



**Montana Department of
ENVIRONMENTAL QUALITY**

Brian Schweitzer, Governor

P. O. Box 200901

Helena, MT 59620-0901

(406) 444-2544

Website: www.deq.mt.gov

November 3, 2008

Randall Richert, P.E., QEP
ConocoPhillips Company
Billings Refinery
P.O. Box 30198
Billings, MT 59107

Dear Mr. Richert:

The Department of Environmental Quality (Department) has made its decision on the Montana Air Quality Permit application for the New Crude and Vacuum Unit project. The application was given permit number 2619-24. The Department's decision may be appealed to the Board of Environmental Review (Board). A request for hearing must be filed by November 18, 2008. This permit shall become final on November 19, 2008, unless the Board orders a stay on the permit.

Procedures for Appeal: Any person jointly or severally adversely affected by the final action may request a hearing before the Board. Any appeal must be filed before the final date stated above. The request for a hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

Conditions: See attached.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-3490

Moriah Peck, P.E.
Environmental Engineer
Air Resources Management Bureau
(406) 444-4267

VW: MAP:vs
Enclosures

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: ConocoPhillips Company – Billings Refinery

Air Quality Permit Number: 2619-24

Preliminary Determination Issued: September 24, 2008

Department Decision Issued: November 3, 2008

Permit Final:

1. *Legal Description of Site:* ConocoPhillips operates a petroleum refinery located at 401 South 23rd Street, Billings, Montana, in the NW $\frac{1}{4}$ of Section 2, Township 1 South, Range 26 East, in Yellowstone County. Jupiter operates a sulfur recovery facility, within the petroleum refinery area described above, at 2201 7th Avenue South, Billings, Montana. The Jupiter facility is operated as a joint venture, of which ConocoPhillips is a partner. ConocoPhillips is responsible for maintaining air permit compliance at Jupiter's sulfur recovery facility.
2. *Description of Project:* On August 21, 2008, the Department received a complete NSR-PSD permit application from ConocoPhillips. ConocoPhillips is proposing to replace the existing Small and Large Crude Units and the existing Vacuum Unit with a new, more efficient Crude and Vacuum Unit. This project is referred to as the NCVU project. The NCVU project will enable ConocoPhillips' Billings refinery to process both conventional crude oils and SynBit/oil sands crude oils and increase crude distillation capacity about 25%. The NCVU project will require modifications and optimization of the following existing process units: No. 2 HDS Unit, Saturate Gas Plant, No. 2 and No. 3 Amine Units, No. 5 HDS Unit, Coker Unit, No. 1 and 2 H₂ Plants, HPU, Raw Water Demineralizer System, Jupiter SRU/ATS Plant, and the FCCU. As a result of the NCVU Project, the Jupiter Plant feed rate capacity will need to be increased to approximately 235 LTD of sulfur
3. *Objectives of Project:* The primary objectives of the NCVU Project are to improve crude fractionation and energy efficiency of the refinery, and to increase crude processing capacity and crude feed flexibility to reduce feed costs.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because ConocoPhillips demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #2619-24.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the

permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

As documented in the Montana Natural Heritage Program Data Report, the Yellowstone River Corridor has a rich diversity of aquatic, riverine, wetland, and adjacent upland habitats along its main-stem. The Yellowstone River, unlike most major rivers of the west, is free from major impoundments that have dramatically altered the hydrologic regime and is characterized as a relatively free-flowing river. The intact hydrology and river dynamics give rise to important cottonwood floodplain communities. Three species of cottonwoods: narrowleaf cottonwood, black cottonwood, and plains cottonwood occur in gallery forests and terraces and provide habitat for nesting, wintering and migrating bald eagles and rookery sites for blue heron. Seasonal flooding is the principal process facilitating the establishment and regeneration of cottonwood forests and riparian communities. River and floodplain habitats are very important ecologically. Adjacent uplands include benches, slopes, cliffs, rock outcrops and historic river-bottom that support shrublands of sagebrush, grasslands consisting of bluebunch wheatgrass, and woodlands of primarily ponderosa pine. Channel gravel and sandbars provide habitat for spiny shoftshell and persistent-sepal yellowcress, although this species has not been relocated in recent years. Riparian communities include the plants beaked spikerush and Schweinitz’s flatsedge. Notable shorebirds recorded for this stretch include the Interior Least Tern. Two reptiles, the western hognose snake and the milk snake have been reported from the river corridor. The aquatic environment includes both cold water and warm water species, including Yellowstone cutthroat trout, pallid sturgeon, paddlefish, blue sucker, the sicklefin chub, and the sturgeon chub.

