg</td> </tr> <tr> <td>CO</td> <td>13.60 tpy, 50 ppmv @ 3% O<sub>2</sub>, 1-hr avg</td> </tr> <tr> <td>VOC</td> <td>1.88 tpy</td> </tr> <tr> <td>PM<sub>10</sub></td> <td>2.84 tpy</td> </tr> </tbody> </table> <p>Annual emissions shall be calculated from actual fuel consumption and applicable emission factors. NO<sub>x</sub> and CO calculations shall use data from the most recent emission test, if available. Calculations for all other pollutants shall use emission factors from Section 6 of the Technical Support Document for this Permit.</p>	<u>Pollutant</u>	<u>Emission Limit</u>	NO <sub>x</sub>	4.16 tpy, 9 ppmv @ 3% O <sub>2</sub> , 1-hr avg	CO	13.60 tpy, 50 ppmv @ 3% O <sub>2</sub> , 1-hr avg	VOC	1.88 tpy	PM <sub>10</sub>	2.84 tpy	1-3
<u>Pollutant</u>	<u>Emission Limit</u>											
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VOC	1.88 tpy											
PM <sub>10</sub>	2.84 tpy											
3.	<p>Combined VOC emissions from storage tank operation shall not exceed 23.32 tpy.</p> <p>Annual emissions shall be calculated from actual material throughput and number of tank degassing events using the methodology outlined in Section 6 of the Technical Support Document for this Permit.</p>	4-9										
4.	<p>Fugitive emissions from marine vessel loading operations shall not exceed the following:</p> <table data-bbox="250 1289 760 1356"> <thead> <tr> <th><u>Pollutant</u></th> <th><u>Emission Limit</u></th> </tr> </thead> <tbody> <tr> <td>VOC</td> <td>4.25 tpy, 2.1 lb/hr</td> </tr> </tbody> </table> <p>Annual emissions shall be calculated from actual fuel consumption and material throughput using the methodology outlined in Section 6 of the Technical Support Document for this Permit.</p>	<u>Pollutant</u>	<u>Emission Limit</u>	VOC	4.25 tpy, 2.1 lb/hr	10						
<u>Pollutant</u>	<u>Emission Limit</u>											
VOC	4.25 tpy, 2.1 lb/hr											
5.	<p>Combined emissions from marine vapor combustion units shall not exceed the following:</p> <table data-bbox="250 1591 1055 1772"> <thead> <tr> <th><u>Pollutant</u></th> <th><u>Emission Limit</u></th> </tr> </thead> <tbody> <tr> <td>NO<sub>x</sub></td> <td>8.04 tpy, 4.0 lb/hr</td> </tr> <tr> <td>CO</td> <td>3.49 tpy, 1.8 lb/hr</td> </tr> <tr> <td>VOC</td> <td>7.72 tpy, 0.0031 mg/L product transferred</td> </tr> <tr> <td>PM<sub>10</sub></td> <td>2.62 tpy</td> </tr> </tbody> </table> <p>Annual emissions shall be calculated from actual fuel consumption and material throughput using the methodology outlined in Section 6 of the Technical Support Document for this Permit.</p>	<u>Pollutant</u>	<u>Emission Limit</u>	NO <sub>x</sub>	8.04 tpy, 4.0 lb/hr	CO	3.49 tpy, 1.8 lb/hr	VOC	7.72 tpy, 0.0031 mg/L product transferred	PM <sub>10</sub>	2.62 tpy	10
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PM <sub>10</sub>	2.62 tpy											

