March 24, 2006

TO: INTERESTED PARTIES

RE: Flint Hills Resources - #3 Crude Unit Expansion Project

Enclosed is the Environmental Assessment Worksheet (EAW) for the proposed Flint Hills Resources - #3 Crude Unit Expansion Project, Dakota County. The EAW was prepared by the Minnesota Pollution Control Agency (MPCA) and is being distributed for a 30-day review and comment period pursuant to the Environmental Quality Board (EQB) rules. The comment period will begin the day the EAW availability notice is published in the EQB Monitor, which will likely occur in the March 27, 2006, issue.

Comments received on the EAW will be used by the MPCA in evaluating the potential for significant environmental effects from this project and deciding on the need for an Environmental Impact Statement (EIS).

A final decision on the need for an EIS will be made by the MPCA Commissioner after the end of the comment period. If a request for an EIS is received during the comment period, or if the Commissioner recommends the preparation of an EIS, the MPCA Citizens’ Board (Board) will make the final decision. The final EIS need decision will also be made by the Board if so requested by the project proposer, other interested parties or MPCA staff and if this request is agreed to by one or more members of the Board or the MPCA Commissioner. The Board meets once a month, usually the fourth Tuesday of each month, at the MPCA office in St. Paul. Meetings are open to the public and interested persons may offer testimony on Board agenda items. A listing of Board members is available on request by calling (651) 296-7306.

Please note that comment letters submitted to the MPCA do become public documents and will be part of the official public record for this project.

If you have any questions on the EAW, please contact Kelly Garvey of my staff at (651) 296-7796.

Sincerely,

[Signature]

Richard Newquist
Supervisor, Environmental Review Unit
Environmental Review and Operations Section
Regional Division

RN:mb

Enclosure
ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to reviewers: The Environmental Assessment Worksheet (EAW) provides information about a project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer supplied reasonably accessible data for, but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the Minnesota Environmental Quality Board (EQB) Monitor. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling (651) 296-7398. An electronic version of the completed EAW is available at the MPCA Web site http://www.pca.state.mn.us/news/eaw/index.html#open-eaw.

1. Project Title: Flint Hills Resources - #3 Crude Unit Expansion Project

2. Proposer: Flint Hills Resources
   Contact Person: Lowell Miller Stolte
   and Title: Environmental Project Manager
   Address: P.O. Box 64596
   St. Paul, Minnesota 55164-0596
   Phone: (651) 437-0831
   Fax: (651) 437-0581

3. RGU: Minnesota Pollution Control Agency
   Contact Person: Kelly Garvey
   and Title: Project Manager
   Address: 520 Lafayette Road North
   St. Paul, Minnesota 55155
   Phone: (651) 296-7796
   Fax: (651) 297-2343

4. Reason for EAW Preparation:
   EIS Scoping __________ EAW __________ Citizen Petition __________
   RGU Discretion __________ Proposer Volunteered
   If EAW or EIS is mandatory give EQB rule category subpart number and name: Minn. R. 4410.4300, subp. 4

5. Project Location:
   County: Dakota
   City: Rosemount
   1/4 1/4 Section 13, 24 Township 115 N Range 19 W

Figures and Attachments attached to the EAW:

Figure 1 County map showing the general location of the project;
Figure 2 U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries;
Figure 3 Crude Unit Construction Location;
Figure 4A Minnesota Department of Natural Resources (DNR) Rare/Sensitive Features, 7.5 minute Topo;
Figure 4B DNR Rare/Sensitive Features, Aerial Photograph;
Figure 5 Rosemount Zoning Map;
Figure 6 Inver Grove Heights Zoning Map; and
6. Description:

a. Provide a project summary of 50 words or less to be published in the EQB Monitor.

Flint Hills Resources (FHR) proposes to increase processing of crude oil at their Pine Bend Refinery in Rosemount. Expanded production is required to meet increasing demand for products, and will require the construction of a new vacuum heater and pre-flash tower that will take place within an existing production unit within the main refinery process area.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

Project
The location of the FHR refinery is shown on Figures 1 and 2. The location of the proposed construction project is shown on Figure 3. A number of constraints on the #3 crude unit current limit rate to ~100,000 barrels per day (bpd). The #3 Crude Unit Expansion Project proposes to increase the vacuum heating capacity and modify existing equipment to allow the #3 crude unit to achieve a design capacity of 150,000 bpd. The project will be located within the existing #3 crude unit, which has supported crude oil production since the 1980s. The new equipment will not noticeably change the external appearance of the refinery or the surrounding environment. Physical manipulation of the environment will be limited to the processing unit area.

The increased crude rate may increase slightly the volume of waste generated. However, it is not expected to generate any new types of waste. Construction activities are expected to produce minimal amounts of construction-type debris. Waste streams are further discussed in question 20 of this EAW. Wastewater treatment plant (WWTP) effluent water quality is not expected to change significantly because of improvements in the de-salting process (as further discussed in question 18 of this EAW).