This permitting action would result in increased SO₂, NO_x, CO, VOC, PM, PM₁₀, and PM_{2.5} emissions. While deposition of pollutants would occur, the Department determined that any impacts to terrestrial life and habitats from deposition of these pollutants would be minor. Habitat impacts could result in a change of diversity or abundance of terrestrial or aquatic life. However, the immediate area does not appear to contain any critical or unique wildlife habitat or aquatic life and the project would occur in an already disturbed area. Therefore, only minor impacts to terrestrial and aquatic life and habitats are anticipated.

B. Water Quality, Quantity and Distribution

ConocoPhillips is authorized to discharge treated wastewater effluent from its Billings refinery to the Yellowstone River via the Yegen Drain in accordance with Montana Pollutant Discharge Elimination System (MPDES) permit # MT-0000256. The receiving stream (the Yellowstone River) is classified as B-3 under Montana's Surface Water Quality Standards. Waters classified B-3 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. As part of the NCVU project, ConocoPhillips is proposing to construct a new parallel wastewater treatment facility to process desalter water from the new crude unit, with equipment consisting of an API oil/water separator, a primary dissolved air floatation unit, and the addition of a thermal oxidizer to control air emissions. The aeration system of the refinery's existing wastewater treatment facility would also be upgraded. This project would result in an increase in the existing average wastewater effluent flow rate. The flow rate would increase by approximately 65% from 350 gallons per minute (gpm) to 575 gpm. Pollutant loads would also increase as follows: Biochemical Oxygen Demand: 5.5 pounds per day (lbs/day); Chemical Oxygen Demand: 52 lbs/day; Total Suspended Solids: 6 lbs/day; Oil and Grease: 3 lbs/day, Ammonia: 3 lbs/day; and phenolic compounds: 0.009 lbs/day. MPDES permits are written to protect the beneficial uses specified in Montana's Surface Water Quality Standards. Therefore, because ConocoPhillips is expected to operate in compliance with its MPDES permit, only minor impacts to surface water are anticipated.

In addition, while deposition of pollutants would occur as a result of this project, the Department determined that any impact from the deposition of pollutants would be minor. Furthermore, this action would not result in a change in the quality or quantity of ground water. Therefore, only minor impacts to water quality, quantity, and/or distribution are anticipated.

C. Geology and Soil Quality, Stability and Moisture

The NCVU will be constructed on a closed Resource Conservation and Recovery Act (RCRA) permitted site known as the South Oily Sludge Pits (SOSP). Prior to 1988, the SOSP were used to store API separator sludge, a listed hazardous waste, in earthen pits. The sludge was removed and the pits were backfilled prior to closure. However, impacted earth materials and waste residuals remained in the soils associated with these pits. In order to prevent direct exposure to the surrounding soils and potential migration of contaminants into groundwater, the SOSP were covered with asphalt. The SOSP site is currently regulated under the authority of a RCRA post closure permit. Prior to constructing the NCVU at the SOSP area, the earth materials containing constituents of concern at concentrations above established levels must be removed. The refinery has modified its RCRA post-closure permit to facilitate the removal of impacted earth materials from the SOSP. The permit modification specifies that a RCRA staging pile can be constructed adjacent to the project area to allow stockpiling of soil prior to off-site shipping. The staging pile is a RCRA-regulated unit with specific performance criteria and permitted uses.

The permit modification also required submittal and Department approval of a detailed Corrective Measures Implementation (CMI) work plan to detail the impacted material removal and management. This CMI work plan was approved by the Department on June 19, 2008, with a subsequent addendum approved on July 17, 2008.

While deposition of pollutants would occur, the Department determined that any impacts from deposition of pollutants would be minor. This project would not change the soil stability or geologic substructure or result in any increased disruption, displacement, erosion, compaction, or moisture loss, which would reduce productivity or fertility at or near the site. No unique geologic or physical features would be disturbed. Therefore, minor impacts to geology and soil quality, stability, and moisture are anticipated.

D. Vegetation Cover, Quantity, and Quality

This project would be constructed on land already used for industrial activities. The vegetative cover, quantity, and quality would not be disturbed inside the facility boundaries. However, possible increases in actual emissions of SO₂, NO_x, CO, VOC, PM, PM₁₀, and PM_{2.5} from historical emission levels may result in minor impacts to the diversity, productivity, or abundance of plant species in the surrounding areas. Issuance of this permit would cause minor, if any, changes in vegetation cover, quantity, or quality.

E. Aesthetics

This project would be constructed on land already used for industrial activities. Therefore, any additional impacts on aesthetics would be minimal.

