IN THE MATTER OF:  
BP Cherry Point Refinery  
4519 Grandview Road  
Blaine, Washington 98230  

PSD NO. 5, SECOND AMENDMENT  
FINAL APPROVAL OF  
PSD APPLICATION

According to the regulations for Prevention of Significant Deterioration (PSD) set forth in WAC 173-403-080 and pursuant to the information submitted by ARCO Petroleum Products Company of July 1985, August 28, 1985, and September 19, 1985, the technical analysis performed by the Washington State Department of Ecology (Ecology), dated October 17, 1985, and the request for this amendment from BP West Coast Products, LLC on July 28, 2008, Ecology now finds the following:

FINDINGS

1. BP West Coast Products, LLC (BP, formerly British Petroleum) operates a petroleum refinery in Ferndale, Washington, formerly owned by ARCO Petroleum Products Company (ARCO), and known as the BP Cherry Point Refinery.

2. Pursuant to the original PSD permit (1985), ARCO modified operation of the existing north vacuum heater to attain 77 million British thermal units (MMBtu) per hour heat output. The vacuum heater is located in the BP Cherry Point Refinery near Ferndale, Washington.

3. It is located in an area which has been designated Class II for the purposes of PSD evaluation, and is approximately 80 kilometers from the boundary of the nearest Class I area. The area is in attainment with all state and national ambient air quality standards (AAQS).

4. The project qualified as a major modification to a major source because Ecology granted delay of installation of the staged-burner NOX controls. Without the staged-burner controls, NOX emissions were 66 tons per year.

5. Approval Condition 3 of the original PSD No. 5 provided that BP must install the staged-burner NOX controls by the indicated deadline or demonstrate 28 tons per year offsets in NOX emissions within one year. On December 10, 1986, Ecology recognized the March 18, 1986 regulatory order to BP from the Northwest Clean Air Agency as satisfaction of offsetting NOX emission reductions. The related elements of Approval Condition 3 and associated references in the original PSD No. 5 are now defunct, and have been removed in this amendment.
6. In this amendment, BP requested that the heater firing rate limit be measured as a 30-day rolling average to account for necessary variations in the heater's operating conditions. This is a relaxation from the original hourly average.

7. The modification was limited by the PSD permit to the following air pollutant emissions:

<table>
<thead>
<tr>
<th>Air Pollutant</th>
<th>Pounds Per Million British Thermal Units</th>
<th>Tons Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (CO)</td>
<td>0.028</td>
<td>9.5</td>
</tr>
<tr>
<td>Nitrogen oxides (NOx)</td>
<td>0.19</td>
<td>66</td>
</tr>
<tr>
<td>Hydrocarbons (HC)</td>
<td>0.0024</td>
<td>0.83</td>
</tr>
<tr>
<td>Sulfur dioxide (SO2)</td>
<td>0.0005</td>
<td>0.16</td>
</tr>
<tr>
<td>Particulate matter (PM)</td>
<td>0.0024</td>
<td>0.83</td>
</tr>
</tbody>
</table>

8. Only NOx emissions are subject to PSD review.

9. Maintenance of low excess air in the combustion zone, and the application of staged-fuel low-NOx burners are Best Available Control Technology for this application. Staged-fuel burners gave over 70 percent controls compared to emissions from standard burners. However, satisfaction of the NOx emission offsets referred to in Finding 5 abrogated BP's installation of staged-fuel low-NOx burners.

10. The ambient air quality impacts of the proposed emissions were determined with the use of the EPA Industrial Source Complex Long-Term (ISCLT) model. The highest impact predicted was less than one microgram nitrogen dioxide (NO2) per cubic meter of air, approximately one kilometer due north of the source. Consideration of the combined impact of the proposed emissions, total NOx emissions from the refinery, and other NOx sources in the area indicated that the national and state ambient air quality standard of 100 micrograms of NO2 per cubic meter of air would not be exceeded.

11. Air emissions from the proposed project will not result in damage to soils or vegetation, or result in any measurable degradation of visibility nor increase in acid deposition.

12. The impact of the proposed project's emissions upon any Class I area will be imperceptible.

13. Ecology finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.
APPROVAL CONDITIONS

1. Emissions from the north vacuum heater shall not exceed any of the following limitations:
   1.1 14.6 pounds per hour of NO\textsubscript{X} (one-hour average, quantified as NO\textsubscript{2}).
   1.2 Sixty-six tons in any twelve (12) consecutive months.

2. Firing of the north vacuum heater shall not exceed 77 MMBtu per hour (higher heating value, 30-day rolling average).

3. A continuous oxygen monitor shall be operated on the heater in accordance with Performance Specification 3 (40 CFR 60, Appendix B). Oxygen monitoring records shall be kept on site by BP for two years and made available to the air authorities for inspection.

4. Hydrogen sulfide (H\textsubscript{2}S) shall not exceed 160 parts per million dry volume basis (ppmdv) in the fuel to the vacuum heater, based on a 3-hour rolling average, or 90 ppmdv on a 30-day rolling average.

5. A continuous H\textsubscript{2}S monitor shall be installed on the fuel feed line and operated according to Performance Specification 2 (40 CFR 60, Appendix B) within 180 days of receipt of final approval. H\textsubscript{2}S records shall be kept for a minimum of two years, and made available for inspection to the air authorities.

6. Compliance with Approval Condition 1 shall be determined by an annual compliance test for NO\textsubscript{X} using EPA Reference Method 7E (40 CFR 60, Appendix A). The compliance test shall use not less than three 1-hour test runs to determine the emission factor. The compliance test report shall be sent to Ecology within 45 days after the test. Once the conditions of the PSD permit are incorporated into the facility's Title V Air Operating Permit, reports shall be sent to the agency issuing the Title V Permit and no longer need to be sent to Ecology.

7. This approval shall become void if the initial operation modification is not completed within eighteen (18) months after receipt of this approval or if operation of this unit is discontinued for a period of eighteen (18) months after receipt of this approval.

8. Any activity which is undertaken by the company or others, in a manner which is inconsistent with this determination shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.

9. The company shall notify Ecology and the Northwest Clean Air Agency in writing of the completion of this modification within thirty (30) days of their occurrence.
10. Access to the source by EPA, state or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is ground for revocation of this permit.

Reviewed by:

Bernard Brady, P.E.
Science and Engineering Section
Air Quality Program
Washington State Department of Ecology

Date: 1/23/09

Approved by:

Stuart A. Clark, Program Manager
Air Quality Program
Washington State Department of Ecology

Date: 1/22/09
WASHINGTON DEPARTMENT OF ECOLOGY
Mail Stop PV-11
Olympia, Washington 98504

IN THE MATTER OF:

ARCO Petroleum Products Company
Cherry Point Refinery
P. O. Box 1127
Ferndale, Washington 98248

No. PSD-7

FINAL DETERMINATION OF
APPROVAL OF PSD APPLICATION

According to the regulations for Prevention of Significant Deterioration (PSD) set forth in WAC 173-403-080 and pursuant to the information submitted by ARCO Petroleum Products Company of October 28, 1985, and the technical analysis performed by the Department of Ecology (the department), dated January 21, 1985, the department now finds the following:

FINDINGS

1. ARCO Petroleum Products Company (hereafter referred to as ARCO or the company) proposes to construct a new gasoline reformer at the Cherry Point Refinery near Ferndale, Washington. The reformer will basically consist of several gas-fired heaters, large compressors, and several catalyst reactor beds. The only emissions will be produced by the burning of fuel gas in the heaters.

2. The proposed project qualifies as a major modification to a major source. It is located in an area which has been designated Class II for the purposes of PSD evaluation, and is approximately 80 kilometers west of the boundary of the nearest Class I area, North Cascades National Park.

3. The refinery is located in an area which is in attainment as regards all state and national ambient air quality standards (AAQS).

4. The proposed project will generate, in the worst case, the following air emissions:

-1-
a. Carbon monoxide (CO): 0.028 lb/MMBtu or 48.3 tons/year;
b. Nitrogen oxides (NO\textsubscript{x}): 0.080 lb/MMBtu or 140 tons/year;
c. Volatile organic compounds (VOC): 0.0012 lb/MMBtu or 2.1 tons/year;
d. Sulfur dioxide (SO\textsubscript{2}): 0.0004 lb/MMBtu or 0.73 tons/year;
e. Particulate matter (PM): 0.0021 lb/MMBtu or 3.6 tons/year.

5. Oxides of nitrogen are the only emissions which are subject to PSD review.

6. Staged fuel low-NO\textsubscript{x} burners, using air preheat, and the maintenance of low excess air in the combustion zone constitute best available control technology for this application. Staged fuel burners will provide approximately 80 percent NO\textsubscript{x} reduction over standard burners, and roughly 50 percent improvement over staged air burner designs.

7. The ambient air quality impacts of the proposed emissions were determined with the use of the EPA Industrial Source Complex Long-Term (ISCLT) model and meteorological data from the Bellingham airport. The highest impact predicted was 0.19 ug/m\textsuperscript{3}, well below the significance level of 1.0 ug/m\textsuperscript{3} NO\textsubscript{2}, approximately 2200 meters due north of the source. Consideration of the combined impact of the proposed emissions, total NO\textsubscript{x} emissions from the ARCO refinery, and other NO\textsubscript{x} sources at Cherry Point indicated that the national and state ambient air quality standard of 100 micrograms of NO\textsubscript{2} per cubic meter of air will not be exceeded.

8. The project is expected to have negligible impact on industrial, commercial, or residential growth in the Ferndale area.

9. Air emissions from the proposed project will not result in damage to soils or vegetation, nor result in any measurable degradation of visibility nor increase in acid deposition.

