July 7, 2010

Mr. Don Sorensen, Refinery Manager
Tesoro Refining and Marketing Company
10200 West March Point Road
P. O. Box 700
Anacortes, WA 98221

Dear Mr. Sorensen:

Regional Haze Best Available Retrofit Technology (BART) Determination

Best Available Retrofit Technology (BART) is required to reduce the regional haze impacts of emissions of your facility. The enclosed Order #7838 contains our BART determination for your facility including a schedule for compliance.

If you have questions or requests relating to this order, please contact Alan Newman at (360) 407-6810 or alan.newman@ecy.wa.gov.

Sincerely,

Jeff Johnston, Ph.D.
Manager, Science and Engineering Section
Air Quality Program

cc: Toby Allen, NWCAA
Alan Newman, Ecology
Rebecca Spurling, Tesoro Refining and Marketing
STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN
ADMINISTRATIVE ORDER AGAINST:

Tesoro Refining and Marketing Co.

ORDER NO. 7838

TO: Mr. Don Sorensen, Refinery Manager
Tesoro Refining and Marketing Company
10200 West March Point Road
P. O. Box 700
Anacortes, WA 98221

This is an Administrative Order requiring your company to comply with WAC 173-400-151 by taking the actions which are described below. Chapter 70.94 RCW authorizes the Washington State Department of Ecology’s Air Quality Program (Ecology) to issue Administrative Orders to require compliance with the requirements of Chapter 70.94 RCW and regulations issued to implement it.

Ecology has determined that portions of your facility are subject to the provisions of the federal and state visibility protection program (WAC 173-400-151 and 40 CFR Part 51, Subpart P). The rules require that the State determine what technologies and level of emission control constitutes Best Available Retrofit Technology (BART) for the eligible emission units at your facility. The rules also require the installation and use of those emission controls on the BART-eligible emission units. The emission controls are to be installed as expeditiously as possible, but in no event can the State allow them to start operation later than five years after the State’s Regional Haze SIP amendment is approved by the United States Environmental Protection Agency (EPA).

FINDINGS

The Tesoro Refining and Marketing Company operate an oil refinery on March Point in Washington State that contains emission units that are subject to BART.

A. The BART-eligible emission units at the Tesoro refinery are:

a. Process heaters and boilers

   1. F-103, Crude Oil Distillation
   2. F-104, Gasoline Splitter/Reboiler
   3. F-304, CO Boiler #2
   4. F-654, Catalytic Feed Hydrotreater
   5. F-6600, Naphtha Hydrotreater
6. F-6601, Naphtha Hydrotreater
7. F-6602, Naphtha Hydrotreater
8. F-6650, Catalytic Reformer
9. F-6651, Catalytic Reformer
10. F-6652, Catalytic Reformer
11. F-6653, Catalytic Reformer
12. F-6654, Catalytic Reformer
13. F-6655, Catalytic Reformer

b. Other units

1. X-819, Flare
2. CWT #2, Cooling Water Tower
3. CWT #2a, Cooling Water Tower

B. BART emission limitations for the BART-eligible emission units are based on usage of the following technologies or a combination of technologies:

a. Use of existing burners on Units F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F6654, F-6655, and X-819.

b. Restricted use of fuel oil in Unit F-103 and use of ultra-low-NOₓ burners.

c. Use of existing burners for control of nitrogen oxides on Unit F-304.

d. Use of the existing Flue Gas Scrubber (FGS) to control sulfur dioxide (SO₂) and particulate matter emissions from Unit F-304.

e. Continued use of the current, upgraded refinery fuel gas sulfur treatment system for control of sulfur dioxide emissions from all process heaters and boilers fueled with refinery fuel gas.

f. Continued operation of CWT #2 and #2a as currently permitted.

Unit F-304, CO Boiler #2, exhausts to the same particulate and SO₂ emission control device (the Flue Gas Scrubber) with Unit F-302, CO Boiler #1. Currently installed emissions monitoring devices monitor the emissions of the Flue Gas Scrubber. Tesoro proposed and Ecology has accepted continuation of monitoring the emissions from the Flue Gas Scrubber for compliance with the BART limitation for particulate and SO₂ from Unit F-304.