Total actual air emissions following the crude expansion project are not expected to increase beyond current emissions levels that have been achieved with the FHR Emissions Reduction Initiative (ERI) completed in 2004. The ERI resulted in a reduction in total facility emissions of greater than 50 percent over five years. This emissions neutral project approach will be achieved by implementing a number of changes to reduce emissions further, primarily by installation of ultra low Nitrogen Oxides (NOx) burners and sulfur plant improvements. Increases in potential emissions associated with this project, which will be detailed in the air permit application, will be less than 100 tons per year (tpy) after a netting analysis.

Modifications to Existing #3 Crude Unit Equipment/Process
1. Installation of a new vacuum heater (25H-4) and transfer line to the existing vacuum tower. The new vacuum heater will have an air pre-heat system.
2. Conversion of the existing vacuum heater (25H-3) to a vacuum prefractionator heater. Modifications will include a new or modified convection section, converting from four pass to eight pass.
3. Modification of the existing crude heater (25H-1). Modifications will include a new convection section, converting from four pass to eight pass and burner additions.
4. Installation of new bi-electric grids in the existing de-salter vessels and align existing de-salters in parallel operation.
5. Internal modifications to the crude column and vacuum tower (packing) to manage the increased rates.
6. Installation of a new vacuum prefractionator vessel.
7. Installation of additional heat exchanger surface area upstream and downstream of the de-salters to preheat the crude and improve separation. Approximately 29 new shell and tube type exchangers are expected.
8. Installation of approximately 19 new pumps.
9. Design and installation of improved crude overhead condensing system.
10. Significant demolition or removal/remodeling of existing equipment will not be required.

**Other Modifications**

1. A continuous emissions monitor will be installed on the distillate hydrotreater charge heater (27H-101) to measure Carbon Monoxide (CO) and NOx emissions since this heater will be more fully utilized.
2. The sulfur recovery units (SRU) will be retrofitted with oxygen enrichment capabilities to manage the increased sulfur load. Although this project was authorized under the Tier 2 Gasoline project, it has not yet been constructed and is being considered here for completeness given the increased sulfur load that will be generated with the additional crude rate.
3. The tail gas treating units tied to the SRUs will be upgraded to an enhanced amine process that will improve the capture and recovery of sulfur compounds by the SRUs.
4. The #5 amine regenerator will be upgraded to handle the additional amine recirculation rates expected.
5. The distillate hydrotreater feed rate will be increased to manage the additional distillate that will be generated; this is not expected to increase firing beyond current potential.
6. The #3 crude booster pumps will be upgraded to meet the future flow requirements, which will entail upsized electric drive pump(s) and possibly a steam turbine drive back-up pump.
7. Various support facilities will be affected by this project, including additional cooling water needs for exchangers, steam lines, etc.

**Timing and Duration of Crude Expansion Construction Activities**
The proposed construction start date is May 2006, with a completion date of September 2007.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

**Purpose**
The purpose of the project is to increase the yield of distillate and gasoil from crude oil (referred to as deep-cut) of the #3 crude unit, increasing its current constrained capacity of 100,000 bpd to a design capacity of 150,000 bpd.

With developments in the Canadian Crude and Midwest Light Products marketplace over the last five years, the Pine Bend Refinery has the opportunity to invest in the capability to increase the production of these fuels from Canadian heavy crude. The increased supply of these products, including gasoline, number 2 fuel oil, asphalt, and petroleum coke, will help meet increased demands for these products.

In addition, investment in the crude unit will increase FHR’s ability to recover gasoil from asphalt (deep-cut) and allow the refinery to fill underutilized conversion capacity that may be available after the hydrocracker startup. The result is additional petroleum coke, gasoline, fuel oil, and asphalt, with better use of resources.
d. Are future stages of this development including development on any outlots planned or likely to happen?  
☐ Yes  ☒ No  
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

e. Is this project a subsequent stage of an earlier project?  ☐ Yes  ☒ No  
If yes, briefly describe the past development, timeline and any past environmental review.

7. Project Magnitude Data

<table>
<thead>
<tr>
<th>Total Project Area (acres)</th>
<th>Less than 1 acre or Length (miles)</th>
<th>NA</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Number of Residential Units:</th>
<th>Unattached</th>
<th>0</th>
<th>Attached</th>
<th>0</th>
<th>maximum units per building</th>
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</table>

<table>
<thead>
<tr>
<th>Commercial/Industrial/Institutional Building Area (gross floor space):</th>
<th>total square feet</th>
<th>0</th>
</tr>
</thead>
</table>

Indicate area of specific uses (in square feet):

<table>
<thead>
<tr>
<th>Office</th>
<th>NA</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>NA</td>
<td>Other Industrial</td>
</tr>
<tr>
<td>Warehouse</td>
<td>NA</td>
<td>Institutional</td>
</tr>
<tr>
<td>Light Industrial</td>
<td>NA</td>
<td>Agricultural</td>
</tr>
<tr>
<td>Other Commercial (specify)</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

Building height __________ If over 2 stories, compare to heights of nearby buildings