10. The impact of the proposed project's emissions upon any Class I area will be imperceptible.
11. The department finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

1. Emissions from the new gasoline reformer shall not exceed any of the following limitations:
   a. 11.0 pounds per hour of carbon monoxide or 48.3 tons per year, based on the average of any 60 consecutive minutes;
   b. 32.0 pounds per hour of nitrogen oxides (as NO₂) or 140 tons per year, based on the average of any 60 consecutive minutes.

2. Firing of the naphtha hydrogen desulfurization (HDS) and reformer heaters shall not exceed 60 and 340 million Btu per hour, respectively, based on the hourly average calculated heat content of the fuel.

3. A continuous oxygen monitor shall be operated on the reformer heaters in accordance with Performance Specification 3 (40 CFR 60, Appendix B). Oxygen monitoring records shall be kept on site by ARCO for two years and made available to the air authorities for inspection.

4. Hydrogen sulfide (H₂S) shall not exceed 160 ppm in the fuel to the vacuum heater, based on a three-hour rolling average, or 90 ppm on a monthly average.

5. A continuous hydrogen sulfide (H₂S) monitor shall be installed on the fuel feed line and operated according to Performance Specification 2 (40 CFR 60, Appendix B) before 180 days after receipt of final approval. H₂S records shall be kept for a minimum of two years, and made available for inspection to the air authorities.

6. An initial compliance test for NOₓ shall be conducted no later than 180 days after startup of the new reformer. Nitrogen oxide emissions shall be tested using EPA Reference Method 7 (40 CFR 60, Appendix A). The compliance
test report shall be sent to the department within thirty (30) days after the
test.

7. This approval shall become void if construction of the reformer is not
commenced within eighteen (18) months after receipt of final approval, or if
construction or operation of the reformer is discontinued for a period of
eighteen (18) months.

8. Any activity which is undertaken by the company or others, in a manner
which is inconsistent with this determination shall be subject to department
enforcement under applicable regulations. Nothing in this determination shall
be construed to relieve the company of its obligations under any state, local,
or federal laws or regulations.

9. The company shall notify the department and the Northwest Air Pollution
Authority in writing within 30 days of the startup of the reformer.

10. Access to the source by EPA, state or local regulatory personnel shall be
permitted upon request for the purpose of compliance assurance inspections.

Failure to allow such access is ground for revocation of this permit.

3/13/86  Nancy Ellison, Manager
Date  Air Programs
January 31, 1989

Fielding Formway, Manager
ARCO Petroleum Products Company
Box 1127
Ferndale, WA 98248

Dear Mr. Formway:

Enclosed are copies of the "Technical Analysis for Modification of the Prevention of Significant Deterioration Approval for ARCO Petroleum Products Company's Third Hearth" and "Final Approval of PSD Application". The modified permit allows ARCO to emit a greater amount of nitrogen oxides and replaces the existing Approval.

This approval is issued under the provisions of RCW 70.94.332 and 40 CFR part 52. Any person feeling aggrieved by this approval may obtain review thereof by application, within 30 days of receipt of this approval, to the Pollution Control Hearings Board, Mail Stop PY-21, Olympia, WA 98504-8921, with a copy to the Director, Department of Ecology, Mail Stop PV-11, Olympia, WA 98504-8711 pursuant to the provisions of Chapter 43.21B RCW and the rules and regulations adopted there under.

Also, within 30 days of this approval, any person who commented on the draft approval may petition the EPA Administrator, under 40CFR 124.19, to review any condition of the decision. Any person who failed to file comments or failed to participate in the public hearing on the draft may petition for administrative review only to the extent of the changes form the draft to the final approval decision. The petition for review must contain the information listed in 40CFR 124.19.

Thank you for your cooperation on this matter. If you have any questions please call me at (206) 867-7117.

Sincerely,

[Signature]

Jay M. Willenberg, P.E.
Engineering and Planning
Air Program

j13arco2
WASHINGTON DEPARTMENT OF ECOLOGY
MAIL STOP PV-11
OLYMPIA, WASHINGTON 98504

IN THE MATTER OF:

ARCO Petroleum Products Co.
P.O. Box 1127
Ferndale, Washington 98248

NO. PSD-89-2
FINAL APPROVAL
OF PSD APPLICATION

Pursuant to Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations, Part 52 and State of Washington regulations WAC 173-403-080 and based upon the complete application submitted by ARCO Petroleum Products Company, and the technical analysis performed by the Department of Ecology (the department), dated January 4, 1988, the department now finds the following:

FINDINGS

1. ARCO operates a petroleum refinery at Ferndale, Washington.

2. ARCO has obtained PSD approval to operate a third calciner, as part of that approval nitrogen oxides emissions are limited to 373 tons per year. ARCO has requested changing the nitrogen oxides limit to 509 tons per year.

3. The proposal would increase the permitted nitrogen oxides emissions by 136 tons per year. An increase of permitted emissions of 136 tons per year is a significant increase in emissions and the proposal constitutes a major modification according to 40CFR51.18(27).

4. The modification is located in an area that has been designated Class II for purpose of PSD evaluation, and is located approximately 80 km from the nearest Class I area.

5. The plant is located in an area that is in attainment as regards to all National Ambient Air Quality Standards and all state air quality standards.
6. Nitrogen oxides emissions are controlled by combustion temperature and staged air combustion. This type of treatment will result in emissions of 0.27 x 10^-6 pounds per dry standard cubic foot, and constitutes Best Available Control Technology (BACT).

7. The ambient impact for the proposal was determined with the use of the EPA Industrial Source Complex Model and with the EPA Complex I Model.

8. The modeling results indicate that the National Ambient Air Quality Standard for nitrogen oxides would not be threatened.

9. A screening calculation per "Workbook for Estimating Visibility Impairment" EPA 450/4-8-031, shows that the project will not impair visibility in the nearest Class I area.

10. The project will not result in significant deposition of acid rain in any sensitive environment, nor result in degradation of any other air quality-related value.

**APPROVAL CONDITIONS**

1. These approval conditions supersede those granted by the Department of Ecology on December 20, 1984.

2. The emissions from the Number 3 Coke Calciner shall not exceed any of the following limitations:

   - a. 160 parts per million of sulfur dioxide, corrected to 7 percent oxygen, dry basis, based on a calendar day average; or,
   - b. 0.01 grains particulate per dry standard cubic foot corrected to 7 percent oxygen for any sixty consecutive minutes; or,
   - c. 504 tons of sulfur dioxide per year; or,
   - d. 26 tons of particulate per year; or,
   - e. 509 tons of nitrogen oxides per year; or,
   - f. That quantity of sulfur dioxide that remains after removal of ninety percent of the sulfur dioxide that enters the scrubber; or,
20 percent opacity, per EPA Method 9.

Emissions of particulate matter from the new silo, the railcar load out and the new hearth transfer tower shall not exceed 0.01 grains per dry standard cubic foot, 21 tons per year and shall not exceed 20 percent opacity, per EPA Method 9.

4. Within 180 days of final approval of this application ARCO shall install, calibrate, maintain and operate a system for continuously monitoring sulfur dioxide, nitrogen oxide, and oxygen. The monitoring system shall be used in determining compliance with the nitrogen oxides emission limit listed above. The monitoring system shall conform with the requirements of Performance Specification 2 and 3 of 40CFR60 Appendix B, except that the NOx span drift in Performance Specification 2 may not exceed 5.0% of full scale. In addition, within 90 days after final approval ARCO shall develop a quality assurance program acceptable to the department which the department may require to be periodically updated.

4. This approval shall become void if construction of the project is not commenced within eighteen (18) months after receipt of final approval, or if construction or operation of the facility is discontinued for a period of eighteen (18) months.

5. Any activity which is undertaken by the company or others, in a manner which is inconsistent with the application and this determination, shall be subject to department enforcement under applicable regulations. Nothing in this determination shall be construed to relieve the company of its obligations under any state, local, or federal laws or regulations.

6. Access to the source by the Environmental Protection Agency (EPA), state or local regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is grounds for revocation of this determination of approval.

Date 1/30/88  
Stuart Clark  
Air Program
WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600

IN THE MATTER OF:
BP Cherry Point Refinery
4519 Grandview Road
Blaine, Washington 98230

PSD 95-01, FIRST AMENDMENT
FINAL APPROVAL OF
PSD APPLICATION

Pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations, Part 52 and regulations set forth in the Washington Administrative Code 173-400-141 and based upon the request for this amendment from BP West Coast Products, LLC on July 28, 2008, and the technical analysis performed by the Washington State Department of Ecology (Ecology), Ecology now finds the following:

FINDINGS

1. BP West Coast Products, LLC (BP, formerly British Petroleum) operates a petroleum refinery in Ferndale, Washington, formerly owned by ARCO Petroleum Products Co. (ARCO), and known as the BP Cherry Point Refinery.

2. BP Cherry Point Refinery is a major stationary source that emits more than 100 tons of pollutants per year.

3. BP Cherry Point Refinery is located in an area that has been designated Class II for the purposes of PSD evaluation, and is located approximately 80 km from the nearest Class I area.

4. BP Cherry Point Refinery is located in an area that is currently designated as attainment for all national air quality standards and all state air quality standards.

5. ARCO obtained PSD approval to construct and operate a third calciner at the BP Cherry Point Refinery dated December 20, 1984 (PSD No. 3).

6. That permit was rescinded and reissued on January 30, 1989, to include an increase in the nitrogen oxides emission limit (PSD 89-2).

7. ARCO requested a new PSD permit to include sulfuric acid mist emissions (H2SO4) from the calciner. Ecology granted that request in PSD 95-01 (March 15, 1995). PSD 89-2 remained and still remains in effect. PSD 95-01 allowed an increase of up to 80 tons per year of H2SO4.