YOU ARE ORDERED: To install and operate emission control equipment in accordance with the following conditions:

BART EMISSION LIMITATIONS

1. Particulate Matter Emissions

1.1. Unit F-304 shall meet the following emission limitation:

1.1.1. Particulate matter less than 10 micron in diameter (PM$_{10}$) emitted from the Flue Gas Stack shall not exceed 0.11 grains/dscf, 1-hour average, corrected to seven percent oxygen, and

1.1.2. 1.0 lb PM/1000 lb coke burnt off in the Catalyst Regenerator.

1.2. For Units F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F6654, F-6655, and X-819, (all other BART-eligible units), emissions shall not exceed 0.05 grain/dscf (0.11 g/m$^3$), 1-hour average, corrected to seven percent oxygen.

1.3. For Unit F-103, particulate matter emissions shall not exceed 0.05 grain/dscf (0.11 g/m$^3$), 1-hour average, (corrected to seven percent oxygen), except when burning fuel oil as allowed by Condition 3.1. When burning fuel oil, particulate emissions shall not exceed 0.10 grain/dscf, 1-hour average, corrected to seven percent oxygen.

1.4. For Units CWT #2 and #2a, particulate matter emissions shall not exceed 0.10 grain/dscf (0.23 g/m3), 1-hour average.

1.5. Compliance with the particulate emission limits above will be determined as follows:

1.5.1. For Unit F-304

1.5.1.1. Compliance will be demonstrated through use and continuous operation of the Flue Gas Scrubber as described in the unit's Operation and
Maintenance Manual, including all unit start-up, shutdown, and malfunction procedures.

1.5.1.2. Compliance with Condition 1.1.1 will be determined upon request of NWCAA or Ecology for emissions testing using EPA methods in 40 CFR Part 60 Appendix A. Particulate testing will use EPA Methods 5 and 202.

1.5.1.3. Compliance with Condition 1.1.2 will be determined upon request of NWCAA or Ecology for emissions testing using EPA methods in 40 CFR Part 60 Appendix A. Particulate testing will use EPA Method 5B.

1.5.2. For Unit F-103, when burning oil, visually observe stacks on a daily basis to qualitatively assess whether emissions are visible. The frequency may be reduced to weekly if no visible emissions are observed for 30 consecutive days. Tesoro shall revert to daily observations of individual stacks if any visible emissions are noted during the observation.

1.5.3. For Unit F-103, when burning fuel gas and for Units F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F6654, F-6655, X-819 when burning gaseous fuels, visually observe stacks monthly to qualitatively assess whether emissions are visible. The frequency may be reduced to quarterly if no visible emissions are observed for six consecutive months. Tesoro shall revert to monthly observations of individual stacks if any visible emissions are noted during the observation.

1.5.4. If visible emissions are observed from Units F-103, F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F-6654, F-6655, or X-819, reduce emissions to zero as soon as possible. If emissions cannot be reduced to zero, the permittee may monitor by Ecology Method 9A no later than 24 hours after detection and daily thereafter until opacity is shown to be less than 20 percent or the permittee will conduct a Method 5 assessment within 30 days.

1.5.5. Keep records of all observations available for inspection.

1.5.6. For Units F-103, F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F6654, and F-6655, and upon request of NWCAA or Ecology compliance with Condition 1.2 and 1.3 will be determined using EPA methods in 40 CFR Part 60 Appendix A. Particulate testing will use EPA Methods 5.
2. Nitrogen Dioxide Emissions

2.1. Unit F-103

2.1.1. Starting no later than the date in Condition 5, emissions of nitrogen dioxide from Unit F-103 is limited to:

2.1.1.1. 59.1 tons/yr, rolling annual (365 days) total calculated daily.

2.1.2. Compliance will be determined by use of a continuous emission monitoring system meeting the criteria of Condition 9.3 or a source-specific emission factor developed and periodically revised per Conditions 9.4 and 9.5.

2.1.3. Emissions testing utilizing EPA Reference Method 7E will be performed within 180 days of the start of operation of the NOX control system.