8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

<table>
<thead>
<tr>
<th>Unit of Government</th>
<th>Type of Application</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCA/U.S. Environmental Protection Agency (EPA) Comment</td>
<td>Air Emission Permit</td>
<td>Construction permit required</td>
</tr>
<tr>
<td>MPCA</td>
<td>National Pollutant Discharge Elimination System (NPDES) Wastewater Permit</td>
<td>Administrative changes to permit are likely</td>
</tr>
<tr>
<td>MPCA/EPA</td>
<td>State Implementation Plan (SIP) Administrative Order Modification</td>
<td>Change to SIP Order to include new sources of Sulfur Dioxide (SO2) emissions</td>
</tr>
<tr>
<td>MPCA</td>
<td>Stipulation agreement Waste Water Treatment Plant Certification</td>
<td>Prepare and submit certification as needed</td>
</tr>
<tr>
<td>City of Rosemount: Fire Marshall</td>
<td>Plan Review and Approval</td>
<td>To be submitted if needed</td>
</tr>
<tr>
<td>City of Rosemount: Community Planning</td>
<td>Building Permit</td>
<td>To be submitted if needed</td>
</tr>
</tbody>
</table>

9. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.
The proposed project is not expected to conflict with current adjacent and nearby land uses. Potential conflicts involving environmental matters are not anticipated. The FHR’s refinery was the first industrial facility developed in the Pine Bend Industrial District (District). The District was formed in 1954. At that time, the Chicago and Northwestern Railroad purchased approximately 6,000 acres in the Pine Bend area. In the past five decades, there has been continued industrial development of the District. There are now over 30 industries and businesses located within a five-mile radius of the junction of U.S. Highway 52 and Minnesota State Highway 55.

The proposed project would lie within the boundaries of the existing refinery complex (see Figure 2). The FHR’s Pine Bend Refinery is located on land zoned as general industrial, as is the area immediately to the east of the refinery. The area adjacent to and immediately west of the refinery complex is zoned agricultural land. Even with the location of many industries in the District, the majority of the land in eastern Rosemount is currently zoned for agriculture land usage.

Small residential subdivisions are located nearby: one is two miles southwest of the refinery, a second is one mile northwest, and a third is one mile north of the refinery. Other homes are scattered across the agricultural lands or along roads to the west, south, and north of the facility. The nearest residences are approximately one mile north, one-quarter mile west, three-quarters mile south, and one-third mile east of the refinery complex.

The refinery is approximately eight miles northwest of the city of Hastings (population 18,200). It is approximately six miles northeast of the Rosemount city center (city population 14,600) and six miles south of the Inver Grove Heights city center (population 29,800). Other nearby cities are Eagan (seven miles to the northwest), Apple Valley (eight miles to the west) and St. Paul (13 miles to the north).

A portion of FHR’s property extends east of the refinery complex. This allows for pipeline transfer of materials from the refinery to docks on the Mississippi River, where materials are loaded and unloaded from barges. This land use overlaps with the planned use corridor of the Mississippi National River and Recreation Area (MNRRA).

10. **Cover Types.** Estimate the acreage of the site with each of the following cover types before and after development:

<table>
<thead>
<tr>
<th>Types 1-8 wetlands</th>
<th>Before</th>
<th>After</th>
<th>Lawn/landscaping</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooded/forest</td>
<td></td>
<td></td>
<td>Impervious Surfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brush/grassland</td>
<td></td>
<td></td>
<td>Other (describe)</td>
<td>Less than 1(^1)</td>
<td>Less than 1(^1)</td>
</tr>
<tr>
<td>Cropland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>Less than 1(^1)</td>
<td>Less than 1(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Gravel and asphalt covered surface. The construction will be located entirely within an existing unit surfaced with gravel and asphalt.

11. **Fish, Wildlife, and Ecologically Sensitive Resources.**

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

The #3 crude unit in which the construction will be located is an industrial area, with no existing vegetation cover. This area currently provides little, if any, habitat for wildlife.

The project will not involve any alteration of watercourse or surface waters and is not expected to have any impact on aquatic species, wildlife resources or habitats.
b.  Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial water bird nesting colonies or regionally rare plant communities on or near the site?  ☒ Yes  ☐ No

If yes, describe the resource and how it would be affected by the project.  Indicate if a site survey of the resources has been conducted and describe the results.  If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number.  ERDB 20040051

Describe measures to minimize or avoid adverse impacts.

No endangered or threatened species, rare plant communities or other sensitive ecological resources have been observed in the #3 crude unit refinery process area.

The DNR Natural Heritage and Non-game Research program performed a site survey (ERDB 20040051) in 2004 for the ultra low sulfur diesel project.  The DNR was contacted to determine if a new site survey would need to be performed for the #3 crude unit project.  Based on discussions with Mrs. Lisa Joyall on July 1, 2005, the DNR concluded that, because the footprint of the #3 Crude Unit Expansion Project was within the recent ERDB 20040051 survey area, the previous survey would be sufficient to meet the requirements of the EAW, and that a second survey would not be necessary.