8. In this first amendment to PSD 95-01, BP requests expanding the H2SO4 test method to allow using EPA Conditional Test Method 013. In accordance with EPA
guidance, approval of this change is subject to opportunity for permit veto by EPA and public notice and opportunity for comment.\textsuperscript{1}

9. In response to public comment, BP requested several additional changes to PSD 95-01:

   a. Deletion of Approval Condition 2. Approval Condition 2 required “participat(ion) in a dry deposition study in the North Cascade National Park.” Dee Morse (National Park Service) confirmed BP has satisfied this condition.\textsuperscript{2} Ecology agrees.

   b. Modification of Approval Condition 17.2 (formerly 3) to allow updating the monitoring methodology for compliance with Approval Condition 17.1. Ecology agrees with the exception that Ecology cannot delegate approval of amended monitoring methodology to the Northwest Clean Air Agency under a PSD permit.

   c. Approval Condition 17.3 is modified to address amended monitoring plans.

10. The emissions of $\text{H}_2\text{SO}_4$ are "significant" because they result in a net increase of more than seven tons per year. The permit modification must be treated as a "major modification" under PSD review.

11. A wet scrubber followed by a wet electrostatic precipitator has been selected to be Best Available Control Technology (BACT) for the control of $\text{H}_2\text{SO}_4$ mist.

12. The ambient impacts of the proposed increase in emissions were determined with the use of the EPA's Industrial Source Complex Short-Term 2 Model (Version 92062).

13. Modeling results show that there will be an increase of $\text{H}_2\text{SO}_4$ of approximately 0.03 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in the North Cascades National Park and sulfate deposition will increase by 0.2 kilograms per hectare per year (kg/ha/yr).

14. The project will have no significant impact on ambient air quality.

15. The project will not have a noticeable effect on industrial, commercial, or residential growth in the Ferndale area.

16. Visibility will not be impaired in any Class I area due to the proposed emissions.

\textsuperscript{1} EPA Technology Transfer Network, Emission Measurement Center, Test Methods, Category D: Historical Conditional Test Methods; http://www.epa.gov/ttn/eme/tmethods.html#CatB.

\textsuperscript{2} Dee Morse (Environmental Protection Specialist, Air Resources Division, Natural Resource Program Center, National Park Service) to Elizabeth Waddell (Seattle Office, National Park Service), electronic message, January 9, 2009.
17. Ecology finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

**APPROVAL CONDITIONS**

1. Emissions of sulfuric acid mist (H₂S0₄) shall not exceed 18.3 pounds per hour (lb/hr) or 50 milligrams per cubic meter (mg/m³, 24-hour average).

2. Compliance with Approval Condition 1 will be measured by monitoring the performance of the Wet Electrostatic Precipitator (WESP) plus an annual source test (Approval Condition 4). BP shall follow the requirements of the monitoring plan approved by Ecology on May 2, 2007, or as amended. The monitoring plan may be amended by advance written approval from Ecology. The source test plan will include testing the stack for compliance while the WESP is operating in the most limiting condition in the WESP monitoring plan.

3. Within 90 days after Ecology approval of any amended WESP monitoring plan, BP shall source test Calciner Hearth 13 for H₂S0₄ mist. BP shall submit the related source test plan to Ecology for approval prior to testing. The monitoring plan may be amended by advance written approval by Ecology. The source test plan shall include operating ranges for the WESP, and will define operating conditions for testing the stack for compliance.

4. BP shall perform annual source testing for H₂S0₄ using 40 CFR 60 Appendix A Method 8 or EPA Conditional Test Method 013.

   4.1 BP shall perform annual source testing within 11 to 13 months of the anniversary of the previous test.

   4.2 An alternate test method may be used if approved in writing, in advance by Ecology.

5. Any activity which is undertaken by the company or others, in a manner which is inconsistent with the application and this determination, shall be subject to enforcement under the applicable regulations.

6. Access to the source by the Environmental Protection Agency, state or local regulatory personnel shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for revocation of this determination of approval.
Reviewed by:

Bernard Brady, P.E.
Science and Engineering Section
Air Quality Program
Washington State Department of Ecology

Approved by:

Stuart A. Clark, Program Manager
Air Quality Program
Washington State Department of Ecology
IN THE MATTER OF: ] PSD-02-04 AMENDMENT 1
BP Isomerization Project ] FINAL APPROVAL OF THE
BP Cherry Point Refinery ] PREVENTION OF SIGNIFICANT
4519 Grandview Road ] DETERIORATION
Blaine, Washington 98230 ]

Pursuant to the Washington State Department of Ecology (Ecology) general regulations for air pollution sources Chapter 173-400 Washington Administrative Code (WAC) and the federal Prevention of Significant Deterioration (PSD) regulations 40 Code of Federal Regulations (CFR) 52.21, and based upon the Notice of Construction (NOC) application submitted by BP Cherry Point Refinery (BP) on July 29, 2002, the additional information submitted on September 6, 2002, December 17, 2002, February 5, 2003, October 1, 2004, and the technical analysis performed by Ecology, Ecology now finds the following:

FINDINGS

1. BP was approved to construct and operate a Clean Gasoline Project at its Cherry Point Refinery in Whatcom County, Washington under PSD PSD-02-04 in May 2003. This project is referred to as the “Isomerization Project” or “project”.

2. The purpose of the project was to enable BP to process light naphtha feedstocks to produce a gasoline blend component that has essentially no benzene, olefins, or sulfur, and is higher in octane than its feed. The project consists of a Naphtha Dehexanizer unit, an Isom Hydrotreater (IHT) that includes a 13 million British thermal unit per hour (MMBtu/hr) IHO process heater, a BenSat™ unit, a Penex™ (Isomerization) unit, connections to existing processes and changes in tank services within the refinery, and a new 363 MMBtu/hr boiler (a replacement for Boiler #2, now identified as Boiler #5).

3. Amendment 1 proposes to modify the Boiler #5’s NOx and CO emission limits, add boiler startup provisions and make some housekeeping changes to permit conditions. This is needed because the new technology boiler could not meet the originally permitted limits throughout its full range of operation. Amendment 1 does not propose any physical modifications to the original project.

4. This project is subject to New Source Performance Standard (NSPS) 40 CFR 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units for Boiler #5.

5. The BP Refinery is an existing major stationary source that emits more than 100 tons of a regulated pollutant per year.

6. The BP Isomerization project is located in an area that is designated as “attainment” for the purposes of PSD permitting for all pollutants.

7. This project is subject to PSD permitting because emissions of nitrogen oxides (NOx) and carbon monoxide (CO) have “significant” emission increases greater than 40 tons per year and 100 tons per year, respectfully.
8. Emissions of all other pollutants are subject to NOC permitting requirements by the Northwest Clean Air Authority (NWCAA).

9. The initial project resulted in an increase of NOX emissions of up to 65 tons per year. Amendment 1 proposes to increase this allowable increase from 65 to 81 tons per year.

10. The initial project resulted in an increase of CO emissions of up to 113 tons per year. Amendment 1 proposes no increase in annual CO emissions.

11. Best Available Control Technology (BACT) determinations and proposed control technologies are shown in Table 1:

<table>
<thead>
<tr>
<th>Table 1: BACT Determinations with Proposed Control Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit</strong></td>
</tr>
<tr>
<td>IHT Process Heater</td>
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<tr>
<td></td>
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<tr>
<td>Boiler #5</td>
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</table>

12. This project is located in an area that has been designated Class II for the purposes of PSD evaluation. The distances to the nearest Class I areas are shown in Table 2:

<table>
<thead>
<tr>
<th>Table 2: Distances to Nearest Class I Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class I Area</strong></td>
</tr>
<tr>
<td>Alpine Lakes Wilderness</td>
</tr>
<tr>
<td>Glacier Peak Wilderness</td>
</tr>
<tr>
<td>North Cascades National Park</td>
</tr>
<tr>
<td>Olympic National Park</td>
</tr>
<tr>
<td>Pasayten Wilderness</td>
</tr>
</tbody>
</table>

13. Maximum impacts of the proposed emissions from this project do not exceed the allowable increments in nearby Class II areas, or in the closest Class I Area (North Cascade National Park) as shown in Table 3.

<table>
<thead>
<tr>
<th>Table 3: Annual Impacts of Proposed Maximum NO2 Emissions from the BP Isomerization Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pollutant</strong></td>
</tr>
<tr>
<td>NO2</td>
</tr>
</tbody>
</table>

14. The project will have no significant impact on ambient air quality.

15. The project will not have a noticeable effect on industrial, commercial or residential growth in the Blaine area.
16. Visibility, deposition, and other air quality related values are not expected to be significantly impaired at the Alpine Lakes Wilderness, Glacier Peak Wilderness, North Cascades National Park, Olympic National Park, Pasayten Wilderness Class I Areas, or the Mt. Baker Wilderness Class II Area.

17. Ecology finds that all requirements for PSD have been satisfied and will comply with all applicable federal NSPS. Approval of the PSD application is granted subject to the following conditions.

**APPROVAL CONDITIONS:**

1. The IHT process heater and Boiler #5 shall be fueled by either natural gas or refinery fuel gas. Continuous compliance shall be monitored by maintaining a written log of the type of fuel burned in the IHT process heater and Boiler #5.

2. Emissions of NO\textsubscript{x} from the IHT process heater shall not exceed 0.10 lb/MMBtu or 0.455 pounds per hour on a calendar day average.
   
   2.1. Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
   
   2.2. Within 60 days of achieving maximum production rate, but no later than 180 days, the IHT process heater shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 2.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
   
   2.3. Continuous compliance shall be monitored by annual source testing in accordance with 40 CFR 60 Appendix A, Method 7E. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.