F. Air Quality

The proposed project would result in increases in actual emissions of SO₂, NO_x, PM/PM₁₀, PM_{2.5}, CO, VOC, and HAPs from historical emission levels to the ambient air in the proposed project area. As detailed through air dispersion modeling in Section VI and Section VII of the permit analysis, any air quality impacts from these pollutants from the proposed project would be minor and would constitute negligible risk to human health and the environment.

Additionally, the estimated CO₂ emissions increase as a result of the NCVU project would be approximately 290 thousand tpy, which is approximately a 30% increase from the refinery's 2007 estimated CO₂ emissions. For comparison purposes, the estimated increase in CO₂ emissions resulting from the NCVU project is approximately 0.7% of the 2005 Montana state-wide estimated CO₂ emissions level of 40,565 thousand tons as documented in the *Montana Greenhouse Gas Inventory and Reference Case Projections 1990-2020*, September 2007. Therefore, any potential impacts from increased CO₂ emissions from the proposed project would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

In an effort to identify any unique endangered, fragile, or limited environmental resources in the area, the Department contacted the Montana Natural Heritage Program, Natural Resource Information System (NRIS). The NRIS search identified the following species of special concern located near the project area: Grasshopper Sparrow, Spiny Softshell, Loggerhead Shrike, Brewer's Sparrow, Spotted Bat, Greater Short-horned Lizard, Western Hog-nosed Snake, Peregrine Falcon, Common Sagebrush Lizard, and Milksnake. In this case, the project area was defined by the section, township, and range of the location with an additional 1-mile buffer zone. Because this project would occur at an existing industrial site and because

controlled emissions from this source would not cause or contribute to a violation of any ambient air quality standard, the Department determined that it would be unlikely that the proposed project would impact any species of special concern and that any potential impacts would be minor.

H. Demands on Environmental Resource of Water, Air and Energy

This project would not consume any significant additional energy or water resources. Further, as described in Section 7.F. of this EA, pollutant emissions generated would have minimal impacts on air quality in the immediate and surrounding area. The submitted modeling results show compliance with the NAAQS, MAAQS and applicable PSD increments. This project would result in a minor effect on the air resource, but resulting emissions will still comply with ambient air quality standards.

I. Historical and Archaeological Sites

This project would not disturb a greater land surface than is already occupied by the refinery. This project would occur within the boundaries of the refinery. The Department contacted the Montana Historical Society - State Historical Preservation Office (SHPO) in an effort to identify any historical and/or archaeological sites that may be present in the proposed area of construction and operation. SHPO conducted a cultural resource file search of the proposed area, and found no previously recorded sites within the designated search locales. It is SHPO's position, however, that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, SHPO recommends that they be recorded and a determination of their eligibility be made. No buildings over fifty years of age are proposed to be altered as a result of this project. Therefore, no impacts to any historical and archaeological sites would be anticipated.

J. Cumulative and Secondary Impacts

The NCVU project will provide the refinery the flexibility to process a larger percentage of heavy high-sulfur crude, and a crude slate with a greater naphthenic acid content. The refinery anticipates, based on current production and future developments in Canada, that oil sands/SynBit crude oil will continue to be available and it will be necessary for the refinery to have the capability to process these crude oils as a larger percentage of the crude oil mix. As documented in the publication, "*Driving It Home: Choosing the Right Path for Fueling North America's Transportation Future*," a joint report prepared by the Natural Resources Defense Council, Western Resource Advocates, and Pembina Institute, the extraction of oil sands (also referred to as tar sands) has numerous environmental impacts. Oil sands consist of a mixture of 85% sand, clay, and silt; 5% water; and 10% crude bitumen – the "tar-like" substance that can be converted to oil. Because bitumen is so viscous, production of oil sands is typically accomplished through strip mining or steam injection into oil wells. These processes can use more water and require larger amounts of energy than conventional oil extraction. It is estimated that oil sands production can generate almost three times as much global warming pollution as conventional crude oil production because of the massive amounts of energy needed to extract, upgrade, and refine the oil. Strip mining of the oil sands often requires dredging of wetlands and the creation of tailings ponds, which can have high concentrations of pollutants that are toxic to aquatic life. Ultimately, the crude oil mixture run by the refinery is selected based on crude oil costs and the capability of the refinery to process the crude oil. The Department does not consider these impacts to be a result of the NCVU project. The NCVU project would not be creating a new market for these oil sands; rather, market forces are driving

the rate of oil sands extraction. Therefore, the cumulative and secondary impacts from the proposed project would be minor.

8. *The following table summarizes the potential economic and social effects of the proposed project on the human environment.* The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	Non e	Unknow n	Comme nts Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population				X		Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed facility would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the project would occur at a previously disturbed industrial site. The proposed project would not change the nature of the site.