In the previous survey (ERDB 20040051) the DNR noted the following:

“An area identified by the Minnesota County Biological Survey as a “Site of High Biodiversity Significance” is located immediately east of the project area between Highway 52 and the Mississippi River.  This particular site contains Dry Prairie and Oak Forest Natural Communities as well as populations of James Polanisia (Cristatella jamesii), a threatened plant species and Creeping Juniper (Juniperus horizontalis), a special concern species.  Additionally a Bald Eagle nesting area has been documented within the significance site.”

The area of significance noted by the DNR is located east of the project area and the Pine Bend Refinery and is separated from the project area by U.S. Highway 52.  This highway carries high volumes of heavy truck traffic on a daily basis, and for locations east of U.S. Highway 52, is the predominant noise source in the area.  It is highly unlikely that construction and subsequent operation of the new equipment located west of U.S. Highway 52 will be audible over the existing noise at the significance site.

The approximate locations of species and features of concern are shown in the attached Figures 4a and 4b.  The significance site is an area of heavily wooded river bluffs and river bottom land.  Much of the site is currently owned by FHR.

The elevation at the top of the wooded bluffs is approximately 900 feet above sea level (ASL).  The base of the bluffs and the river bottom land are at approximately 700 feet ASL.  Most of the features and species locations shown in Figures 4a and 4b are located well below the top of the bluffs.  The bald eagle nest is located in the river bottom land over 200 feet below the top of the bluffs and approximately 4800 feet east of the refinery.  No crude oil expansion project-related construction activities are anticipated outside of the Pine Bend Refinery boundaries.  The refinery and the crude oil expansion project will not be visible from most of the locations shown on Figures 4a and 4b.
In summary, the crude oil expansion project:
- will not adversely affect aesthetics of the significance site;
- will not result in any construction-related activities in or near the significance site;
- ultimately, will not impact this site of high biodiversity; and
- will not result in increased human or vehicle access or activity in the area of significance noted by the DNR.

12. **Physical Impacts on Water Resources.** Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch?  ☐ Yes  ☒ No
   If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

13. **Water Use.** Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)?  ☐ Yes  ☒ No
   If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.
   
   No additional ground-water wells or ground-water usage is expected to be needed for this project beyond current appropriations. Although additional water is needed to process the increased crude, this additional water demand will be met through re-use options on site (i.e., no additional ground-water wells or water appropriations are needed). Fin fans will be used where possible to minimize cooling water demands. The project will not increase the refinery’s total water consumption beyond the overall levels referenced in the ultra low sulfur diesel EAW.

14. **Water-related land use management districts.** Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district?  ☐ Yes  ☒ No
   If yes, identify the district and discuss project compatibility with district land use restrictions.

15. **Water Surface Use.** Will the project change the number or type of watercraft on any water body?  ☒ Yes  ☐ No
   If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.
   
   The additional asphalt generated by running increased crude rates will be managed by barge, truck, and rail. An estimated 30 additional barges are expected to be loaded during the barge season. This increase in barge traffic is expected to manage the asphalt being shipped to markets further south.

16. **Erosion and Sedimentation.** Give the acreage to be graded or excavated and the cubic yards of soil to be moved:  < 1  ____ acres;  50  ____ cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.
   
   There are no steep slopes or highly erodible soils at the construction site. Soils excavated during construction activities will be used to refill and level the site following placement of foundations. Excess soil will be used in other areas of the site. Standard construction erosion prevention measures will be
used to prevent erosion and sediment runoff during construction. Siltation fences will be placed around excavation and construction areas. Grading, vegetation and runoff control measures (described in the stormwater management plan) will be used to control sediment runoff after construction is complete.


a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any stormwater pollution prevention plans.

Stormwater from the process areas of the refinery affected are collected in basins onsite, and ultimately must meet standards before discharge consistent with the refinery’s Stormwater Pollution Prevention Plan under the refinery’s general stormwater permit. The overall quantity and quality of refinery surface water runoff will not change significantly as a result of construction and upgrade to #3 crude unit. Any increases are expected to be within the limits of the refinery’s existing NPDES Permit.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

All runoff from the project area will be collected in either the South or Southwest Stormwater Basins. The outfall for all of the basins is treated at the refinery’s WWTP and then discharged to the Mississippi River at outfall No. 10.


a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

The rate of wastewater generation at the refinery is not expected to increase substantially as a result of the proposed project. Although additional water will be needed to process the increased crude rate (as noted in section 13), re-use options will minimize the increase seen by the WWTP. Essentially, some wastewater streams, such as stripped sour water, will be re-used in the de-salters before being discharged to the WWTP, which will help mitigate increases in hydraulic loading to the WWTP. Additionally, improvements being made to the de-salters should help minimize organic loading to the WWTP. Wastewater will be collected and treated at the WWTP before discharged to the Mississippi River. A project certification will be completed in accordance with the refinery’s 1998 Stipulation Agreement with the MPCA, which will certify the ability of the WWTP to appropriately manage an increased flow of wastewater.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

No significant change to the quality of the effluent leaving the refinery’s WWTP is expected.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility’s ability to handle the volume and composition of wastes, identifying any improvements necessary.