3. Emissions of NO\textsubscript{x} from Boiler #5 shall not exceed 10.1 pounds per hour on a calendar day average.
   
   3.1. Compliance shall be determined by 40 CFR 60 Appendix A, Method 7E.
   
   3.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, Boiler #5 shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 3.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
   
   3.3. Continuous compliance shall be monitored by a Continuous Emission Monitor (CEM) for NO\textsubscript{x} and O\textsubscript{2}. The CEMs must meet Performance Specifications 2 and 3 of 40 CFR 60, Appendix B, and quality control/quality assurance requirements of 40 CFR 60, Appendix F.

4. Emissions of CO from the IHT process heater shall not exceed 70 ppmvdv at 7 percent O\textsubscript{2} or 1.1 pounds per hour, both on a calendar day average.
   
   4.1. Compliance shall be determined by annual source testing in accordance with 40 CFR 60 Appendix A, Method 10, 10A, 10B, or an equivalent method approved in advance by Ecology.
   
   4.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, the IHT process heater shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 4.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.
4.3. Continuous compliance shall be monitored by annual source testing for CO in accordance with 40 CFR 60 Appendix A, Method 10, 10A, or 10B. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.

5. Emissions of CO from Boiler #5 shall not exceed 18.1 pounds per hour on a calendar day average.

5.1. Compliance shall be determined by annual source testing in accordance with 40 CFR 60 Appendix A, Method 10, 10A, 10B, or an equivalent method approved in advance by Ecology.

5.2. Within 60 days of achieving maximum production rate, but no later than 180 days from initial startup, Boiler #5 shall be performance tested in accordance with 40 CFR 60.8 and Approval Condition 5.1 above. During this test, the unit shall be operated at a minimum of 90 percent of maximum load.

5.3. Continuous compliance shall be monitored by a CEM for CO and O₂. The CEMs must meet Performance Specifications 3, 4, 4a, and 4b of 40 CFR 60, Appendix B and quality control/quality assurance requirements of 40 CFR 60, Appendix F.

6. Startup conditions for Boiler #5

6.1. Emission limits for CO in Condition 5 are relieved during startup periods.

6.2. Emissions of CO during startup periods shall be limited to 50 pounds per hour averaged over the startup period.

6.3. Emissions of CO during startup periods shall be monitored and included in the annual emissions reported each year pursuant to WAC 173-400-105(1).

6.4. Startup periods are limited to 12 hours, except that if refractory work has been done during a maintenance shutdown, the period is limited to 30 hours.

6.5. Startups claiming use of this condition shall be limited to six per calendar year.

7. BP shall submit the following reports and monitoring data to NWCAA and Ecology. Once this permit has been incorporated in to BP’s Title V permit, these submittals no longer need to be sent to Ecology.

7.1. Submit copies of each required source test performed on emission units regulated by this order.

7.1.1. BP shall submit a test plan to Ecology and NWCAA at least 30 days in advance of any test date required under this Order.

7.1.2. BP shall notify Ecology and NWCAA at least two weeks in advance of the exact test date.

7.2. Submit a report monthly, within 30 days of the end of the calendar month, or on another schedule agreed to by Ecology and NWCAA. At the least, the report shall include the following:

7.2.1. Calendar date or monitoring period.

7.2.2. Monthly maximum of NOₓ emissions for each regulated unit for the reporting month in accordance with Approval Conditions 2 and 3.

7.2.3. Monthly maximum of CO emissions for each regulated unit for the reporting month in accordance with Approval Conditions 4 and 5.
7.3. In addition, required report shall include:
   7.3.1. Days and duration for which data was not collected.
   7.3.2. Reasons for which data was not collected.
   7.3.3. A statement that BP burned no new fuels, no fuels from a new supplier, or no new fuel mixture.

7.4. BP shall maintain monitoring records on site for at least five years, and shall submit:
   7.4.1. Excess emission reports to NWCAA, as discussed in Approval Condition 7.5.
   7.4.2. Results of any compliance source tests.

7.5. For each occurrence of monitored emissions in excess of any condition, the monthly emissions report shall include the following:
   7.5.1. The time of the occurrence.
   7.5.2. Magnitude of the emission or process parameters excess.
   7.5.3. The duration of the excess.
   7.5.4. The probable cause.
   7.5.5. Corrective actions taken or planned.
   7.5.6. The name of any agency contacted.

8. Sampling ports and platform shall be provided on each stack, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate permanent and safe access to the test ports shall be provided.

9. BP shall notify Ecology and NWCAA in writing at least thirty days prior to startup of IHT process heater and Boiler #5 at least 30 days prior to the initial startup.

10. Within 90 days of startup, BP shall identify operational parameters and practices that will constitute “good combustion practices” of the IHT process heater and Boiler #5. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA, or EPA. Emissions that result from a failure to follow the requirements of the O&M manual may be considered credible evidence that emission violations have occurred.

11. Access to the source by Ecology, NWCAA, or the EPA, shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act or the Washington State Clean Air Act.

12. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18 month period, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.
Appendix 1: Summary of Emission Limits

The table below is a listing of the emission limits contained in this permit. If there are any discrepancies between this table and the Approval Conditions above, the Approval Condition terms should be used.

<table>
<thead>
<tr>
<th>Emission Unit</th>
<th>Pollutant</th>
<th>Limit</th>
<th>Averaging Time</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHT Process</td>
<td>NOX</td>
<td>0.10 lb/MMBtu</td>
<td>Calendar day</td>
<td>Annual Source test with 40 CFR 60</td>
</tr>
<tr>
<td>Heater</td>
<td></td>
<td>0.455 lb/hr</td>
<td>Calendar day</td>
<td>Appendix A Method 7E</td>
</tr>
<tr>
<td></td>
<td>CO</td>
<td>70 ppmvd @ 7% O2</td>
<td>Calendar day</td>
<td>Annual Source test with 40 CFR 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1 lb/hr</td>
<td>Calendar day</td>
<td>Appendix A Method 10, 10A, or 10B</td>
</tr>
<tr>
<td>Boiler #5</td>
<td>NOX</td>
<td>10.1 lb/hr</td>
<td>Calendar day</td>
<td>Method 7E and CEM</td>
</tr>
<tr>
<td></td>
<td>CO</td>
<td>18 lb/hr</td>
<td>Calendar day</td>
<td>Method 10, 10A, or 10B, and CEM</td>
</tr>
</tbody>
</table>
This approval is issued pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40 Code of Federal Regulations Part 52, and regulations set forth in the Washington Administrative Code 173-400-700. Based upon the complete application submitted by the BP Cherry Point Refinery (BP) dated May 2007, the complete application for modification received April 1, 2009, and the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

FINDINGS

1. The BP Cherry Point Refinery (BP) has applied to increase the short-term sulfur dioxide (SO₂) emission limit imposed on the two new boilers by the existing PSD permit. This increase is needed to address the variability of sulfur concentration in the refinery gas fuel. A new annual limitation is requested to assure that annual emissions of SO₂ do not increase. No changes to any other air pollutant emission limits are requested. BP proposes no physical or operational changes to the boilers.

2. The original permit allowed the BP Cherry Point Refinery (BP) to shutdown two existing boilers (Boiler #1 and Boiler #3) and replace them with two new boilers (Boiler #6 and #7). This is referred to as the Boiler Replacement Project.

3. BP is located in Whatcom County approximately seven miles southeast of Blaine, Washington. The coordinates of the project are about UTM 10 519600E and 5414800N.

4. BP is located within a Class II area that is currently designated in attainment for all national and state air quality standards.

5. Ecology, EPA Region 10, and the Land Managers received the Boiler Replacement Project PSD permit amendment application on about April 1, 2009. The application was determined to be complete as of May 1, 2009.

6. Boilers #1 and #3 are each rated at 330 MMBtu per hour and 150,000 pounds steam per hour. The two new package boilers are each rated at 363 MMBtu per hour and 250,000 pounds steam per hour. Each of the existing boilers and the replacement boilers each provide steam at 750°F and 620 psig.
7. The boilers burn a combination of refinery fuel gas and natural gas. Because there is a limited supply of refinery fuel gas at Cherry Point Refinery, natural gas is routinely blended with refinery fuel gas in the mix drum. When sufficient refinery fuel gas is not available to meet all refinery needs, natural gas is used.

8. Because BP is an existing major stationary source, any net emissions increase of a regulated pollutant greater than its Significant Emission Rate (SER) qualifies the proposed project as a major modification. As a result, the project would be subject to PSD review under WAC 173-400-700 for that pollutant. Additionally, the project is subject to federal PSD review because it qualifies as a major modification under federal rules [40 CFR 52.21(b)(2)(i), 40 CFR 52.21(b)(3)(i), and 40 CFR 52.21(b)(23)(i)].

9. Potential regulated pollutants for the proposed project are shown in Table 1. They are nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO2), volatile organic carbon compounds (VOC), particulates less than 10 microns in diameter (PM10), and particulates of any diameter (PM). Amendment 1 changes the SO2 short-term emission rate allowed for the two boilers combined from 27.2 to 78.6 pounds per hour on a 3-hour average basis. The significance analysis is for the initial permit, not the amendment. Amendment 1 does not change the annual potential to emit for any pollutant.

### Table 1: New Boilers Criteria Pollutant Emissions (Combined)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emission Rate</th>
<th>SER</th>
<th>Significant?</th>
<th>With Contemporaneous Emission Increases and Decreases</th>
<th>Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lb/hr tpy</td>
<td>tpy</td>
<td></td>
<td>tpy</td>
<td></td>
</tr>
<tr>
<td>NOx</td>
<td>7.9</td>
<td>34.4</td>
<td>40</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>26.5</td>
<td>116.2</td>
<td>100</td>
<td>Yes</td>
<td>298.3</td>
</tr>
<tr>
<td>SO2</td>
<td>78.6</td>
<td>119.3</td>
<td>40</td>
<td>Yes</td>
<td>124.9</td>
</tr>
<tr>
<td>PM10</td>
<td>6.8</td>
<td>30.0</td>
<td>15</td>
<td>Yes</td>
<td>58.3</td>
</tr>
<tr>
<td>VOC</td>
<td>3.9</td>
<td>17.2</td>
<td>40</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>0.6</td>
<td>2.6</td>
<td>7</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

1. Includes both combustion emissions and fugitive equipment leaks

10. Regulated pollutants with net emissions increases greater than their PSD Significant Emission Rate (SER) are subject to regulation under PSD. For this project, the PSD regulated pollutants are CO, SO2, and PM10. Also, all particulates (PM and PM10) are considered to be PM10.