No.	Emission Limits	Equipment/ Activity										
6.	<p>VOC emissions from fugitive component leaks shall not exceed 0.83 tpy.</p> <p>Annual emissions shall be calculated from the number of components in service and the duration of service using the methodology outlined in Section 6 of the Technical Support Document for this Permit.</p>	4-10										
7.	<p>Combined emissions from the operation of emergency fire pumps shall not exceed the following:</p> <table border="0" data-bbox="245 491 727 667"> <thead> <tr> <th><u>Pollutant</u></th> <th><u>Emission Limit</u></th> </tr> </thead> <tbody> <tr> <td>NO<sub>x</sub></td> <td>0.006 tpy</td> </tr> <tr> <td>CO</td> <td>0.03 tpy</td> </tr> <tr> <td>VOC</td> <td>0.006 tpy</td> </tr> <tr> <td>PM<sub>10</sub></td> <td>0.003 tpy</td> </tr> </tbody> </table> <p>Annual emissions shall be calculated from actual hours of operation using the methodology outlined in Section 6 of the Technical Support Document for this Permit.</p>	<u>Pollutant</u>	<u>Emission Limit</u>	NO <sub>x</sub>	0.006 tpy	CO	0.03 tpy	VOC	0.006 tpy	PM <sub>10</sub>	0.003 tpy	11-13
<u>Pollutant</u>	<u>Emission Limit</u>											
NO <sub>x</sub>	0.006 tpy											
CO	0.03 tpy											
VOC	0.006 tpy											
PM <sub>10</sub>	0.003 tpy											

## 2.2 Operating Limits and Requirements

No.	Operating Limits and Requirements	Equipment/ Activity
8.	Reasonable precautions shall be taken at all times to prevent and minimize fugitive emissions from plant operations.	Facilitywide
9.	Operations that cause or contribute to a nuisance odor shall use recognized good practice and procedures to reduce these odors to a reasonable minimum.	Facilitywide
10.	Emission units identified in this Permit shall be maintained and operated in total and continuous conformity with the conditions identified in this Permit. EFSEC reserves the right to take any and all appropriate action to maintain the conditions of this Permit, including directing the facility to cease operations until corrective action can be completed.	1-13
11.	Process boilers shall only be fired on natural gas.	1-3
12.	Corrective action shall be taken within three days of emission monitoring if monitoring results indicate emissions in excess of applicable emission concentration limits. Corrective action includes, but is not limited to, maintenance activity and retesting with a reference method pursuant to Appendix A of this Permit. Corrective action shall be pursued until emission concentrations are demonstrated to be in compliance with applicable limits.	1-3
13.	Exhaust stacks on each emission unit shall be discharged vertically above the roof level of the building or enclosure in which the particular emission unit is housed. Any device that obstructs or prevents vertical discharge is prohibited.	1-3, 10-13
14.	The monthly average true vapor pressure of product stored in each storage tank shall not exceed 11.0 psi.	4-9
15.	Product with a true vapor pressure greater than 4.5 psi shall not be heated while in storage.	4-9

No.	Operating Limits and Requirements	Equipment/ Activity
16.	<p>When any tank is degassed, the vapor space of the tank shall be vented to a control device consistent with the requirements of BACT. Prior to degassing, the Permittee shall submit a Best Available Control Technology (BACT) analysis to EFSEC. EFSEC will issue a letter to the Permittee establishing emission control standards and limits in response to the Permittee's BACT analysis. The Permittee shall comply with the limitations established in EFSEC's letter.</p> <p>The vapor space of the tank shall be vented to the approved control device until the volatile organic concentration within the tank is reduced to less than 5,000 parts per million, measured as methane, for at least one hour after degassing operations have ceased</p>	4-9
17.	Crude oil throughput shall not exceed 131,400,000 barrels per year.	4-10
18.	A leak detection and repair (LDAR) program meeting the requirements of 40 CFR 63 Subpart H shall be implemented for all equipment and/or components that handle crude oil.	4-10
19.	All product loading shall be performed using submerged or bottom loading configurations.	10
20.	All product loading shall cease if visible liquid leaks are observed.	10
21.	All displaced headspace vapors from marine vessel loading operations shall be captured and routed to the vapor combustion system at all times during active loading operations.	10
22.	The marine vessel vapor capture system shall be maintained and operated to achieve a minimum capture efficiency of 99.89%.	10
23.	Vapor combustion units shall only use natural gas for assist/pilot gas.	10
24.	The combustion temperature of each vapor combustion unit in use shall be maintained at 1,400°F or greater at all times during active loading operations.	10
25.	Marine tank vessel loading shall only be performed in marine tank vessels with a valid vapor tightness certification within the preceding 12-month using the vapor tightness test in 40 CFR 63.565(c) and documentation in 40 CFR 63.567(i). Vessels without a valid vapor tightness certification may demonstrate "no detectable emissions" using EPA Method 21 or other methods approved in writing by EFSEC.	10
26.	Operation of each emergency fire pump for the purposes of testing and readiness checks shall not exceed 34 hr/yr. A nonresettable time totalizer shall be installed and used to measure hours of operation.	11-13
27.	Diesel engines powering the emergency fire pumps shall only be fired on #2 diesel or better. The sulfur content of the fuel fired in the diesel engine shall not exceed 0.0015% by weight (15 ppm). A fuel certification from the fuel supplier may be used to demonstrate compliance with this requirement.	11-13
28.	Diesel engines powering the emergency fire pumps shall be new, 40 CFR 60 Subpart III compliant units.	11-13