Not applicable.
d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

Not applicable.

19. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to
   - Ground water: 65 minimum; 150 average.
   - Bedrock: 40 minimum; 180 average.

Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

There are no Karst conditions, sinkholes or shallow limestone formations beneath the #3 crude unit.

b. Describe the soils on the site, giving SCS classifications, if known. Discuss soil granularity and potential for ground-water contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

The soil types located on the Pine Bend Refinery property are: Hubbard loamy sand, Wadena loam, Estherville sand loam, Plainfield loamy sand, Mahtomedi loamy sand, Urban land-Waukegan complex, Urban land, Zumbro loamy fine sand, and Algansee sandy loam. These are mainly fine grain soils.


a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

Construction: During construction, typical industrial construction waste will be generated. This will likely include waste carbon steel, lumber, and concrete. The actual amounts of waste material are hard to estimate prior to the project, but will likely be less than 100 cubic yards. To the maximum extent possible, construction waste will be recycled. A source separation plan will be used to identify materials suitable for recycling. At this time, it is anticipated that all carbon steel waste can be recycled. Nearly all concrete/cement and lumber waste should be recyclable. Construction waste that is not suitable for recycling will be disposed of at a construction waste.

Hazardous waste is not expected to be generated during project construction.

Operation: Routine operation of the new heaters, and upgrades to existing equipment in the #3 Crude Unit should not substantially increase the volume of existing waste streams and is not expected to generate any new solid or hazardous waste streams.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating ground water. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.
FHR’s Pine Bend Refinery processes and refines crude oil. The refinery produces large volumes of various petroleum products, including gasoline, diesel fuels, asphalts, kerosene, aviation fuel, liquefied petroleum gas, butane, and petroleum coke. In addition to end products, the refining process generates numerous flammable or combustible intermediate products.

The #3 Crude Unit Expansion Project may increase the volume of these materials used or present at the facility; however, the project is not expected to produce or process any new types of toxic hazardous materials not already used or generated at the facility.

The refinery has a Spill Prevention and Control Countermeasures Plan (SPCC Plan) incorporated as part of the Facility Contingency plan (referred to as the One Plan). The SPCC Plan provides a description of procedures used to detect spills, identifies emergency coordinators, provides for implementation of emergency procedures, describes the availability and use of emergency equipment, and outlines response coordination within the refinery and with outside agencies and jurisdictions. A copy of the current SPCC Plan is maintained on site.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

The scope of the project does not include the addition of new above or below ground storage tanks.

<table>
<thead>
<tr>
<th>Traffic</th>
<th>Parking spaces added: 0</th>
<th>Existing spaces (if project involves expansion):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated total average daily traffic generated: 0</td>
<td>Estimated maximum peak hour traffic generated (if known) and its timing: 0</td>
</tr>
<tr>
<td></td>
<td>Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.</td>
<td></td>
</tr>
</tbody>
</table>

Construction of the proposed project will result in a limited increase in traffic to and from the refinery during the approximately 18-month construction period. Because the construction will be within an existing unit that will continue to operate during most of the construction period, the construction will be performed by existing trained personnel and contractors familiar with the refinery. Additional traffic will be limited to contractor’s vehicles and vehicles delivering equipment and supplies, including large pieces of prefabricated equipment.

Most of the additional fuels generated are expected to be sent via pipeline, which means that there should not be a significant increase in truck traffic. Any additional petroleum coke generated is expected to be shipped almost exclusively via railcar. Additional asphalt generated is expected to be shipped via barge, truck, and rail. Additional truck traffic generated locally at the refinery from the asphalt loading racks could increase by up to 70 trucks a day; since this additional asphalt would likely be utilized in markets further removed from the area, it is expected that any increases would almost exclusively utilize Highway 52/55, which is designated a principal arterial road by the city of Rosemount. With the completion of the new interchange at Highway 52/55 and 117th Street East, the impact of the additional traffic entering and exiting the facility on the flow of traffic in the area is expected to be minimal. The project is not expected to have any impact on the regional transportation system.

Vehicle-related Air Emissions. Estimate the effect of the project’s traffic generation on air quality, including CO levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.

As discussed above, the project is not expected to increase truck traffic significantly from the refinery. Given current traffic volumes on Highway 52/55, the increase in the number of trucks loading at the
facility will not significantly impact the air quality in the region, including CO levels. No significant increase in employee traffic to or from the refinery is expected to occur.

23. **Stationary Source Air Emissions.** Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult EAW Guidelines for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

**Expected Project Emissions**

FHR will be required to obtain an air quality permit from the MPCA for the #3 Crude Unit Expansion Project. Preliminary planning efforts completed to date for the project indicate that the following new or expanded air emission sources and control equipment will be installed with this project.