11. The emissions of all air pollutants from BP are subject to review under Chapter 173-400 WAC and Chapter 173-460 WAC. Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD pollutants that have a significant net emission increase due to the project when considered under PSD regulations. All other pollutants are regulated under state regulations by the Northwest Clean Air Agency (NWCAA).
12. The NSPS requirements of 40 CFR 60 Subpart Db applies to NO\textsubscript{x} emissions, and to monitoring and reporting. Because the fuel is gaseous, Subpart Db does not have applicable PM\textsubscript{10} requirements. There are no applicable NSPS requirements for CO. 40 CFR 60 Subpart Ja has applicable refinery gas H\textsubscript{2}S fuel content limits. BP will also include the proposed boilers in leak detection and repair (LDAR) program based on 40 CFR 60 Subpart GGG and 40 CFR 63 Subpart CC in accordance with a facility wide consent decree.

13. Best Available Control Technology (BACT) determinations are shown in Table 2.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Best Available Control</th>
<th>Emission Rate (per boiler)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>Proper combustion</td>
<td>13.3 lb/hr based on 0.0365 lb/MMBtu (50 ppm)</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO\textsubscript{2})</td>
<td>NSPS quality refinery fuel gas</td>
<td>39.3 lb/hr on a three hour average</td>
</tr>
<tr>
<td>Particulate Matter (PM\textsubscript{10})</td>
<td>Proper combustion</td>
<td>3.4 lb/hr based on 12.7 lb/MMscf of fuel gas</td>
</tr>
</tbody>
</table>

14. Allowable increases in emissions from the project will not cause or contribute to air pollution in violation of any National Ambient Air Quality Standard (NAAQS). Table 3 shows CO, SO\textsubscript{2}, and PM\textsubscript{10} impacts are below their respective NAAQS and SILs. Short-term SO\textsubscript{2} emissions reflect Amendment 1. Annual SO\textsubscript{2} emissions are unchanged from the original application. All NO\textsubscript{x}, CO, and PM\textsubscript{10} emission rates are unchanged from the original application.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Maximum Concentration</th>
<th>SIL (a)</th>
<th>Monitoring De Minimis Concentration</th>
<th>Maximum Concentrations BP Refinery and Other Regional Sources</th>
<th>Background(b)</th>
<th>Total</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x}</td>
<td>Annual</td>
<td>0.22</td>
<td>None</td>
<td>14</td>
<td>0.22</td>
<td>(d)</td>
<td>0.22</td>
<td>100</td>
</tr>
<tr>
<td>SO\textsubscript{2}</td>
<td>1-hour</td>
<td>127</td>
<td>None</td>
<td>None</td>
<td>127</td>
<td>149</td>
<td>276</td>
<td>1,050</td>
</tr>
<tr>
<td></td>
<td>3-hour</td>
<td>47</td>
<td>25</td>
<td>None</td>
<td>697</td>
<td>92</td>
<td>789</td>
<td>1,300</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>9.3</td>
<td>5</td>
<td>13</td>
<td>111</td>
<td>43</td>
<td>154</td>
<td>365</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>9.3</td>
<td>5</td>
<td>13</td>
<td>111</td>
<td>43</td>
<td>154</td>
<td>262</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>1.47</td>
<td>1</td>
<td>None</td>
<td>13.6</td>
<td>13</td>
<td>26.6</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>1.47</td>
<td>1</td>
<td>None</td>
<td>13.6</td>
<td>13</td>
<td>26.6</td>
<td>52</td>
</tr>
<tr>
<td>CO</td>
<td>1-hour</td>
<td>63.74</td>
<td>2,000</td>
<td>None</td>
<td>63.7</td>
<td>(c)</td>
<td>63.7</td>
<td>40,000</td>
</tr>
<tr>
<td></td>
<td>8-hour</td>
<td>19.70</td>
<td>500</td>
<td>575</td>
<td>19.7</td>
<td>(c)</td>
<td>19.7</td>
<td>10,000</td>
</tr>
<tr>
<td>PM\textsubscript{10}</td>
<td>24-hour</td>
<td>3.5</td>
<td>5</td>
<td>10</td>
<td>3.5</td>
<td>(c)</td>
<td>3.5</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>0.40</td>
<td>1</td>
<td>None</td>
<td>0.40</td>
<td>(c)</td>
<td>0.40</td>
<td>50</td>
</tr>
</tbody>
</table>

(a) SIL = Significant Impact Level, per the EPA New Source Review Manual, Draft 1990, Table C-4.
(b) Background concentrations reflect the highest observations from 2002-2006 collected at a BP SO\textsubscript{2} monitoring station located adjacent to BP's meteorological monitoring tower.
(c) Pollutants for which a NAAQS analysis was not required were not modeled with other regional sources, and were not combined with a background concentration for comparison with the ambient standard.
(d) Pollutants for which the project did not trigger PSD were modeled only with the two replacement boilers and were not combined with a background concentration for comparison with the ambient standard.
(f) NWCAA has 655 ug/m\textsuperscript{3} one-hour average and 2,096 ug/m\textsuperscript{3} five-minute average standards for SO\textsubscript{2}. Modeling shows
compliance with the 1-hour standard. Multiplication of the 1-hour concentration impact by 1.64 (factor recommended by Turner)\(^1\) indicates 453 \(\mu g/m^3\), which meets the 5-minute standard.

15. Allowable increases in emissions from the project will not cause or contribute to air pollution in violation of any PSD increment. Table 4 shows the increment consumption for \(SO_2\) emissions. Table 3 shows that no other regulated pollutant triggered their PSD modeling SIL. This removes any further modeling requirements, including increment consumption analysis.

Table 4: Maximum Predicted \(SO_2\) Concentrations and Comparison with Applicable PSD Increments

<table>
<thead>
<tr>
<th>Averaging Period</th>
<th>BP Refinery and Other Regional Industrial Sources (\mu g/m^3)</th>
<th>PSD Increment (\mu g/m^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 hour</td>
<td>389</td>
<td>512</td>
</tr>
<tr>
<td>24 hour</td>
<td>75</td>
<td>91</td>
</tr>
<tr>
<td>Annual</td>
<td>13.6</td>
<td>20</td>
</tr>
</tbody>
</table>

(a) There is no PSD increment for 1-hour or 5 minute averaging periods.

16. Class I area distances and concentrations are shown in the following table:

Table 5: Predicted Pollutant Concentrations for Class I Areas

<table>
<thead>
<tr>
<th>Class I Area of Interest</th>
<th>Distance ((km))</th>
<th>(NO_x) (\mu g/m^3)</th>
<th>(PM_{10}) (\mu g/m^3)</th>
<th>(SO_2) (\mu g/m^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual Average(^2)</td>
<td>24-Hour Average</td>
<td>Annual Average</td>
<td>3-Hour Average</td>
</tr>
<tr>
<td>Alpine Lakes Wilderness</td>
<td>162</td>
<td>0.0000201</td>
<td>0.0202</td>
<td>0.0011</td>
</tr>
<tr>
<td>Glacier Peak Wilderness</td>
<td>112</td>
<td>0.0000567</td>
<td>0.0159</td>
<td>0.0012</td>
</tr>
<tr>
<td>Goat Rocks Wilderness</td>
<td>262</td>
<td>0.00000236</td>
<td>0.0133</td>
<td>0.0004</td>
</tr>
<tr>
<td>Mount Adams Wilderness</td>
<td>300</td>
<td>0.00000151</td>
<td>0.0105</td>
<td>0.0003</td>
</tr>
<tr>
<td>Mount Rainier National Park</td>
<td>218</td>
<td>0.00000896</td>
<td>0.0250</td>
<td>0.0008</td>
</tr>
<tr>
<td>N Cascades National Park</td>
<td>80</td>
<td>0.0000197</td>
<td>0.0199</td>
<td>0.0016</td>
</tr>
<tr>
<td>Olympic National Park</td>
<td>106</td>
<td>0.0000307</td>
<td>0.0516</td>
<td>0.0022</td>
</tr>
<tr>
<td>Pasayten Wilderness</td>
<td>126</td>
<td>0.0000759</td>
<td>0.0146</td>
<td>0.0010</td>
</tr>
</tbody>
</table>

Maximum Concentration in Mandatory Class I Areas

<table>
<thead>
<tr>
<th>Class I Area of Interest</th>
<th>(NO_x) (\mu g/m^3)</th>
<th>(PM_{10}) (\mu g/m^3)</th>
<th>(SO_2) (\mu g/m^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Baker Wilderness(^3)</td>
<td>60</td>
<td>0.000421</td>
<td>0.0342</td>
</tr>
<tr>
<td>(EPA) Proposed SIL(^4)</td>
<td></td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>(FLM) Recommended SIL(^4)</td>
<td></td>
<td>0.03</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Class I Area PSD Increment\(^4\)

<table>
<thead>
<tr>
<th>Class I Area PSD Increment(^4)</th>
<th>(NO_x)</th>
<th>(PM_{10})</th>
<th>(SO_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2.5)</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

1 NO\(_x\) was conservatively assumed to be 75% converted to \(NO_2\), per Section 6.2.3 of EPA's Guideline on Air Quality Models (Appendix W to 40 CFR Part 51).
2 Mount Baker Wilderness Area is not a Class I area, it is included in the analysis because FLMs have requested its inclusion for their information.
3 SIL = Significant Impact Level; EPA proposed and FLM recommended from the Federal Register, Vol. 61, No. 142, p. 38292, July 23, 1996.
4 40 CFR 52.21(c), adopted by reference in WAC 173-400-720(4)(a)(v).

17. Allowable emissions will not cause a significant visibility impact in:

17.1. The surrounding Class I areas: The highest modeled impacts were 2.39% and 1.46% degradation in the Olympic National Park and North Cascades National Park respectively. Federal land managers reviewed both the original and amended permit applications and considered the project to be below their "concern" threshold.

17.2. Nearby Class II wilderness and scenic areas: The highest modeled impact was 2.90% degradation in the Mt. Baker Wilderness Area. Federal land manager guidance considers this to be below the "concern" threshold.

18. The highest modeled deposition in the surrounding Class I areas is 0.0007 kilograms nitrogen and 0.0021 kilograms sulfur per hectare per year in the North Cascades National Park. The nitrogen deposition level is 14% of the "concern" threshold in federal land manager guidance. The sulfur deposition level is 42% of the federal land manager "concern" threshold. Amendment 1 does not change annual emissions, so it does not affect this analysis.

19. No significant effect on industrial, commercial, or residential growth in the area is anticipated as a result of this project.

20. Ecology finds all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

Fuels

1. Boilers #6 and #7 shall burn only refinery fuel gas or natural gas.

Emission Limits

2. CO emissions from boilers #6 or #7 (each) shall not exceed:
   2.1. 13.3 lb/hr based on a calendar day average.

3. SO$_2$ emissions from boilers #6 or #7 (each) shall not exceed:
   3.1. 39.3 lb/hr based on a three hour average.
   3.2. 21.4 lb/hr based on a calendar day average.
   3.3. 59.6 tons per year based on a twelve month rolling average.

4. PM$_{10}$ emissions from boilers #6 or #7 (each) shall not exceed:
   4.1. 3.4 lb/hr on a calendar day average.
Initial Compliance Demonstration and Notification

5. BP shall notify Ecology and NWCAA in writing at least 30 days prior to initial start-up of Boilers #6 and #7.

6. For CO emissions from Boilers #6 and #7 exhaust stacks, BP will demonstrate initial compliance with Condition 2.1.

6.1 BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which Boilers #6 and #7 will be operated, but not later than 180 days after initial start-up.

6.2 Boilers #6 and #7 are to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90% of the rated capacity, the reason shall be explained in the test report.

6.3 Determine compliance using 40 CFR 60 Appendix A Method 10, 10A, 10B, or equivalent test method if approved in advance by Ecology.

6.4 A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 6.5.

6.5 BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

7. For SO₂ emissions from Boilers #6 and #7 exhaust stacks, BP will demonstrate initial compliance with Condition 3.1.

7.1 BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which Boilers #6 and #7 will be operated, but not later than 180 days after initial start-up.

7.2 Boilers #6 and #7 are to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90% of the rated capacity, the reason shall be explained in the test report.

7.3 Determine compliance using 40 CFR 60 Appendix A Method 6 or 6C, or equivalent test method if approved in advance by Ecology.

7.4 A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 7.5.

7.5 BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.
8. For PM/PM$_{10}$ emissions from Boilers #6 and #7 unit exhaust stacks, BP will demonstrate initial compliance with Condition 4.1.

8.1 BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which Boilers #6 and #7 will be operated, but not later than 180 days after initial start-up.

8.2 Boilers #6 and #7 are to be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90% of the rated capacity, the reason shall be explained in the test report.

8.3 Determine compliance using 40 CFR 60 Appendix A Method 5 front half, and 40 CFR 51 Appendix M Method 202 for the back half, or equivalent test method if approved in advance by Ecology.

8.4 A typical mix of normal refinery gas and natural gas fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 8.5.

8.5 BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

**Compliance Monitoring and Testing**

9. For CO emissions from Boilers #6 and #7 exhaust stacks, BP will demonstrate compliance with Condition 2.1.

9.1 Monitor using a CEMS that measure and records CO emissions from Boilers #6 and #7 exhaust stacks and that meets the requirements of Condition 12.1.

10. For SO$_2$ emissions from Boilers #6 and #7 exhaust stacks, BP will demonstrate routine compliance with Condition 3.1.

10.1 Test once per calendar month for total sulfur in the boiler fuel using ASTM Test Method D-5504 or another method approved by Ecology. A minimum of 3 samples, taken at least an hour apart, shall be run per monthly test.

10.2 Monitor fuel H$_2$S content using a CEMS that continuously monitors and records the concentration (dry basis) of H$_2$S in the fuel gas. It shall meet the requirements of Condition 12.2.

10.3 As an alternative to Conditions 10.1 and 10.2, BP may monitor using a CEMS that measure and records SO$_2$ emissions from the Boilers #6 and #7 exhaust stacks and meets the requirements of Condition 12.3.

11. For particulate emissions from the Boilers #6 and #7 exhaust stacks, BP will demonstrate routine compliance with Condition 4.1.
11.1 Continuous compliance shall be demonstrated by an annual emissions test on each exhaust stack using the methods indicated in Condition 8.3. After 3 consecutive years of annual tests on each boiler stack have demonstrated compliance, testing of each boiler stack may be reduced to once every 5 years. If a test demonstrates noncompliance, a retest along with resumption of annual testing is required for the unit until 3 consecutive years demonstrate compliance.

12. Continuous Emission Monitoring Systems:


Start-up Conditions

13. Start-up is defined as starting the boiler from an inactive cold state, and ending when operating above 91 MMBtu HHV/hour or after 8 hours of operation, whichever is sooner.

13.1 Emission limits for CO in Condition 2 are relieved during start-up periods.

13.2 Emissions of CO during start-up periods shall be limited to 50 pounds per hour averaged over the start-up period.

13.3 Emissions of CO during start-up periods shall be monitored and included in the annual emissions reported each year pursuant to WAC 173-400-105(1).

Recordkeeping, Notification and Reporting

14. BP shall submit the following reports and monitoring data to NWCAA and Ecology. Once this permit has been incorporated into BP’s Title V permit, these submittals no longer need to be sent to Ecology.

14.1 Submit a report monthly, within 30 days of the end of the calendar month, or on
another schedule agreed to by Ecology and NWCAA. At the least, the report shall include the following:

14.1.1 Calendar date or monitoring period.

14.1.2 Monthly maximum of CO, SO₂, and PM₁₀ emissions for each boiler for the reporting month in accordance with Approval Conditions 2, 3, and 4, respectively.

14.1.3 Monthly total sulfur analysis results and annual SO₂ emissions on a twelve monthly rolling average in accordance with Approval Condition 3.3.

14.2 In addition, required report shall include:

14.2.1 Days and duration for which data was not collected.
14.2.2 Reasons for which data was not collected.

14.3 BP shall maintain monitoring records on site for at least five years, and shall submit:

14.3.1 Excess emission reports to NWCAA, as discussed in Approval Condition 14.4.
14.3.2 Results of any compliance source tests.
14.3.3 Results of any CEM RATAs.

14.4 For each occurrence of monitored emissions in excess of any condition, the monthly emissions report shall include the following:

14.4.1 The time of the occurrence.
14.4.2 Magnitude of the emission or process parameters excess.
14.4.3 The duration of the excess.
14.4.4 The probable cause.
14.4.5 Corrective actions taken or planned.
14.4.6 The name of any agency contacted.

Special Requirements

15. When the final NSPS 40 CFR 60 Subpart Ja is published in the Federal Register, its provisions will become applicable to Boilers #6 and #7. Within 30 days of publication, BP will contact Ecology and NWCAA to begin a process to meet these new requirements and modify the applicable conditions of this permit.

Standard Requirements

16. Sampling ports and platforms shall be provided on the Boilers #6 and #7's stacks, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate, permanent, and safe access to the test ports shall be provided.
17. Within 90 days of start-up of the boilers, BP shall identify operational parameters and practices that will constitute "good combustion practices" for Boilers #6 and #7. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA or the EPA. If a failure to follow the requirements of the manuals results in excess emissions, that failure may be considered credible evidence that the event was caused by poor or inadequate operation or maintenance.

18. Access to the source by Ecology, NWCAA, or the EPA shall be permitted upon request. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act and the Washington State Clean Air Act.

19. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18-month period, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

20. The effective date of this permit shall not be earlier than the date upon which the EPA notifies Ecology that the EPA has satisfied its obligations, if any, under Section 7 of the Endangered Species Act 16 U.S.C. § 1531 et seq., 50 C.F.R. part 402, subpart B (Consultation Procedures) and Section 305(b)(2) of the Magnuson-Stevens Fishery and Conservation Act 16 U.S.C. § 1801 et seq., 50 C.F.R. part 600, subpart K (EFH Coordination, Consultation, and Recommendations).

21. For federal regulatory purposes and in accordance with 40 CFR 124.15 and 124.19: If there was a public comment requesting a change in the preliminary determination or a proposed permit condition during the public review and comment period, the effective date of this permit shall not be earlier than 30 days after service of notice to the commenters and applicant on the preliminary determination.

21.1 If a review of the final determination is requested under 40 CFR 124.19 within the 30-day period following the date of the final determination, the effective date of the permit is suspended until the review and any subsequent appeal against the permit are resolved.