No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity														
40.	A visual inspection of product piping and vapor lines associated with loading operations at the marine dock shall be performed every two hours during marine vessel loading and offloading. The inspection shall verify that there are no visible signs, odors or sounds indicating a product leak.	10														
41.	Marine tank vessel transfer operations shall be monitored and recorded as follows: <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">a) Date of each loading event</td> <td>Recorded for each occurrence</td> </tr> <tr> <td>b) Vessel name, registry and legal owner</td> <td>Recorded for each vessel</td> </tr> <tr> <td>c) Quantity of crude oil loaded</td> <td>Recorded for each vessel</td> </tr> <tr> <td>d) Duration of loading operations</td> <td>Recorded for each vessel</td> </tr> <tr> <td>e) Visual inspection results</td> <td>Recorded for each occurrence</td> </tr> <tr> <td>f) Description of observed leaks</td> <td>Recorded for each occurrence</td> </tr> <tr> <td>g) Leak repair actions</td> <td>Recorded for each occurrence</td> </tr> </table>	a) Date of each loading event	Recorded for each occurrence	b) Vessel name, registry and legal owner	Recorded for each vessel	c) Quantity of crude oil loaded	Recorded for each vessel	d) Duration of loading operations	Recorded for each vessel	e) Visual inspection results	Recorded for each occurrence	f) Description of observed leaks	Recorded for each occurrence	g) Leak repair actions	Recorded for each occurrence	10
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e) Visual inspection results	Recorded for each occurrence															
f) Description of observed leaks	Recorded for each occurrence															
g) Leak repair actions	Recorded for each occurrence															
42.	Emergency fire pump operation shall be monitored and recorded as follows: <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">a) Hours and purpose of operation</td> <td>Recorded monthly</td> </tr> <tr> <td>b) Fuel sulfur certification</td> <td>Recorded for each fuel delivery</td> </tr> <tr> <td>c) Equipment repair and maintenance activity</td> <td>Recorded for each occurrence</td> </tr> </table>	a) Hours and purpose of operation	Recorded monthly	b) Fuel sulfur certification	Recorded for each fuel delivery	c) Equipment repair and maintenance activity	Recorded for each occurrence	11-13								
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b) Fuel sulfur certification	Recorded for each fuel delivery															
c) Equipment repair and maintenance activity	Recorded for each occurrence															

#### 2.4 Emission Monitoring and Testing Requirements

No.	Emission Monitoring and Testing Requirements	Equipment/ Activity
43.	Each process boiler shall be emission tested within 90 days of commencing regular operation. Subsequent emission testing shall be conducted every five years thereafter, no later than the end of the month in which initial testing was performed. Emission testing shall be performed in accordance with Appendix A of this Permit.	1-3
44.	Each process boiler shall be emission monitored annually. Emission monitoring is not required during any year in which emission testing of the boiler has been performed. Emission monitoring shall be performed in accordance with Appendix B of this Permit.	1-3
45.	Each vapor combustion unit shall be emission tested within 90 days of commencing regular operation. Subsequent emission testing shall be conducted annually thereafter, no later than the end of the month in which initial testing was performed. Emission testing shall be performed in accordance with Appendix C of this Permit.	10
46.	The marine vessel vapor capture system shall be emission tested within 90 days of commencing regular operation. Subsequent emission testing shall be conducted annually thereafter, no later than the end of the month in which initial testing was performed. Emission testing shall be performed in accordance with Appendix D of this Permit.	10

**2.5 Reporting Requirements**

No.	Reporting Requirements	Equipment/ Activity
47.	An annual emissions inventory report shall be submitted in accordance with WAC 173-400-105(1). In addition to the emissions information required under WAC 173-400-105(1), each annual report shall include an estimate of annual emission quantities for each TAP compound listed in the Technical Support Document for this Permit.	1-13
48.	Excess emissions shall be reported to EFSEC as follows: <ul style="list-style-type: none"> <li>• As soon as possible, but no later than 12 hours after discovery for emissions that represent a potential threat to human health or safety;</li> <li>• As soon as possible, but no later than 48 hours after discovery for emissions which the permittee wishes to claim as unavoidable pursuant to WAC 173-400-107; and</li> <li>• No later than 30 days after the end of the month of discovery for all other excess emissions.</li> </ul>	1-13
49.	Emission test results shall be reported to EFSEC in writing and in electronic format within 45 days of test completion unless a written extension is approved by EFSEC in advance.	1-3, 10
50.	Emission monitoring results shall be reported to EFSEC in writing within 15 days of completion unless a written extension is approved by EFSEC in advance.	1-3
51.	All landings of internal floating roofs shall be reported to EFSEC via telephone within 24-hours of the landing.	4-9
52.	EFSEC shall be notified in writing at least 30 days prior to the filling or re-filling of each tank as required by 40 CFR 60.113b(a)(5).	4-9
53.	The following operational data shall be reported to EFSEC in writing by March 15 for the preceding calendar year: <ol style="list-style-type: none"> <li>a) Process boiler fuel consumption;</li> <li>b) Quantity of natural gas combusted in vapor combustion units;</li> <li>c) Quantity of crude oil loaded to vessels;</li> <li>d) Duration of loading operations;</li> <li>e) Number of storage tank degassing events;</li> <li>f) Hours of emergency fire pump operation; and</li> <li>g) Air emissions during the reporting period.</li> </ol>	1-13
54.	Initial start-up of approved equipment shall be reported to EFSEC via letter within 10 days of occurrence.	1-13

**3. General Provisions**

No.	General Provisions
A.	For the purpose of ensuring compliance with this Permit, the permittee shall comply with provisions under EFSEC WAC 463-78-100 for Registration with EFSEC.
B.	The permittee shall pay costs as are actually and necessarily incurred by EFSEC, in accordance with RCW 80.50.071, for program development, monitoring, compliance, and administration of the air operating permit program.

No.	General Provisions
C.	For the purpose of ensuring compliance with this Permit, duly authorized representatives of the Southwest Clean Air Agency shall be permitted access to the permittee's premises and the facilities being constructed, owned, operated and/or maintained by the permittee for the purpose of inspecting said facilities. These inspections are required to determine the status of compliance with this Permit and applicable regulations and to perform or require such tests as may be deemed necessary.
D.	The provisions, terms and conditions of this Permit shall be deemed to bind the permittee, its officers, directors, agents, servants, employees, successors and assigns, and all persons, firms, and corporations acting under or for the permittee.
E.	The requirements of this Permit shall survive any transfer of ownership of the source or any portion thereof.
F.	This Permit shall be posted conspicuously at or be readily available near the source.
G.	This Permit shall be invalid if construction/installation has not commenced within eighteen months from date of issuance.
H.	This Permit does not supersede requirements of other Agencies with jurisdiction and further, this Permit does not relieve the permittee of any requirements of any other governmental Agency. In addition to this Permit, the permittee may be required to obtain permits or approvals from other agencies with jurisdiction.
I.	If any provision of this Permit is held to be invalid, all unaffected provisions of the Permit shall remain in effect and be enforceable.
J.	EFSEC may, in accordance with RCW 70.94 and RCW 80.50 impose such conditions as are reasonably necessary to assure the maintenance of compliance with the terms of this Permit, the Washington Clean Air Act, and the applicable rules and regulations adopted under the Washington Clean Air Act.

**Permit XX-XXXX - Appendix A**  
**Emission Testing Requirements**  
**Process Boilers**

**1. Introduction:**

The purpose of this testing is to quantify emissions from each process boiler and demonstrate compliance with the requirements of this Permit and applicable air quality regulations.

**2. Testing Requirements:**

- a. **Test plan.** A comprehensive test plan shall be submitted to EFSEC for review and approval at least 10 business days prior to each test. EFSEC personnel shall be informed at least 5 business days prior to testing so that a representative may be present during testing.
- b. **Testing schedule.** Testing shall be conducted at each boiler exhaust stack within 90 days of commencing regular operation and every 5 years thereafter, no later than the end of the month in which initial testing was performed.
- c. **Test runs/Reference test methods.** A minimum of 3 test runs shall be performed for each constituent listed below to ensure the data are representative. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods and/or schedule are approved in writing by EFSEC in advance of the emission testing.

<u>Constituent</u>	<u>Reference Test Method</u>	<u>Minimum Test Run Duration</u>
Flow rate, temperature	EPA Methods 1 and 2	N/A
O <sub>2</sub> , CO <sub>2</sub> content	EPA Method 3 or 3A	60 minutes
Moisture content	EPA Method 4	60 minutes
NO <sub>x</sub>	EPA Method 7E	60 minutes
CO	EPA Method 10	60 minutes

**3. Source Operation:**

- a. **Source operations.** Source operations during the emissions test must be representative of maximum intended operating conditions.
- b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. All recorded production parameters shall be documented in the test results report. Recorded parameters shall, at a minimum, include:
  - (1) Boiler fuel consumption rate (MMBtu/hr),
  - (2) Process startups and shutdowns, and
  - (3) Plant adjustments.

**Permit XX-XXXX - Appendix A**  
**Emission Testing Requirements**  
**Process Boilers**

**4. Reporting Requirements:**

- a. A final emission test report (both hardcopy and electronic) shall be prepared and submitted to EFSEC within 45 calendar days of test completion and, at a minimum, shall contain the following information:
- (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
  - (2) Time and date of the test and identification and qualifications of the personnel involved,
  - (3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
  - (4) Summary of control system or equipment operating conditions,
  - (5) Summary of production related parameters,
  - (6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
  - (7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
  - (8) Copies of field data and example calculations,
  - (9) Chain of custody information,
  - (10) Calibration documentation,
  - (11) Discussion of any abnormalities associated with the results, and
  - (12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.
- b. All test results shall be corrected to 3% oxygen.

**Permit XX-XXXX - Appendix B**  
**Emission Monitoring Requirements**  
**Process Boilers**

**1. Introduction:**

- a. The purpose of periodically monitoring boiler exhaust is to minimize emissions and provide a reasonable assurance that the boilers are operating properly.
- b. Periodic monitoring may be conducted with an electrochemical cell combustion analyzer, analyzers used for reference method testing, or other analyzers pre-approved by EFSEC.

**2. Monitoring Procedure:**

- a. Monitoring of boiler exhaust gases to determine emission concentrations of the following constituents shall be conducted annually. Monitoring is not required during any year in which emission testing has been performed pursuant to Appendix A.

Constituents to be Measured

Carbon Monoxide (CO)  
Nitrogen Oxides (NO<sub>x</sub>)  
Oxygen (O<sub>2</sub>)

- b. Source operation during testing must be representative of maximum intended operating conditions during that year.
- c. Records kept during boiler monitoring shall at a minimum include the following:
  - (1) Boiler fuel consumption rate (MMBtu/hr),
  - (2) Process startups and shutdowns, and
  - (3) Plant adjustments.
- d. Alternative testing methodologies must be pre-approved by EFSEC.

**3. Minimum Quality Assurance/Quality Control Measures:**

- a. The analyzer(s) response to span gas of a known concentration shall be determined before and after testing. No more than 12 hours may elapse between span gas response checks. The results of the analyzer response shall not be valid if the pre and post response check results vary by more than 10% of the known span gas value.
- b. The CO and NO<sub>x</sub> span gas concentrations shall be no less than 50% and no more than 200% of the emission concentration corresponding to the permitted emission limit. Ambient air may be used to zero the CO and NO<sub>x</sub> cells/analyzer(s) and span the oxygen cell/analyzer.

**Permit XX-XXXX - Appendix B**  
**Emission Monitoring Requirements**  
**Process Boilers**

**3. Minimum Quality Assurance/Quality Control Measures (con't):**

- c. Sampling shall consist of at least 1 test consisting of at least 5 minutes of data collection following a "ramp-up phase." The "ramp-up phase" ends when analyzer readings have stabilized (less than 5% per minute change in emission concentration). Emission concentrations shall be recorded at least once every 30 seconds during the data collection phase. All test data collected following the ramp-up phase(s) shall be reported to EFSEC.

**4. Reporting:**

- a. All monitoring results shall be recorded at the facility and reported to EFSEC in writing within 15 calendar days of completion. The following information shall be included in the report:
  - (1) Time and date of the performance monitoring;
  - (2) Identification of the personnel involved;
  - (3) A summary of results, reported in units consistent with the applicable emission standard or limit;
  - (4) A summary of equipment operating conditions including a) boiler fuel consumption rate (MMBtu/hr) or natural gas flow rate (scf/hr), b) process startups and shutdowns, and c) plant adjustments;
  - (5) A description of the evaluation methods or procedures used including all field data, quality assurance/quality control procedures and documentation; and
  - (6) Analyzer response check documentation.
- b. Reported monitoring results shall be corrected to 3% O<sub>2</sub> in the exhaust gas and corrected for the analyzer response to zero and span gas.



**Permit XX-XXXX - Appendix C**  
**Emission Testing Requirements**  
**Vapor Combustion Units**

**1. Introduction:**

- a. **Purpose.** The purpose of this testing is to quantify emissions from each vapor combustion unit, and demonstrate compliance with the requirements of this Permit and applicable air quality regulations.

**2. Monitoring Procedure:**

- a. **Test plan.** A comprehensive test plan shall be submitted to EFSEC for review and approval at least 10 business days prior to each test. EFSEC personnel shall be informed at least 5 business days prior to testing so that a representative may be present during testing.
- b. **Testing schedule.** Testing of the vapor combustion units shall be conducted within 90 days of commencing regular operation, and annually thereafter no later than the end of the month in which initial testing was performed.
- c. **Test runs/Reference test methods.** A minimum of 3 test runs shall be performed at the inlet and outlet of each vapor combustion unit for each constituent listed below to ensure the data are representative. Compliance shall be determined based on the average of individual sampling runs at each testing location. The sampling methods identified below shall be used unless alternate methods and/or schedule are approved in writing by EFSEC in advance of the emission testing.

<u>Constituent</u>	<u>Reference Test Method</u>
Flow rate, temperature	EPA Methods 1 and 2
O <sub>2</sub> , CO <sub>2</sub> content	EPA Method 3 or 3A
Moisture content	EPA Method 4
NO <sub>x</sub>	EPA Method 7E
CO	EPA Method 10
VOC	EPA Method 25A

**3. Source Operation:**

- a. **Source operations.** Source operations during the emissions test must be representative of maximum intended operating conditions.
- b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. Recorded parameters shall, at a minimum, include the following:
  - (1) Crude oil loading rate,
  - (2) Volume of crude oil transferred,
  - (3) Vapor combustion unit combustion temperature, and
  - (4) Process startups and shutdowns.