B. Cultural Uniqueness and Diversity

The proposed project would not cause a change in the cultural uniqueness and diversity of the area because the land is currently used as a petroleum refinery; therefore, the land use would not be changing. The use of the surrounding area would not change as a result of this project.

C. Local and State Tax Base and Tax Revenue

This project would have a minor effect on the local and state tax base and tax revenue because the proposed project is intended to increase crude distillation capacity. Therefore, tax revenue from the facility might increase slightly.

D. Agricultural or Industrial Production

The proposed project would not result in a reduction of available acreage or productivity of any agricultural land; therefore, agricultural production would not be affected. Industrial production would change slightly because the crude distillation capacity at this facility would increase.

E. Human Health

As described in Section 7.F of the EA, the impacts from this facility on human health would be minor. The project would include increases in NO_x, SO₂, PM/PM₁₀, PM_{2.5}, CO, and VOC emissions from recent emissions levels. However, the emissions would not result in a violation of the NAAQS, MAAQS, and applicable PSD increments. The air quality permit for this facility incorporates conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

Additionally, as detailed in Section VII of the permit analysis, a health risk assessment was conducted to determine if the proposed wastewater treatment system thermal oxidizer would comply with the negligible risk requirement of MCA 75-2-215 and ARM 17.8.770. Since the concerned HAPs would not be expected to accumulate in the soil or surface water, only exposure occurring through inhalation was assessed. As defined in ARM 17.8.740(10), negligible risk is “*an increase in excess lifetime cancer risk of less than 1.0×10^{-6} for any individual pollutant, and 1.0×10^{-5} for the aggregate of all pollutants, and an increase in the sum of the non-cancer hazard quotients for all pollutants with similar toxic effects of less than 1.0 in order to determine negligible risk.*” For the purposes of determining the negligible risk of the wastewater treatment thermal oxidizer, all HAPs associated with combustion of natural gas/RFG and the non-destroyed portion of the vent gas to the thermal oxidizer were considered. All of the individual pollutant concentrations meet the acceptable cancer risk limit because they are less than 1.00E-06 for each pollutant and less than 1.00E-05 for the aggregate of all pollutants. Further, the sums of the chronic non-cancer hazard quotients are less than 1.0. Therefore, the proposed wastewater treatment system thermal oxidizer meets the criteria of ARM 17.8.770 and operation of the incinerator would be considered a negligible risk to public health, safety, welfare, and to the environment. Overall, any impacts to human health in the proposed project area would be minor.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed action would not alter any existing access to or quality of any recreational or wilderness area activities. This project would not have an impact on recreational or wilderness activities because the site is far removed from recreational and wilderness areas or access routes. Furthermore, the facility is contained on private property and would continue to be contained within private property boundaries.

G. Quantity and Distribution of Employment

This project would result in minor impacts to the quantity and distribution of employment at the facility because temporary construction-related positions could result from this project, but any impacts to the quantity and distribution of employment would be minor.

H. Distribution of Population

The proposed project does not involve any significant physical or operational change that would affect the location, distribution, density, or growth rate of the human population.

I. Demands for Government Services

The demands on government services would experience a minor impact. The primary demand on government services would be the acquisition of the appropriate permits by the facility (including local building permits, as necessary, and a state air quality permit) and compliance verification with those permits.

J. Industrial and Commercial Activity

Overall, industrial production at the ConocoPhillips refinery would change slightly as a result of the project because the crude distillation capacity would increase by approximately 25%. Therefore, a minor impact on industrial activity at the ConocoPhillips refinery would be expected. Industrial and commercial activity in the neighboring area would not be anticipated to be affected, however.

K. Locally Adopted Environmental Plans and Goals

There are no locally adopted environmental plans and goals that are expected to be affected by the proposed change to emission limitations. ConocoPhillips must continue to comply with the State Implementation Plan and associated stipulations for the Billings/Laurel area.

L. Cumulative and Secondary Impacts

Increases in actual pollutant emissions of NO_x, SO₂, PM/PM₁₀, PM_{2.5}, CO, and VOC above recent historical levels may result in minor cumulative and secondary impacts to the human environment. However, the emissions would not result in a violation of the NAAQS, MAAQS, and applicable PSD increments. Therefore, the cumulative and secondary impacts from the proposed project would be minor.

Recommendation: No EIS is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of a new crude and vacuum unit. MAQP #2619-24 includes conditions and limitations to ensure the facility would operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program, Department of Environmental Quality – Water Protection Bureau, Department of Environmental Quality – Waste and Underground Tank Management Bureau

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Department of Environmental Quality – Water Protection Bureau, Department of Environmental Quality – Waste and Underground Tank Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Moriah Peck, P.E.

Date: September 16, 2008