21.2 If there was no public comment requesting a change in the preliminary determination or a proposed permit condition during the public review and comment period, this permit is effective upon the date of finalization subject to consideration of Condition 20 (EPA's ESA requirement) above.
Ecology was notified by the U.S. EPA that the U.S. EPA has satisfied its obligations under the Endangered Species and Magnuson-Stevens Acts relative to PSD Permit 07-01 issued to BP Cherry Point Refinery on:

May 21, 2007

Date of U.S. EPA Notification

Stuart A. Clark
Air Quality Program Manager
Washington State Department of Ecology
IN THE MATTER OF: \hspace{1cm} | \hspace{1cm} NO. PSD-10-01
\hspace{1cm} \hspace{1cm} | \hspace{1cm} BP Cherry Point Refinery
\hspace{1cm} \hspace{1cm} | \hspace{1cm} FINAL APPROVAL
\hspace{1cm} \hspace{1cm} | \hspace{1cm} 4519 Grandview Road
\hspace{1cm} \hspace{1cm} | \hspace{1cm} OF PSD APPLICATION
\hspace{1cm} \hspace{1cm} | \hspace{1cm} Blaine, Washington 98230

This approval is issued pursuant to the regulations for the Prevention of Significant Deterioration (PSD) set forth in the Washington Administrative Code 173-400-700. Based upon the application submitted by the BP Cherry Point Refinery (BP) dated April 2010, and additional information dated July 19, 2010, the technical analysis performed by the Department of Ecology (Ecology), Ecology now finds the following:

FINDINGS

1. BP has applied to implement a Clean Fuels Project (Project). The project is to install and operate new equipment to meet the new federal Ultra-Low Sulfur Diesel (ULSD) specifications for non-road equipment and benzene content for gasoline. The diesel fuel’s sulfur content will be reduced from less than 500 to less than 15 part per million.

2. The project will allow removal of up to 15 long tons of sulfur per day from refinery’s non-road diesel fuel product.

3. BP is located in Whatcom County approximately seven miles southeast of Blaine, Washington. The coordinates of the project are about UTM Zone 10 519600E and 5414800N.

4. BP is located within a Class II area that is currently designated in attainment for all national and state air quality standards.

5. Ecology, EPA Region 10, and the Land Managers received the Project PSD permit application on about April 21, 2010. BP submitted additional information dated July 21, 2010, in response to questions from Ecology. The application was determined to be complete as of August 24, 2010.

6. The Project has two primary components:

6.1. A new diesel hydro-desulfurization (#3 DHDS) processing unit to provide additional treatment to up to 25,000 barrels per day of existing diesel fuel production. It has a 28 million BTU per hour (MMBtu/hr) charge heater.

6.2. A new hydrogen plant (#2 Hydrogen Plant) to produce up to 40 million standard cubic feet (MMSCFD) per day of synthesized hydrogen for the new #3 DHDS and also other existing refinery operations. It will also purify up to four MMSCFD of hydrogen from existing refinery sources. A Steam Methane Reformer (SMR) furnace with a heat input capacity of 496 million BTU/hr is the main source of combustion emissions. The new
hydrogen plant also has a flare system to combust off specification gases associated with start-up, shutdown, and upset conditions. During normal operations this flare will have limited use.

7. The Project will also retrofit the existing First Stage Fractionator Reboiler (one of the four heaters at the hydrocracker) with Ultra Low NOX Burners (ULNBs).

8. The Project will burn a combination of refinery fuel gas and natural gas. Because there is a limited supply of refinery fuel gas at Cherry Point Refinery, natural gas is routinely blended with refinery fuel gas in the mix drum. When sufficient refinery fuel gas is not available to meet all refinery needs, natural gas is used.

9. Because BP is an existing major stationary source, any net emissions increase of a regulated pollutant greater than its Significant Emission Rate (SER) qualifies the proposed Project as a major modification. As a result, the Project would be subject to PSD review under WAC 173-400-700 for that pollutant. Additionally, the Project could be subject to federal PSD review if it qualifies as a major modification under federal rules [40 CFR 52.21(b)(2)(i), 40 CFR 52.21(b)(3)(i), and 40 CFR 52.21(b)(23)(i)].

10. BP conducted a two-step PSD applicability analysis where Step 1 determines emissions increases due to the Project (including increases from affected equipment). Step 2 combines these Project increases with other contemporaneous increases and decreases to determine the Project’s Significant Net Emissions increase. The details of this analysis are available in the Technical Support Document prepared for this permit.

11. Potential regulated pollutants for the proposed Project are shown in Table 1. They are nitrogen oxides (NOX), carbon monoxide (CO), sulfur dioxide (SO2), volatile organic compounds (VOC), particulates less than 10 microns in diameter (PM10), particulates less than 2.5 microns in diameter (PM2.5), and particulates of any diameter (PM). For this permit, PM is considered equal to PM10. Under current federal PSD regulations, condensables are not considered as part of PM, PM10, or PM2.5. Under current state PSD regulations, condensables are considered part of PM10. The state PSD regulations do not consider PM2.5 at all.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emission Rate</th>
<th>SER</th>
<th>Significant?</th>
<th>With Contemporaneous Emission Increases and Decreases</th>
<th>Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOX</td>
<td>61 tpy, 40 tpy</td>
<td>Yes</td>
<td>34 tpy</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>CO</td>
<td>77 77</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SO2</td>
<td>36 40</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PM (filterable)</td>
<td>9 25</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PM10(filterable)</td>
<td>9 15</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PM10(total)</td>
<td>32 15</td>
<td>Yes</td>
<td>32 tpy</td>
<td>Yes</td>
<td>Yes2</td>
</tr>
<tr>
<td>PM2.5(filterable)</td>
<td>8 10</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>VOC</td>
<td>35 40</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>1.5 7</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1. Includes both combustion emissions and fugitive equipment leaks.
2. Significant under Washington State PSD regulations only; not current federal regulations.
12. Regulated pollutants with net emissions increases greater than their PSD SER are subject to regulation under PSD. For this project, the only PSD regulated pollutant is total PM$_{10}$ under WAC 173-400-720.

13. The emissions of all air pollutants from BP are subject to review under Chapter 173-400 WAC and Chapter 173-460 WAC. Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD pollutants that have a significant net emission increase due to the Project when considered under PSD regulations. All other pollutants are regulated under state and local air agency regulations by the Northwest Clean Air Agency (NWCAA).

14. The NSPS requirements of 40 CFR 60 Subparts A, J, Ja, GGGa, and QQQ are applicable to the Project. There are no applicable NSPS requirements for PM$_{10}$ emissions.

15. Best Available Control Technology (BACT) determinations are shown in Table 2.

**Table 2. BACT Determinations for PM$_{10}$**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Best Available Control</th>
<th>Emission Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>#3 DHDS Charge Heater</td>
<td>Good Combustion Practices</td>
<td>0.28 lb/hr based on 0.0100 lb/MMBtu</td>
</tr>
<tr>
<td>#2 H$_2$ Plant SMR Furnace</td>
<td>Good Combustion Practices</td>
<td>4.96 lb/hr based on 0.0100 lb/MMBtu</td>
</tr>
<tr>
<td>#2 H$_2$ Plant Flare</td>
<td>Proper combustion, design to NSPS &amp; MACT specifications</td>
<td></td>
</tr>
</tbody>
</table>

16. Allowable increases in emissions from the Project will not cause or contribute to air pollution in violation of any National Ambient Air Quality Standard (NAAQS). Table 3 shows that PM$_{10}$ impacts are below their respective NAAQS and SILs.

**Table 3. Maximum Predicted Criteria Pollutant Concentrations (µg/m$^3$)**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Maximum Concentration</th>
<th>Modeling SIL (a)</th>
<th>Monitoring De Minimis Concentration</th>
<th>Background</th>
<th>Total</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{10}$</td>
<td>24-hour</td>
<td>0.8</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>0.14</td>
<td>None</td>
<td>None</td>
<td>-</td>
<td>-</td>
<td>50</td>
</tr>
</tbody>
</table>

(a) SIL = Significant Impact Level, per the EPA New Source Review Manual, Draft 1990, Table C-4.

17. Allowable increases in emissions from the Project will not cause or contribute to air pollution in violation of any PSD increment. Since PM$_{10}$ did not break its SIL, no increment analysis is required.
18. Class I area distances and concentrations are shown in the following table:

### Table 4. Predicted Class I Area Criteria Pollutant Concentrations

<table>
<thead>
<tr>
<th>Class I Area of Interest</th>
<th>NO₂ a</th>
<th>PM₁₀</th>
<th>SO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual Average</td>
<td>24-Hour Average</td>
<td>Annual Average</td>
</tr>
<tr>
<td>Alpine Lakes Wilderness</td>
<td>1.45E-04</td>
<td>0.0115</td>
<td>0.0005</td>
</tr>
<tr>
<td>Glacier Peak Wilderness</td>
<td>0.00085</td>
<td>0.0193</td>
<td>0.0010</td>
</tr>
<tr>
<td>Goat Rocks Wilderness</td>
<td>1.62E-05</td>
<td>0.0037</td>
<td>0.0001</td>
</tr>
<tr>
<td>Mount Adams Wilderness</td>
<td>9.15E-06</td>
<td>0.0030</td>
<td>0.0001</td>
</tr>
<tr>
<td>Mount Baker Wilderness d</td>
<td>0.00324</td>
<td>0.0397</td>
<td>0.0024</td>
</tr>
<tr>
<td>Mount Rainier National Park</td>
<td>3.44E-05</td>
<td>0.0070</td>
<td>0.0002</td>
</tr>
<tr>
<td>N Cascades National Park</td>
<td>0.00177</td>
<td>0.0265</td>
<td>0.0019</td>
</tr>
<tr>
<td>Olympic National Park</td>
<td>0.00198</td>
<td>0.0680</td>
<td>0.0021</td>
</tr>
<tr>
<td>Pasayten Wilderness</td>
<td>0.00096</td>
<td>0.0174</td>
<td>0.0014</td>
</tr>
<tr>
<td>Class I Area &amp; Mt. Baker Maximum Concentration</td>
<td>0.00324</td>
<td>0.0680</td>
<td>0.0024</td>
</tr>
<tr>
<td>EPA Proposed SIL b</td>
<td>0.1</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>FLM Recommended SIL b</td>
<td>0.03</td>
<td>0.27</td>
<td>0.08</td>
</tr>
<tr>
<td>Class I Area PSD Increment c</td>
<td>2.5</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

a. NOₓ was conservatively assumed to be 75 percent converted to NO₂ per Section 6.2.3 of EPA’s Guideline on Air Quality Models (Appendix W to 40 CFR Part 51).

b. SIL = Significant Impact Level; EPA proposed and FLM recommended from the Federal Register, Vol. 61, No. 142, p. 38292, July 23, 1996.

c. PSD = Prevention of Significant Deterioration; from 40 CFR 52.21(c), adopted by reference in WAC 173-400-720(4)(a)(v)

d. Mount Baker Wilderness Area is not a Class I area. It is included in the analysis because FLMs have requested its inclusion in previous permit applications.