- In the #3 crude unit, one new process heater and one existing heater (25H-3) being modified to increase firing capacity, both to be fitted with low NOx control technology firing refinery fuel gas, and both subject to Federal New Source Performance Standards for SO2 emissions (Subpart J).
- Fugitive components containing volatile organic compounds (VOCs) from the #3 crude unit changes, from the crude booster pumps, and from various other units, with minor changes being made to support the additional rates. These components include valves, connectors, pumps, relief valves, and drains, and will be subject to the Federal Leak Detection and Repair regulations, as well as the Federal New Source Performance Standards for VOCs (Subpart GGG). Fugitives from all of the units will be subject to the National Emissions Standards for Hazardous Air Pollutants (Subpart CC).

Total potential emissions from the aforementioned new and expanded equipment are preliminarily estimated and summarized in the table below for comparison to the EAW 100 tpy threshold in Minn. R. 4410.4300, subp. 15(A). As shown in the table below, none of the increases are greater than the 100 tpy threshold.

<table>
<thead>
<tr>
<th>Potential Emissions Increase from New and Expanded Equipment</th>
<th>FHR – #3 Crude Unit Expansion Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutant</td>
<td>Estimated Emissions (tpy)</td>
</tr>
<tr>
<td>CO</td>
<td>12</td>
</tr>
<tr>
<td>NOx</td>
<td>39</td>
</tr>
<tr>
<td>SO2*</td>
<td>86</td>
</tr>
<tr>
<td>VOCs</td>
<td>15</td>
</tr>
<tr>
<td>Total Particulate Matter (PM)</td>
<td>8</td>
</tr>
<tr>
<td>PM less than 10 microns (PM10)</td>
<td>8</td>
</tr>
</tbody>
</table>

* FHR has included emissions increases of SO2 for this project assuming that current fuel gas sulfur levels remain unchanged. In actuality, the increased crude rate will result in a decrease in total sulfur in fuel gas, resulting in lower SO2 emissions than represented above. Note that potential emission increases represented above include: (1) emissions from new sources (25H-4), and (2) emissions from modified sources that show an increase in potential to emit for 25H-3, the previous was 206 mmbtu/hour and the new potential will be 227 mmbtu/hour. These emissions will be included in the Federal Prevention of Significant Deterioration (PSD) permit application. Per EAW guidance (MPCA publication no. p-ear1-03, November 2003), this table does not include emissions.
from increased utilization of refinery process units not being modified or emissions from modified units not increasing potential to emit (however, these increases will be included in the air permit application).

The FHR’s petroleum refinery is a major source under PSD rules. The emissions increase due to each refinery modification, such as the #3 Crude Unit Expansion Project, must be reviewed to determine applicability of the project to PSD review. FHR is proposing emission limitations in its air permit application to demonstrate that the net emissions increase for the project is less than PSD applicability thresholds for all pollutants.

Even with the emissions increases identified above, FHR is not expecting overall site-wide air emissions in 2007 to increase significantly beyond those that were emitted in 2004. Other emission reduction projects currently planned to help offset increases expected from the #3 Crude Unit Expansion Project include low NOx burner upgrades on up to ten different heaters, and oxygen enrichment and enhanced amine improvements to the sulfur recovery units. Additional emission reduction projects being considered during this same time frame, but not connected to this project, include: (1) an increase in rail loading of petroleum coke rather than truck loading, which reduces PM and PM10 emissions from truck traffic; and (2) increased sulfur removal from fuel gas.

As discussed in Section 6, the actual emissions increase over current emission rates is expected to be negligible given the reductions continuing to be undertaken at the refinery. The air permit application will show potential emissions increase in permitted air emissions after netting of less than 100 tpy.

Health Risk Analysis Update
To assess potential health risks from the FHR refinery emissions after completion of the proposed #3 Crude Unit Expansion Project, results of previous risk analyses were used to form the basis of a more current health risk analysis. The previous risk analysis work began in 1996 and was updated in 1998.

The 1996 and 1998 analyses focused on evaluating historical ambient air monitoring around the refinery that measures ambient air concentrations. The ambient air monitoring concentrations are cumulatively contributed to by refinery emissions, adjacent industrial emissions, mobile source emissions (vehicle traffic), and naturally occurring emissions. In addition to inhalation risks, the previous risk analysis studies estimated risks associated with incidental soil ingestion, dermal contact with soil, consumption of leafy vegetables and fish consumption. The 1996 and 1998 studies concluded that risks from these indirect pathways were negligible. Other indirect pathways considered for inclusion in the original 1996 analysis were consumption of homegrown meat, poultry, and dairy products. Risks from these pathways were thought to be less significant than those ultimately chosen for evaluation and risks were not computed. Both the 1996 and 1998 studies concluded that, for the pollutants assessed, the air quality around the refinery does not pose a health risk to the public above thresholds considered acceptable by MPCA and the Minnesota Department of Health.