**Permit XX-XXXX - Appendix C**  
**Emission Testing Requirements**  
**Vapor Combustion Units**

**4. Reporting Requirements:**

- a. **Test Result Units.** Results shall be reported in units of ppmv, lb/hr and mg/L of product transferred.
- b. **Test Report.** A final emission test report (both hardcopy and electronic) shall be prepared and submitted to EFSEC within 45 calendar days of test completion and, at a minimum, shall contain the following information:
- (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
  - (2) Time and date of the test and identification and qualifications of the personnel involved,
  - (3) Summary of results, reported in units and averaging periods consistent with applicable emission standards or units,
  - (4) VOC destruction efficiency for each vapor combustion unit,
  - (5) Summary of control system or equipment operating conditions,
  - (6) Summary of production related parameters,
  - (7) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
  - (8) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
  - (9) Copies of field data and example calculations,
  - (10) Chain of custody information,
  - (11) Calibration documentation,
  - (12) Discussion of any abnormalities associated with the results, and
  - (13) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.
- c. **Test Result Correction.** All test results shall be corrected to 18% oxygen.

**Permit XX-XXXX - Appendix D**  
**Emission Testing Requirements**  
**Marine Vessel Vapor Capture System**

**1. Introduction:**

- a. **Purpose.** The purpose of this testing is to quantify fugitive emissions from the marine vessel vapor capture system, and demonstrate compliance with the requirements of this Permit and applicable air quality regulations.

**2. Monitoring Procedure:**

- a. **Test plan.** A comprehensive test plan shall be submitted to EFSEC for review and approval at least 15 business days prior to each test. EFSEC personnel shall be informed at least 5 business days prior to testing so that a representative may be present during testing.
- b. **Testing schedule.** Testing of the marine vessel vapor capture system shall be conducted within 90 days of commencing regular operation, and annually thereafter no later than the end of the month in which initial testing was performed.
- c. **Test runs/Test methods.** Emission testing shall be conducted over a period of approximately six hours as close to the end of the marine vessel loading process as practical. All testing shall be performed in accordance with the attached "*Testing Protocol for the Direct Measurement of Uncollected Volatile Organic Compound (VOC) Loading Losses During Marine Vessel Loading*".

**3. Source Operation:**

- a. **Source operations.** Source operations during the emissions test must be representative of maximum intended operating conditions.
- b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing as specified in the attached testing protocol.

**4. Reporting Requirements:**

- a. **Test Result Units.** Fugitive emission results shall be reported in units of L/min, lb/1000 gal of product transferred, and percent vapor capture efficiency.

**Permit XX-XXXX - Appendix D**  
**Emission Testing Requirements**  
**Marine Vessel Vapor Capture System**

**4. Reporting Requirements (con't):**

- b. **Test Report.** A final emission test report (both hardcopy and electronic) shall be prepared and submitted to EFSEC within 45 calendar days of test completion and, at a minimum, shall contain the following information:
- (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
  - (2) Time and date of the test and identification and qualifications of the personnel involved,
  - (3) Summary of results, reported in units and averaging periods consistent with applicable emission standards or units,
  - (4) Vapor capture system capture efficiency,
  - (5) Summary of control system or equipment operating conditions,
  - (6) Summary of production related parameters,
  - (7) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
  - (8) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
  - (9) Copies of field data and example calculations,
  - (10) Chain of custody information,
  - (11) Calibration documentation,
  - (12) Discussion of any abnormalities associated with the results, and
  - (13) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

**Testing Protocol for the Direct Measurement of  
Uncollected Volatile Organic Compound (VOC) Loading Losses During  
Marine Vessel Loading**

**Tesoro Savage  
Vancouver Energy Distribution Terminal**

*(Attached)*