19. Allowable emissions will not cause a significant visibility impact in:

19.1. The surrounding Class I areas: The highest modeled impacts were 3.76% and 1.03% degradation in the Olympic National Park and North Cascades National Park, respectively. Federal land managers reviewed both the original and amended permit applications and considered the Project to be below their "concern" threshold.

19.2. Nearby Class II wilderness and scenic areas: The highest modeled impact was 1.67% degradation in the Mt. Baker Wilderness Area. Federal land manager guidance considers this to be below the "concern" threshold.
20. The highest modeled deposition in the surrounding Class I areas is 0.0007 kilograms nitrogen and 0.0009 kilograms sulfur per hectare per year in the North Cascades National Park. The nitrogen deposition level is 14% of the "concern" threshold in federal land manager guidance. The sulfur deposition level is 18% of the federal land manager "concern" threshold.

21. No significant effect on industrial, commercial, or residential growth in the area is anticipated as a result of this project.

22. On September 1, 2010, EPA notified Ecology that the EPA has satisfied its obligations under Section 7 of the Endangered Species Act 16 U.S.C. § 1531 et seq., 50 C.F.R. part 402, subpart B (Consultation Procedures) and Section 305(b)(2) of the Magnuson-Stevens Fishery and Conservation Act 16 U.S.C. § 1801 et seq., 50 C.F.R. part 600, subpart K (EFH Coordination, Consultation, and Recommendations) relative to this Project.

23. Ecology finds all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

**APPROVAL CONDITIONS**

**For the #2 Hydrogen Plant**

1. Fuels combusted in the Steam Methane Reformer Furnace shall be limited to PSA off gas and natural gas.

2. Heat input to the Steam Methane Reformer Furnace shall not exceed 496 MMBtu/hour HHV, based on a 365-day rolling average.

3. Particulate matter (PM$_{10}$, filterable and condensable) from the Steam Methane Reformer Furnace stack shall not exceed any of the following emission limits:
   
   3.1. 4.96 lb/hour
   
   3.2. 0.010 lb/MMBtu
   
   3.3. Compliance with this condition shall be determined by the average of three test runs conducted during periodic source testing required under Condition 5.

4. BP shall demonstrate initial compliance with Condition 3.
   
   4.1. BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which the furnace will be operated, but not later than 180 days after initial start-up.
   
   4.2. The furnace shall be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90% of the rated capacity, the reason shall be explained in the test report.
4.3. Determine compliance using 40 CFR 60 Appendix A Method 5 front half, and 40 CFR 51 Appendix M Method 202 for the back half, or an alternative test method if approved in advance by Ecology.

4.4. A typical mix of fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 4.5.

4.5. BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

5. BP shall demonstrate routine compliance with Condition 3.

5.1. Testing shall be conducted annually within 11 to 13 months of the anniversary of the initial test using the methods and procedures in Condition 4.

5.2. After three consecutive years of annual tests have demonstrated compliance, testing may be reduced to once every five years. If a test demonstrates noncompliance, a retest (along with resumption of annual testing) is required for the unit until three consecutive years demonstrate compliance.

6. The #2 Hydrogen Plant Flare pilot fuel and header sweep gas shall be limited to natural gas.

7. The #2 Hydrogen Plant Flare flow rate shall be monitored continuously using a flow meter compensated for pressure and temperature. The flow meter shall be used to determine the standard cubic feet per minute (scfm) of gas flow to the flare.

8. The owner/operator shall maintain the following records for the #2 Hydrogen Plant. These records shall be maintained for a period of no less than five years from the time of generation and shall be readily available for review by Ecology and NWCAA.

8.1. Hourly MMBtu HHV heat input rate to the SMR Furnace.

8.2. 365-day rolling MMBtu HHV heat input rate to the SMR Furnace.

8.3. The heat content in Btu/scf, hourly average of gas combusted in the #2 Hydrogen Plant Flare.

8.4. The flow rate in scfm, hourly average, of gas combusted in the #2 Hydrogen Plant Flare.

For the #3 DHDS Unit

9. Fuel combusted in the #3 DHDS Charge Heater shall be limited to refinery fuel gas and natural gas.

10. Heat input to the #3 DHDS Charge Heater shall not exceed 28 MMBtu/hour HHV, based on a 365-day rolling average.
11. Particulate matter (PM\textsubscript{10}, filterable and condensable) from the #3 DHDS Charge Heater shall not exceed any of the following emission limits:

11.1. 0.28 lb/hour

11.2. 0.010 lb/MMBtu

11.3. Compliance with this condition shall be determined by the average of three test runs conducted during periodic source testing required under Condition 13.

12. BP shall demonstrate initial compliance with Condition 11.

12.1. BP will have a compliance test conducted by an independent testing vendor within 60 days of achieving the maximum firing rate at which the furnace will be operated, but not later than 180 days after initial start-up.

12.2. The furnace shall be operated at an average firing rate as close to the rated capacity during the compliance test as practical. If this is less than 90% of the rated capacity, the reason shall be explained in the test report.

12.3. Determine compliance using 40 CFR 60 Appendix A Method 5 front half, and 40 CFR 51 Appendix M Method 202 for the back half, or an alternative test method if approved in advance by Ecology.

12.4. A typical mix of fuel shall be burned during the test period. This mix shall be listed in the test plan referenced in Condition 12.5.

12.5. BP will submit a test plan to Ecology and NWCAA for approval at least 30 days prior to initial performance testing.

13. BP shall demonstrate routine compliance with Condition 11

13.1. Testing shall be conducted within 3 months of each 36 month anniversary of the initial test using the methods and procedures in Condition 12.

14. The owner/operator shall maintain the following records for the #3 DHDS Unit. These records shall be maintained for a period of no less than five years from the time of generation and shall be readily available for review by Ecology and NWCAA.

14.1. Hourly MMBtu HHV heat input rate to the #3 DHDS Charge Heater.

14.2. 365-day rolling MMBtu HHV heat input rate to #3 DHDS Charge Heater.
Notifications

15. The owner/operator shall notify Ecology in writing of the following events. Each notification shall be postmarked no later than 15 days following the date of the event.

15.1. Commencement of construction date for the Clean Fuels Project. For the purpose of this notification, commencement of construction refers to construction of the #2 Hydrogen Plant and #3 DHDS and does not include any notices relevant to Hydrocracker 1st Stage Fractionator Reboiler ULNB project approved under OAC #1067.

15.2. Initial firing date of the #2 Hydrogen Plant Steam Methane Reformer Furnace.

15.3. Initial firing date of the #3 DHDS Charge Heater.

Standard Requirements

16. Sampling ports and platforms shall be provided on the Steam Methane Reformer Furnace and #3 DHDS Charge Heater exhaust stacks, after any final pollution control device. The ports shall meet the requirements of 40 CFR 60 Appendix A, Method 1. Adequate, permanent, and safe access to the test ports shall be provided.

17. Within 90 days of start-up of the #2 Hydrogen Plant Steam Methane Reformer Furnace and the #3 DHDS Charge Heater, BP shall identify operational parameters and practices that will constitute “good combustion practices” for each unit. These operational parameters and practices shall be included in an O&M manual for the facility. The O&M manual shall be maintained and followed by BP and shall be available for review by Ecology, NWCAA, or the EPA. If a failure to follow the requirements of the manuals results in excess emissions, that failure may be considered credible evidence that the event was caused by poor or inadequate operation or maintenance.

18. Access to the source by Ecology, NWCAA, or the EPA shall be permitted upon request. Failure to allow such access is grounds for an enforcement action under the federal Clean Air Act and the Washington State Clean Air Act.

19. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless Ecology extends the 18-month period, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

20. BP’s requirements in the following approval conditions to notify or report to or acquire approval or agreement from "Ecology and the Northwest Clean Air Agency" may be satisfied by providing such notification, reporting, or approval request to NWCAA if the approval conditions of this PSD permit have been incorporated in BP’s Title V permit (40 CFR Part 70).
21. For federal regulatory purposes and in accordance with 40 CFR 124.15 and 124.19: If there was a public comment requesting a change in the preliminary determination or a proposed permit condition during the public review and comment period, the effective date of this permit shall not be earlier than 30 days after service of notice to the commenters and applicant on the preliminary determination. If a review of the final determination is requested under 40 CFR 124.19 within the 30-day period following the date of the final determination, the effective date of the permit be suspended until the review and any subsequent appeal against the permit are resolved.

22. If there was no public comment requesting a change in the preliminary determination or a proposed permit condition during the public review and comment period, this permit is effective upon the date of the final signature below.

Reviewed by:

Robert C. Burmark, P.E.
Science and Engineering Section
Air Quality Program

Approved by:

Stuart A. Clark
Air Quality Program Manager
Washington State Department of Ecology