The primary objective of the Human Health Risk Assessment 2005 Update is to estimate risks from refinery air emissions after the proposed #3 Crude Unit Expansion Project. Important elements of the risk analysis update include: ambient air monitoring data from 2004, source allocation factors developed in the 1996 risk assessment applied to the 2004 air monitoring data, chemicals of concern and pathways from the 1998 risk assessment, and a projection of emissions increases after the crude oil expansion proportional to the projected increase in crude throughput. The 2005 update applied the source allocation factors to the most current available ambient air data from 2004 to estimate current risks, and conservatively scaled up the ambient air concentrations (and risks) based on the ratio of the current to expected post-project crude throughput. The 2005 analysis included additional constituents not originally included in the previous Health Risk Assessment (formaldehyde, nickel, tetrachloroethylene, and hexane).
Since the 1998 study, FHR reduced total emissions by more than 50 percent through the ERI. This resulted in a similar reduction in toxic air pollutants. For example, actual total VOC emissions from the refinery have been reduced 89 percent, NOx emissions decreased by 44 percent, and chromium emissions decreased by 42 percent. Potential emissions increase from the crude expansion project as discussed above is primarily from increased utilization of existing or installation of a new heater, which would not change the type of air toxics being considered in this analysis. The potential emissions increases from the expansion are offset by emissions reductions that occurred since the previous risk assessment work was conducted. This is true for all the chemicals identified as having the highest risk potential, with the exception of mercury, which will increase approximately 2.5 percent (from 9.3 pounds/year to 9.8 pounds/year). This emission increase would not result in a significant increase in risk.

The August 2005 Health Risk Assessment evaluated potential acute inhalation risks (risks from short-term exposure to potentially high hourly concentrations). This type of analysis had not been considered in the original analyses. The acute evaluation concluded that the MPCA’s ambient monitoring data did not indicate a significant acute toxicity health risk; the acute inhalation screening hazard index was estimated to be 0.8, which is less than the threshold level of one.

In conclusion, the Health Risk Analysis Update provided evidence that it is unlikely that risks from the expansion will result in risks above regulatory thresholds of concern for the pollutants assessed. This is because FHR has, for the most part, reduced their overall emissions and those of the inhalation chemicals of interest significantly since the time of the original assessment. The small projected increase in mercury emissions should not result in a significant increase in risk.

**24. Odors, noise and dust.** Will the project generate odors, noise or dust during construction or during operation? [ ] Yes [ ] No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Construction activities would take place within the fenced refinery area. Construction activities will involve the use of heavy equipment, cranes, cement trucks and other heavy vehicles. Construction activities will generate both noise and dust, although dust emissions will be minimized through the watering of unpaved site access routes and, if necessary, the application of dust suppressants. Dust generated during site preparation and construction will likely be large particulate, which will settle out before airborne dust leaves the refinery site.

Noise generated during construction may be audible outside of the refinery fence line; however, it is extremely unlikely that state noise standards for agricultural land will be exceeded. The nearest residence to the construction is approximately one-half mile from the refinery west fence line. While noise from construction may be audible at this residence, it is highly unlikely that noise will exceed state noise standard for residences.

The increased production of the #3 crude unit will increase the amount of asphalt produced, which may increase the amount of asphalt type odors generated from the storage tanks and from the loading operations. However, within the last two years, over six asphalt tanks have been removed from service, which has helped to reduce asphalt odors. The increased production is not expected to generate
additional noise. Due to a slight increase in petroleum coke production, a small increase in PM/PM10 emissions is expected. The refinery is currently moving towards increasing rail traffic for petroleum coke, which will reduce emissions generated by truck hauling.

25. **Nearby resources.** Are any of the following resources on or in proximity to the site?

   a. Archaeological, historical, or architectural resources?  Yes  No
   b. Prime or unique farmlands or land within an agricultural preserve?  Yes  No
   c. Designated parks, recreation areas, or trails?  Yes  No
   d. Scenic views and vistas?  Yes  No
   e. Other unique resources?  Yes  No

   If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

   The SHPO was contacted regarding archaeological, historical or architectural resources within the refinery and near the refinery. In the attached letter dated August 4, 2005 (SHPO No. 2005-2620), SHPO stated that:

   “Based upon our review of the project information, we conclude that there are no properties listed on the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project.”

   Property owned by FHR east of U.S. Highway 52 to the Mississippi River is located in the MNRRA. The proposed project site is located on the west side of the refinery, 3,000 to 4,000 feet from the MNRRA corridor. The project site should not be visible from the MNRRA corridor.

26. **Visual impacts.** Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks?  Yes  No

   If yes, explain.

   The refinery is currently illuminated at night. Any lighting associated with construction or operation would be indistinguishable from lighting of the remainder of the refinery.

27. **Compatibility with plans and land use regulations.** Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency?  Yes  No

   If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

   The proposed project is consistent with current land use plans and regulations. The Pine Bend Refinery is located within the city of Rosemount, which has adopted a comprehensive plan. The plan includes the refinery and recognizes the refinery to be part of the 6,000-acre District. There are no conflicts between the proposed project and the comprehensive plan. Figures 5 and 6 shows the land use zoning of the refinery and nearby properties.