2.2. Units F-104, F-304, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F-6654, F-6655, X-819

2.2.1. No nitrogen dioxide emission limitations are applicable to these units.

3. Sulfur Dioxide Emissions

3.1. Unit F-103

3.1.1. Starting no later than the date in Condition 5, Unit F-103 is to be fired by refinery fuel gas meeting the requirements of Condition 3.4 below, or natural gas. Fuel oil may be used when the conditions in Condition 3.1.2 are met.

3.1.2. Fuel oil may be used only in the following circumstances:

3.1.2.1. Curtailment of natural gas supply, or

3.1.2.2. Periods with limited refinery fuel gas availability such as start-up and shutdown of major refinery process units, while major refinery process units are not operating and producing refinery gas, and emergency conditions as necessary to maintain safe operations or equipment shutdown, or

3.1.2.3. Test firing on fuel oil is allowed for up to 24 hours per calendar year.
3.2. Unit F-304

3.2.1. Starting no later than the date in Condition 5, emissions of sulfur dioxide in the stack from the Flue Gas Scrubber treating the exhaust from Units F-304 and F-302 is to meet the following:

3.2.1.1. Not exceed, 25 ppmv (dry basis, 0% O₂, 365-day rolling average), or

3.2.1.2. 50 ppmv (dry basis, 0% O₂, 7-day rolling average).

3.2.1.3. Compliance to be demonstrated by a continuous emissions monitor meeting the criteria of Condition 8.1.

3.2.1.4. Bypassing of the Flue Gas Scrubber

3.2.1.4.1. Bypassing of the Flue Gas Scrubber is to be minimized.

3.2.1.4.2. Sulfur dioxide emission when the Flue Gas Scrubber is bypassed shall not exceed 1000 ppmvd, 1-hour average, corrected to seven percent oxygen. Compliance with the 1000 ppmvd limitation must be demonstrated by use of a continuous emissions monitor or mass balance calculation. The mass balance calculation must assume all sulfur entering Units F-302 and F-304 (CO Boilers #1 and #2) is oxidized to SO₂ and discharged to the atmosphere unless demonstrated otherwise by process data and/or analytical methods at representative operating conditions.

3.2.1.4.3. Records and data used to determine compliance with this provision shall be kept for at least five years and made available to NWCAA or Ecology on request.

3.2.1.4.4. Sulfur dioxide emissions during bypass of the Flue Gas Scrubber shall be minimized to the extent reasonably practicable by methods such as FCCU feed rate reduction, FCCU feed sulfur content reduction, catalyst utilization, and/or other actions. These procedures are to be incorporated into the FCCU operations and maintenance procedures.

3.2.1.4.5. Records must be taken during each Flue Gas Scrubber bypass event. The records shall contain the date and time of the beginning and end of the bypass event, all actions taken to reduce SO₂
emissions during the bypass, all actions required to restart the Flue Gas Scrubber and end bypassing. The record may take the form of a checklist. Records of each bypass event shall be retained at the facility for at least five years and be made available to NWCAA or Ecology upon request.

3.3. Units F-104, F-654, F-6600, F-6601, F-6602, F-6650, F-6651, F-6652, F-6653, F-6654, F-6655

3.3.1. Starting no later than the date in Condition 5, these units shall only fire refinery gas meeting the criteria in Condition 3.4 or natural gas.

3.4. Refinery fuel gas requirements

3.4.1. Refinery fuel gas from blend drum V-213 shall not contain greater than 0.10 percent by volume H₂S, 365-day rolling average, measured according to Condition 8.3 of this order.

3.4.2. Bypass of acid gas from the amine regenerator C-1120 system away from the normal processing flow to General Chemical shall be recorded and reported the NWCAA (i.e., any period that PC5265A is opened). A root-cause analysis shall be conducted and recorded for any bypass event.

SCHEDULE FOR COMPLIANCE

4. Particulate Matter Emissions

4.1. For all units, compliance with the emission limitations is required on the issuance date of this Order.

5. Schedule for Compliance with Sulfur Dioxide Emissions Limitation

5.1. For all units, compliance with the emission limitations is required on the issuance date of this Order.

6. Schedule for Compliance with Nitrogen Dioxide Emissions Limitations

6.1. Compliance with the nitrogen dioxide emission limitation for Unit F-103 is to be achieved as follows:
6.1.1. Submittal of Notice of Construction application to NWCAA for the installation of NO\textsubscript{x} controls on Unit F-103 no later than June 30, 2014. The facility may submit a request for an extension to Ecology no later than 90 days prior to this date. Ecology will respond to the facility in writing whether it will accept or deny the extension request.

6.1.2. Start of construction for installation of ultra-low-NO\textsubscript{x} burners in Unit F-103, no later than March 1, 2015. The facility may submit a request for an extension to Ecology no later than 90 days prior to this date. Ecology will respond to the facility in writing whether it will accept or deny the extension request.

6.1.3. Start operation of emission controls installed to meet the NO\textsubscript{x} emission limitation no later than September 30, 2015. The facility may submit a request for an extension to Ecology no later than 90 days prior to this date. Ecology will respond to the facility in writing whether it will accept or deny the extension request.

6.1.4. Compliance with the 365-day rolling average emission limit begins on the 365th day after the date the emission controls start operation unless the criteria of Condition 14 are invoked.

**MONITORING AND RECORDKEEPING REQUIREMENTS**

7. Particulate Matter (PM\textsubscript{10})

7.1. For Unit F-304, Flue Gas Scrubber Stack

7.1.1. Particulate emissions stack test results shall be submitted to NWCAA and Ecology upon request.

7.1.2. Emissions testing shall use EPA Methods 5 and 202 to demonstrate compliance with Condition 1.1.1.

7.1.3. Emissions testing shall use the procedures of 40 CFR 63.1564(c) and 63.1572 to demonstrate compliance with Condition 1.1.2.

7.1.4. Visual emissions monitoring data shall be recorded and retained at the facility available for review by NWCAA or Ecology inspectors.

7.1.5. Visible emissions observation records are to be retained at the facility for at least five years.
7.2. For all other BART-eligible emission units

7.2.1. Particulate emissions stack test results shall be submitted to NWCAA and Ecology upon request.

7.2.2. Emissions testing shall use EPA Method 5.

7.2.3. Visual emissions monitoring data shall be recorded and retained at the facility available for review by the NWCAA or Ecology inspectors.

7.2.4. Visible emissions observation records are to be retained at the facility for at least five years.

8. Sulfur Dioxide

8.1. Unit F-103

8.1.1. A record of all hours of operation using fuel oil shall be kept. The record shall record the day and time of the start of use of fuel oil, the day and time fuel oil use ends, and the reason fuel oil is used.

8.1.2. The records are to be retained at the facility for at least five years and be made available to NWCAA or Ecology upon request.

8.2. Unit F-304

8.2.1. A continuous emission monitor system (CEM) shall be installed, calibrated, maintained, and operated to measure oxygen and SO₂ concentrations in the Flue Gas Scrubber stack.

8.2.2. The monitors shall meet the more stringent of the specifications of 40 CFR Part 60 Appendices B and F, or the NWCAA Regulation 367 and Appendix A.

8.2.3. SO₂ emissions data from the CEM shall be maintained as calendar day average concentrations (ppmdv). The daily averages shall be used to calculate and record 7-day and 365-day rolling averages. The daily average SO₂ concentrations and calculations of the 7-day and 365-day averages shall be retained at the facility for at least five years and made available to NWCAA or Ecology on request.
8.3. Refinery fuel gas system

8.3.1. A continuous emissions monitoring system (CEMS) for hydrogen sulfide concentration shall be installed, calibrated, maintained, and operated measuring the outlet stream of the fuel gas blend drum subsequent to all unmonitored incoming sources of sulfur compounds to the system and prior to any fuel gas combustion device. The monitor shall be certified in accordance with 40 CFR Part 60 Appendix B and operated in accordance with 40 CFR Part 60 Appendix F and the NWCAA Regulation 367 and Appendix A.

8.3.2. Record the calendar day average H₂S concentration of the refinery fuel gas as measured by the CEM required in Condition 8.3.1. The daily averages shall be used to calculate the 365-day rolling average. Records of the daily average H₂S concentration and 365-day rolling averages are to be retained at the facility for at least five years and be made available to NWCAA or Ecology upon request.

9. Nitrogen Dioxide Emissions

9.1. Unit F-103

9.1.1. Nitrogen dioxide emissions are to be quantified by means of a continuous emission monitoring system, consisting of a continuous nitrogen oxides monitor and a continuous flow rate monitor meeting the requirements of Condition 9.3, or

9.1.2. Development of a unit-specific emissions factor. The method to develop and update the emission factor is described in Conditions 9.4 and 9.5 below.

9.2. All other BART-eligible units

9.2.1. No monitoring and recordkeeping requirements.

9.3. Nitrogen oxides and flow continuous monitor requirements

9.3.1. The monitor shall meet the more stringent of the specifications of 40 CFR Part 60 Appendices B and F, or the NWCAA Regulation 367 and Appendix A.

9.3.2. Each calendar day’s average nitrogen oxides emissions will be calculated and recorded daily.
9.3.3. The rolling annual total nitrogen oxides emissions shall be recalculated and recorded daily.

9.4. If used, a unit-specific emissions factor, expressed as lb/MMBTU of fuel fired shall be based on the following:

9.4.1. Minimum of four discrete NOx stack tests utilizing the emission test method given in 40 CFR Part 60, Appendix A, Method 7E.

9.4.2. Each of the four tests is to be no closer than three weeks apart or as specified in the source testing plant submitted to NWCAA and Ecology and approved by both agencies.

9.4.3. The first test is the initial compliance test specified in Condition 2.1.3.

9.4.4. Each source test must include information on production rate through the unit, fuel firing rate, specific gravity of the refinery fuel gas, and heat content of the refinery fuel gas. For Unit F-103, the information recorded will include whether fuel oil was used during the test and the nitrogen and sulfur content of the fuel oil.

9.4.5. Each stack test shall be conducted at normal operating rate.

9.4.6. The supporting information and the emission factor (or factors if multiple operating rates have been tested) developed shall be submitted to NWCAA and Ecology within 60 days of the last of the emission tests. Ecology and NWCAA must concur with the appropriateness of the factor proposed.

9.5. If the NOx emissions from Unit F-103 are determined by a unit-specific emission factor, nitrogen oxide emissions shall be tested at least once each calendar year utilizing 40 CFR Part 60, Appendix A, Method 7E. The information specified in Condition 9.4.4 shall be collected as part of each emission test, and with all previous emissions and process information collected, is used to recalculate the unit-specific emission factor for use in the following calendar year.

REPORTING REQUIREMENTS

10. The test report for the initial NOx emission control system performance testing required by Condition 2.1 shall be submitted to Ecology and to NWCAA within 45 days of completion.
11. Documentation of completion of each milestone in Condition 6 will be provided by Tesoro by certified mail to Ecology and to NWCAA within 30 days of completion.

12. Continuous emission monitoring data and/or emission factor based emissions shall be submitted to Ecology and to NWCAA on a semiannual basis, January through June and July through December. The semiannual report shall be provided within 45 days of completion of the reporting period. The submittal shall be electronically in a format acceptable to NWCAA. Reporting to Ecology will end when Tesoro has demonstrated compliance with the BART emission limits in this order applicable to a specific unit for a continuous 36-month period.

13. Continuous Emission Monitoring Quality Control Testing

13.1. Data quality control testing shall be performed at least once per calendar quarter. This entails Cylinder Gas Audits and Relative Accuracy Audits.

13.2. A Relative Accuracy Test Audit (RATA) test shall be performed at least once per year on every CEM system required by this Order.

13.3. All RATA tests shall assess the ability of the entire system from stack probe to data acquisition system output.

13.4. Tesoro shall notify Ecology and NWCAA when annual RATA testing is scheduled to occur, no later than 30 days prior to the testing date.

13.5. Tesoro shall provide Ecology and NWCAA a copy of the RATA test results in an electronic format within 45 days of completion of the RATA test.

13.6. Tesoro shall provide NWCAA the results of all quarterly cylinder gas audits performed with the next quarterly data assessment report submitted to NWCAA.

OTHER CONDITIONS

14. If after installation, operational adjustments, and testing, the BART control technology for NOX specified for Unit F-103 is unable to meet the emission limitation for the unit, Tesoro may submit a written request to Ecology (with a copy sent to NWCAA) that the BART emission limitation for that unit be modified. The request must at a minimum provide the following:

14.1. If the request is submitted before installation of the control technology:
14.1.1. Tesoro documents the technical difficulties and reasons why the limit cannot be achieved.

14.1.2. Tesoro provides documentation of all work with the equipment vendor and installer, if one is involved, to achieve the emission limitation.

14.1.3. Tesoro proposes an alternative control technology and emission limitation as BART for this unit, including an evaluation of the visibility improvement achievable through implementation of the proposed limitation compared to the effect of the limitation currently in this Order.

14.2. If the request is submitted after the unit has been in operation, but no sooner than 12 months after the start of operation, Tesoro’s request must contain:

14.2.1. All information collected by Tesoro and its vendor or equipment installer to determine reasons for failure to meet the emission limitation, including but not limited to:

14.2.2. A listing of the actions to comply attempted, results, and reasons for failure.

14.2.3. Copies of all continuous emission monitor results or emissions tests performed.

14.2.4. Documentation of operating conditions during each test.

14.2.5. Fuels used and fuel ultimate analysis information to be provided for at least one emissions test.

14.2.6. Tesoro proposes as BART an emission limitation based on the capabilities of the control equipment as installed on the unit (including basis for it) for the revised emission limitation. The request shall include an evaluation of the visibility improvement achievable through implementation of the proposed limitation compared to the improvement provided by the limitation currently in this Order.

15. Tesoro may request this compliance Order be rescinded after all of the following occur:

15.1. All BART units at the plant have continuously complied with the emissions limitations in Conditions 1, 2, and 3 for a period of three years after the date in Condition 6.
15.2. The emission limitations in this Order have been incorporated into one or more enforceable orders or permits issued under the criteria of RCW 70.94.152 or 70.94.153 and NWCAA regulations implementing these provisions.

15.3. The emission limitations in the enforceable orders or permits have been incorporated into the Air Operating Permit issued by NWCAA to Tesoro.

16. By issuance of this order, the requirements of Order 5071 have been complied with and it is rescinded.

Within 20 days of receipt of this Order, you may request a delay in the submittal date. Any such request must be accompanied by a written justification for the delay.

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

You have a right to appeal this Order. To appeal you must:

- File your appeal with the Pollution Control Hearing Board within 30 days of the “date of receipt” of this document. Filing means actual receipt by the Board during regular office hours.

- Serve your appeal on the Department of Ecology within 30 days of the “date of receipt” of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). “Date of receipt” is defined at RCW 43.21B.001(2).

If you appeal, you must:

- Include a copy of this document with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

To file your appeal with the Pollution Control Hearing Board:

Mail appeal to: Deliver your appeal in person to:

The Pollution Control Hearings Board OR The Pollution Control Hearings Board
P.O. Box 40903 4224–6th Avenue SE Rowe Six, Bldg 2
Olympia, WA 98504-0903 Lacey, WA 98503
To serve your appeal on the Department of Ecology:

Mail appeal to:  
Department of Ecology  
Appeals Coordinator  
P.O. Box 47608  
Olympia, WA 98504-7608

OR

Deliver your appeal in person to:  
Department of Ecology  
Appeals Coordinator  
300 Desmond Drive SE  
Lacey, WA 98503

And send a copy of your appeal packet to:

Alan Newman  
Department of Ecology  
Air Quality Program  
P.O. Box 47600  
Olympia, WA 98504-7600

For additional information, go to the Environmental Hearings Office website at http://www.eho.wa.gov.


Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED this 7 day of July, 2010 at Olympia, Washington.

Jeff Johnston, Ph.D.  
Manager, Science and Engineering Section  
Department of Ecology  
Air Quality Program