28. **Impact on infrastructure and public services.** Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project?  Yes  No

   If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)
The construction and operation of the proposed project is not expected to have any impact on local infrastructure or public services. The project will be constructed and operated entirely on refinery property. Additionally, utilities including electricity, fuel gas piping, steam piping, cooling water connections (identified above), fire protection, and controlled sewer systems will be connected to the process units. No additional significant impacts to community infrastructure are expected from limited additional construction employment generated by this project.

29. **Cumulative impacts.** Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the “cumulative potential effects of related or anticipated future projects” when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

Other than the equipment identified in this EAW for the #3 Crude Unit Expansion Project, no new process units or storage tanks have been installed or are anticipated to be installed at the refinery within the same time frame (2006 to 2007) as the #3 Crude Unit Project. Various other projects may be completed during the same time frame, including:

- The Packinox exchanger in the platformer unit will be replaced with a unit of similar design. This project is a replacement in kind that is not tied to the crude expansion project.
- A number of heaters will be retrofitted with ultra low NOx burners installations to reduce NOx emissions; this will include heaters and boilers required to be modified under the Consent Decree (#1 crude, boiler 6, platformer heater, #3 crude unit heaters, and some distillate hydrotreater heaters), as well as additional heaters not included in the Consent Decree (other platformer heaters, distillate hydrotreater heaters, and #1 hydrogen plant heaters).
- The fuel gas treating system may be modified to reduce sulfur levels pending further evaluation of this system.
- A #2 hydrogen plant condensate recovery system may be installed that could include a high pressure stripper similar to the one being installed in the #4 hydrogen plant; this would result in additional water recovery for re-use back into the process.

Other projects are being considered beyond the 2007 time frame. These projects have not yet been scoped nor approved by FHR management. The nature and scope of any such project and whether each one proceeds at all would depend on market conditions. They are discussed here for purposes of completeness. Such projects include:

1. The #3 Coker - Consideration is being given to increasing the size of the drums to manage additional coker capacity if market demands support this increased capital expenditure. This would also allow for an outlet for asphalt if the market limits future crude rate.
2. The Hydrocracker (part of the ultra low sulfur diesel project) – This unit will go on line in early 2006. Depending on the success of this project, as well as current capacity of the fluidized catalytic cracking unit (FCCU), an expansion could be considered to either or both of these units to improve gasoline and distillate fuels yields.
3. The Alkylation Unit or Gasoil Hydrotreater Units – Consideration is being given to expanding these units to relieve fuel gas or gasoil constraints and increase production of fuels if a Hydrocracker or FCCU expansion resulted in constraints on either or both of these units.
These future projects have not been scoped at this time, but all of these projects will be evaluated for EAW and air permitting implications when finalized. The #3 Crude Unit Expansion Project defined in this EAW does not rely on these future changes to be a viable project economically. With these additional changes, cumulative effects would be to reduce asphalt production, storage, and loading, and would increase utilization of cokers to generate more petroleum coke and motor fuels. Air emissions would not be expected to increase significantly.

30. **Other Potential Environmental Impacts.** If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

None identified.

31. **Summary of issues.** List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

None identified.

**RGU CERTIFICATION.**

I hereby certify that:
- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minn. R. 4410.0200, subps. 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer:  
Richard Newquist, Supervisor, Environmental Review Unit
Environmental Review and Operations Section
Regional Division

Date: 3/22/06

The format of the Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for EAW Guidelines, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN, 55155, (651) 296-8253, or at their Web site http://www.mnplan.state.mn.us.
Figure 2

USGS TOPOGRAPHIC MAP
CRUDE PRODUCTION
EXPANSION
Flint Hills Resources, LP
Pine Bend, MN

Flint Hills Resources Pine Bend Refinery

Source: USGS 7.5' Inver Grove Heights Quadrangle - Revised 1993
Figure 3

#3 CRUDE UNIT
CONSTRUCTION LOCATION
CRUDE PRODUCTION
EXPANSION
Flint Hills Resources, LP
Pine Bend, MN
Figure 4A

RARE/SENSITIVE FEATURES
CRUDE PRODUCTION EXPANSION
Flint Hills Resources, LP
Pine Bend, MN

Features of Concern
1. James Polonisia
2. James Polonisia
3. Dry Prairie
4. Gopher Snake
5. James Polonisia
6. James Polonisia
7. James Polonisia
8. Dry Prairie
9. Bald Eagle Nest
10. Creeping Juniper
11. Oak Forest
August 4, 2005

Mr. Greg Patten
Barr Engineering Company
4700 West 77th Street
Minneapolis, MN 55435-4803

RE: Flint Hills Resources, Pine Bend Refinery – Crude Production Expansion
T115 R19 S13, S14 & S24, Rosemount, Dakota County
SHPO Number: 2005-2620

Dear Mr. Patten:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Based on our review of the project information, we conclude that there are no properties listed on the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, Procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal permit or license, it should be submitted to our office with reference to the assisting federal agency.

Please contact Dennis Gimmestad at (651) 296-5462 if you have any questions regarding our review of this project.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer