

Environmental Assessment Comment Summary and Response for Enbridge Alberta Clipper Related Projects

June 18, 2009

Introduction

The Environmental Assessment (EA) was issued for public review on May 20, 2009. The end of the public comment period for the EA was June 8, 2009.

Written comments via mail and E-mail were received from eight (8) parties.

A hearing on Chapter 30 permitting, which included receiving comments on the EA, was held in Superior on June 4, 2009 in the City of Superior Public Library, Large Meeting Room, from 5:30 p.m. to 8:00 p.m.

Thirty four (34) individuals filled out appearance slips or filled out a comment form at the hearing. Fifteen (15) of those in attendance made oral statements for the record.

This comment summary document includes and responds to all comments received.

The comments, below, may represent individual comments or may summarize several closely related comments. Responses are also provided. The comments and responses are grouped under general topic headings in bold typeface. Some responses indicate changes to the EA. These changes are by reference in this document only. Three exhibits are attached, and are referenced in the comment responses.

EA/WEPA Process

Comment: Why was there no EIS?

Response: None of the permitting actions for these projects require the Environmental Impact Statement process under NR 150, Wisconsin Administrative Code. Under NR 150, there is no content difference between an EA and an EIS. The EIS process requirements are more extensive than are those for an EA, but the primary difference between the two is a required hearing on an EIS.

Comment: Canadian tar sands impacts and green house gas emissions should have been carefully considered in the EA and resulted in the preparation of a more detailed environmental impact statement ("EIS").

Response: See the previous comment response, and the comment responses below concerning Canadian tar sands and greenhouse gas emissions.

Comment: Based on the inadequate demonstration of need for the pipeline and the significant impacts that the project is likely to have on human health and the environment, we request that DNR issue a subsequent EA or an EIS that addresses these shortcomings, and allows for further review and comment.

Response: NR 150.22(2)(b), Wis. Adm. Code, requires a description of the purpose and need for the proposal, it does not require a demonstration of need. The EA provides over nine pages of description of the project purpose and need. The EA, also, did not find significant impacts associated with the project.

Comment: We would like to re-iterate our displeasure with the Department's decision to accept public comment for a period of 19 days rather than the more standard 30 days. The comment period also spanned three full weekends when Department representatives were, of course, unavailable to respond to questions.

Response: NR 150 requires a public review period, but does not include a specifically required time period for the review of an EA [see NR 150.21, Wis. Adm. Code]. The Department's longstanding standard practice for public review of an EA is 15 days. The purpose of the public comment period is to receive comments, not to answer questions. While Department staff cannot always be available at their desks, we can always be contacted through voicemail and E-mail.

Comment: We are extremely disappointed that the Department refused to grant us a formal 24 hour extension on this comment deadline, particularly given that project staff has not been available over the course of the last three days to answer our questions, and will not be able to review these comments until Wednesday or Thursday at the earliest.

Response: While NR 150 does not include a provision for extending a public review period on an EA, we are considering all public comments received through the date of this comment response document.

Comment: We were disappointed that the Department chose not to solicit independent, expert input to validate the data and assumptions associated with the alternatives analysis for the storage tank expansion.

Response: Comment noted.

Comment: Though we respect and appreciate the careful review and consideration the Wisconsin Department of Natural Resources (WDNR) gives to all aspects of proposed pipeline construction projects, there remains a high degree of uncertainty about the short and long-term impacts associated with wetland and waterway disturbance of this scale. The only ways to reduce this uncertainty is through the collection of detailed pre-construction baseline data, and careful monitoring and evaluation of post-construction restoration and recovery.

Response: The project waterway and wetland application included wetland delineation and stream survey information for each resource that is proposed to be impacted by the pipelines and pumping station. This pre-construction information will provide the baseline for restoration.

General Project Comments

Comment: General concerns were expressed regarding wild rice and treaty rights.

Response: Because the project occurs in ceded territory, the Department worked with the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) as part of the application process. GLIFWC indicated that a formal consultation with the Voigt Task Force was not necessary. No wild rice waters will be directly impacted by the project. Wild rice waters downstream of the project area can be protected through implementing appropriate erosion and sediment control practices during construction, and through implementation of appropriate inspection, safety and spill response measures during operation.

Comment: How will wild rice areas be restored? Don't want replacement with genetically engineered wild rice.

Response: The project will not directly affect wild rice. Downstream wild rice beds could be adversely impacted if pipeline construction at waterway crossings allows erosion and siltation, or if spills occur at stream crossings. The EA describes the measures to prevent or minimize both of these scenarios. The Department is not aware of any proposals having to do with genetically modified wild rice.

Comment: I'm writing to express my opinion on the Enbridge Pipeline project. To put it bluntly, I think it's horrible.

Response: Comment noted.

Comment: I'm concerned about environmental impacts.

Response: Comment noted.

Comment: I understand that the DNR is focusing on the environmental impact the pipeline will have on streams, rivers, and local ecosystems, and that's probably the only items it can consider when deciding to allow it, but I would hope that the DNR can look at the big picture. I would hope the DNR will do the moral thing.

Response: The big picture is considered in the EA, but in making permitting decisions the Department is constrained within the authority granted by the State Legislature.

Comment: What/who are "environmental inspectors", and are they wetland scientists, biologists? Who pays them?

Response: Environmental Inspectors work for Enbridge and their background, training, and education varies. Independent Environmental Monitors (IEMs) work directly for the Department to document compliance with permits. Previous IEMs had educational backgrounds in natural

sciences, and experience in pipeline construction monitoring. The IEM funding is provided by Enbridge.

Comment: We support Enbridge's application for approval of the Environment Assessment related to the Alberta Clipper project.

Response: Comment noted.

Comment: Approval of this 13-mile segment will help clear the way for construction of hundreds of miles of already-approved pipeline in Minnesota and North Dakota. The majority of this out-of-state work will be completed by Wisconsin firms employing Wisconsin Operating Engineers. Thus, this overall project represents millions of hours of work for our members at family-supporting wages in these difficult economic times.

Response: Comment noted.

Comment: How can this project help us get our floodplains mapped? We may need this information if - "when" spills occur.

Response: Floodplain regulation, including mapping, is handled by the local unit of government through a Floodplain Zoning Ordinance, with state and federal oversight.

Comment: We are very concerned about the almost certain probability that the installation of the Alberta Clipper project will lead to requests for further expansions of the Superior Terminal (e.g., additional tanks), and additional outbound pipelines. Estimates of potential future fill range from ~15 acres (additional storage tanks to accommodate upgrades to operate the Alberta Clipper line at full capacity), to more than 400 acres (including a Murphy Refinery expansion and/or installation of 11-17 merchant tanks). The Alberta Clipper project is the latest installment of a series of incremental improvements to the Enbridge system that are, in fact, all interconnected. Despite this, the environmental review and alternatives analyses for these projects are treated as if each segment is separate. The result is a limited alternatives analysis where each piece is justified as a necessary piece of a larger puzzle. Reviewed as a whole (e.g., inbound / outbound lines, associated storage and pumping needs, merchant facilities), a wider range of alternatives would likely have been feasible for the siting and configuration of the Southern Access, Southern Lights, Alberta Clipper, and Superior Terminal Expansion projects. We are concerned about this trend and believe the Department needs to do a more thorough job preventing this type of segmentation in future oil industry infrastructure proposals.

Response: Permit applications for additional breakout tanks at the Superior Terminal are certainly possible. The EA discloses this possibility on pages 118 - 119. The potential need for additional tanks is discussed in a system context, based on the expandability of the proposed Alberta Clipper pipeline from 450,000 bpd to 800,000 bpd. All of the related proposed projects, and previously installed Enbridge system components, were discussed in detail in the EA.

Comment: While individual and cumulative impacts associated with oil industry infrastructure may not yet have passed a threshold of significance in the Superior region, we believe that point

cannot be too far away. We see no indications that WDNR is inclined to deny approval of permits for this project; however, we would like to see these approvals issued with an indication that additional lines and/or tank expansions will be difficult, if not impossible, to approve under state law. At the very least, special attention to the cumulative and secondary impacts of oil industry infrastructure should be given in the cumulative impacts study WDNR plans to complete under a grant from the Wisconsin Coastal Management Program.

Response: The Department has not been notified of future pipeline projects in this area, but if proposal are submitted they will be considered under the state laws that are applicable at that time.

Comment: Wisconsin's economy heavily depends on a stable, secure supply of crude oil and the Alberta Clipper petroleum pipeline will bring needed crude oil from the tar sands area of Alberta, Canada, to Midwestern refineries. We respectfully urge the Wisconsin Department of Natural Resources to issue the approvals and permits needed for this important, desired project.

Response: Comment noted.

Comment: Enbridge has yet to compensate me for changes and damages they made to my property during their last project 2002/2003. I have contacted them and they appeared to listen, but did nothing. They did not uphold their contract then, and I have no reason to believe they will uphold it this time. And, again, they will be going directly through my property.

Response: Comment noted.

Comment: Where are the agencies that were supposed to make sure Enbridge uphold their end of the agreement during the last project? Who do I contact to enforce Enbridge's agreement from the last project and put my property back to it's natural state? I've talked with Enbridge to no avail. Now that it is over five years, any litigation through our- court system has expired. I was talking with them prior to the five year expiration and they just "kept right on talkin'" until it expired.

Response: Waterway and wetland permits for the 2002 project were handled by the Department's Superior office.

Comment: Has Enbridge held any practice drills for their SPCC? To what extent? Were contractors and other emergency personnel involved? If one was held, how successful did the practice drill go for WI without having any contacts or contractors?

Response: Pipeline safety is handled by the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. Their website is: <http://www.phmsa.dot.gov>.

Comment: The statement states that it has not contacted all property owners who have water wells in the pathway of this project, that they have no means of learning who the property owners are. So, is Enbridge going to just "wing-it" and hope nothing happens? All property owners must be notified!

Response: The EA found that the projects are unlikely to have more than minor and temporary effects on groundwater. See EA pages 262 - 263, and 278. Spills are discussed as a potential threat to groundwater (see EA pages 263, 264, 266, and 278), but spills affecting wells are rare (see EA page 264).

Comment: The country's new direction is "Going Green". To investigate new sources of energy. How does this plan fit in with the COUNTRY'S new direction? What does the president think of this plan? Has anybody reported and evaluated pollution levels at sites where this operation is currently taking place in Canada? Anybody from the US DNR? Any other US agencies? From what I have researched, the pollution levels for producing these products outweighs the benefits. Has FEMA been involved in any of this project?

Response: The Alberta Clipper project is subject to a U.S. Department of State Presidential permit and EIS. Permits are needed from the U.S. Army Corps of Engineers. An endangered resources review by the U.S. Fish and Wildlife Service is required. Other U.S. agencies cooperating in development of the federal EIS are the: Environmental Protection Agency, Army Corps of Engineers, Fish and Wildlife Service, Forest Service, Natural Resources Conservation Service, Farm Service Agency, and Bureau of Indian Affairs. The U.S. Department of Transportation and Council on Environmental Quality were also assisting agencies on the federal EIS.

Comment: Please allow this project to proceed.

Response: Comment noted.

Comment: We believe that this assessment and permit conditions justifies approval of the Enbridge permits and EA and that such approvals are crucial for Wisconsin's future energy security and availability. Approval of the final 13 miles of a 1000-mile project in Wisconsin is a critical link enabling the shipment of additional crude oil supply from the northern Rockies and Alberta, Canada oil sands to Midwest refiners, providing a more secure and reliable energy source. This also means that Midwestern states like Wisconsin will be less reliant on the importation of crude oil from sources less friendly to the United States like Venezuela and the Middle East. Where Wisconsin was once at the end of every energy pipeline system, we will now be at the front providing the state with much needed energy resources creating jobs and economic development.

Response: Comment noted.

Comment: Enbridge has a long and strong environmental record in Wisconsin. When there have been problems in operating, Enbridge has shown they respond and step up to the responsibility to repair and remediate the situation. They use the latest, state of the art, pipeline construction technologies and hire contractors who employ highly trained workers. Based upon past pipeline construction projects, we believe Enbridge will construct this segment of pipe with the same concern for protecting the environment and wetlands.

Response: Comment noted.

Comment: The project will provide construction jobs and economic stimulus. The project will provide economic development and enhance the tax base.

Response: Comment noted.

Comment: The pipeline industry is environmentally sensitive. Industry employees are concerned about the environment.

Response: Comment noted.

Comment: Enbridge has a good history in Superior.

Response: Comment noted.

Comment: Enbridge employment in Superior is about 250. Construction will employ 3,000. Supports conclusions of EA and EA process. Enbridge pays terminal tax.

Response: Comment noted.

Comment: The golf course crossing was done well last time.

Response: Comment noted.

Comment: Enbridge is a good environmental steward, has restoration skills.

Response: Comment noted.

Comment: Concern expressed about the benzene spill and pipeline spills (diluent). How can oil spills be cleaned up?

Response: The benzene spill that occurred some years ago was not a pipeline incident. The potential for spills from the proposed pipelines and the manner in which such events would be handled are described in the EA. Pipeline safety is handled by the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. Their website is: <http://www.phmsa.dot.gov>.

Comment: Concerned about maintenance inspection.

Response: This issue was discussed in the EA.

Comment: Concerned about restoration and compressed red clay.

Response: This issue was discussed in the EA.

Comment: Concerned about railroad stability.

Response: Railroads are only crossed with permission of the rail company, and all rail crossings in Wisconsin are proposed to be bored.

Comment: Concerned about how eminent domain will impact landowners.

Response: Eminent domain will not be needed for the Wisconsin portion of the proposed projects.

Comment: Native Americans are appointed to be spiritual defenders of mother earth. "Enbridge speaks with forked tongue," doesn't clean up spills.

Response: Comment noted.

Comment: Respect the environment and Native American rights.

Response: Because the project occurs in ceded territory, the Department worked with the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) as part of the application process. GLIFWC indicated that a formal consultation with the Voigt Task Force was not necessary.

Comment: We can talk to Enbridge about issues and problems.

Response: Comment noted.

Comment: No long term effects were found from the benzene spill, including no impact on area wells. We need jobs and environmental protection.

Response: Comment noted.

General EA Content

Comment: We appreciate the extensive macro and route variation analysis completed for the Alberta Clipper and Southern Lights lines and do not object to the Department of Natural Resources' determination of the least environmentally damaging practical alternatives for the two lines.

Response: Comment noted.

Comment: Page 345 of the EA outlines general goals of post-construction monitoring, but provides little detail. Instead the document references various proposed plans (e.g., Construction and Environmental Control Plan (CECP), a Wisconsin-specific Environmental Mitigation Plan, and a Revegetation and Restoration Plan); however, these plans were not available for public review. We did make two efforts to obtain copies of the revegetation plans, but one staff member did not have time to locate and provide the most current version and the other staff member was out of town in the three business days prior to the comment deadline. The details of these plans

are relevant to the avoidance and minimization of project impacts. Final, approved, versions should be posted on a publicly accessible web-site prior to the issuance of project permits.

Response: The EA included plans elements within the text, rather than attaching them as addenda. See EA section III on pages 42 - 124. The plan documents are also available as part of the application materials.

Comment: We would like the record to reflect that the absence of page numbers in the Table of Contents added an unnecessary level of difficulty to public review of this document. A numbered Table of Contents is a standard tool for helping reviewers locate (or relocate) specific sections within the text, and a necessary tool for navigating a text that is hundreds of pages long.

Response: There is no requirement under NR 150, Wis. Adm. Code to include page numbers in an EA table of contents, nor is there a requirement for a table of contents. The Department nevertheless regrets that we were not able to include page numbers. We agree that page numbers in the table of contents would make navigation of the document easier.

Comment: No emergency contacts were listed for Wisconsin in the Emergency Response Plan. I realize that any Emergency Response Plan must remain somewhat generic so that it can cover multiple situations, however, it is very disturbing that under their SPCC, "Agency Notification", nobody is listed as a contact for the state of WI. And, in their plan, under "Spill Response Contractors", nobody is listed for the state of WI. How long will notification take and what is "ETA"? Not having anyone immediately available is not a plan. So therefore, there is no Emergency Response Plan for the state of WI.

Response: This deficiency in the application materials available during the public informational hearing on June 4, 2009, has been noted. Previous versions of the application included the appropriate contact information, and will be incorporated into the final permit file. "ETA" refers to estimated time of arrival.

Comment: The federal government no longer allows building on flood plains. This is for good reason. How is it even a consideration to allow a pipeline to go through a flood plain? Or any waterways where a spill could be carried and dispersed at an enormous pace? Should there be an accident/spill in a flood plain, the results would be disastrous. Any spill would be a disaster, but consider the impact of a spill in a flood plain or water way. Tank Storage in a flood plain Again, how is this a consideration, especially when the FEMA is currently directing counties to re-assess properties to better identify flood-plains? So this EIS statement is not necessarily accurate until this re-assessment occurs. There will probably be more wetlands and waterways identified during the reassessment. Shouldn't this re-assessment take place prior to the EIS?

Response: Floodplain regulation is handled by the local unit of government through a Floodplain Zoning Ordinance, with state and federal oversight. Although restricted, floodplain development, including pipeline construction, is not expressly prohibited.

Comment: We wish to acknowledge the extensive draft permit and environmental assessments completed in the recently posted Environmental Assessment for the Enbridge Alberta Clipper pipeline expansion project.

Response: Comment noted.

Comment: Potential for contamination. The EA did not discuss or disclose the potential for environmental contamination from the new tanks. Three abandoned tank facilities (Amoco, Unical, and Murphy Oil) were evaluated as potential sites for the new storage tanks, and all three were dismissed due, in part, to the presence of contaminated soils. Page 324 says “normal breakout tank operation should not affect wetlands, but spills could be detrimental to this resource.” However, the EA does not disclose risk factors for spills or leaks or how such problems will be prevented. The only precaution identified in the EA was the construction of containment berms should a spill occur. It was unclear from the EA whether the Department knows what caused contamination at previous storage tank sites and whether Enbridge has provided adequate assurances to reduce the risks of leaks and spills in the wetlands at the Superior Terminal.

Response: Section V of the EA presents information on incident risks. Enbridge's comprehensive Spill Prevention, Containment and Control Plan for construction is also described in the EA.

Comment: Section II.F., page 41: On May 27, 2009 Enbridge sent a letter to Kate Angel, Wisconsin Coastal Management Program in which Enbridge certified compliance with Wisconsin's Coastal Management Program. Enbridge requests that the EA note that letter of compliance in the final EA and include it in the EA record.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.1, pages 53 and 54, Figures 7a & 7b: These figures reflect the workspace configuration proposed in the initial application. As discussed in the text, Enbridge reduced the spacing between the proposed pipelines based on the recommendations of a professional geotechnical engineer. Updated figures are attached as Exhibit 1.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.4.f., page 72: The EA notes that additional requirements for working on agricultural lands during wet conditions are included in Enbridge's Agriculture Mitigation Plan (“AMP”). Enbridge consulted with the Wisconsin Department of Agriculture, Trade and Consumer Protection (“DATCP”) and was informed that an AMP is not required for this project.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.4.f., page 73, third paragraph: The EA text states that: “*No hydrostatic test discharges would occur within the state of Wisconsin.*” As previously indicated and per Table 8 on page 69 of the EA, Enbridge needs to pre-test the sections of pipeline that will be installed by horizontal directional drilling techniques.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.4.1., page 85, final paragraph: The EA text states that: “*Enbridge believes that the integrity of the Pokegama River can be maintained intact with minimal temporary and not permanent disturbance using damp and pump methods.*” Per the submittal on May 9, 2009 and Table 12 on page 87 of the EA, Enbridge now intends to install the pipelines across the Pokegama River by horizontal directional drilling techniques.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.4.1., pages 88 and 89: These sections discuss the installation of the pipelines across the Pokegama River utilizing dam and pump methods. Per the previous comment, Enbridge now intends to install both pipelines across the Pokegama River by horizontal directional drilling techniques per Table 12 on page 87 of the EA.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.B.4.1.04, page 92, first paragraph: This section of the EA discusses guided bore installations. The EA text states that: “*Enbridge proposed to cross one waterbody with the Southern Lights Diluent Pipeline, the Pokegama River, using this construction method.*” Per Table 12 on page 87, Enbridge intends to install all of the Southern Lights Diluent pipeline crossings utilizing the guided bore method with exception to the Pokegama River (HDD), wb1089a (dry crossing), and wb1096a (dry crossing).

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section III.F., page 123, second paragraph: The EA text states that: “*Enbridge is currently planning to refurbish and increase the volume of existing doomed external floating roof tank 3, which was constructed in 1989. Refurbishment of tank 3 is anticipated to commence in 2009. In addition, Enbridge is planning various maintenance activities of existing piping, valves, and flanges within the terminal that are scheduled to occur in 2009. The emission increase from these projects was below the 40 ton per year VOC significant threshold as defined in 40 CFR 52.21(b)23 and s. NR 405.02(27)(a); however, the aggregated emissions from previous projects resulted in combined emissions that exceeded the significance threshold. Therefore, a PSD permit application and BACT analysis will be submitted for review and approval by the DNR.*” This entire paragraph should be stricken. Per the following paragraph in the EA, although Enbridge no longer intends to increase the volume of tank 3, it is currently out-of-service for routine maintenance. Therefore, Enbridge has withdrawn the air permit application for the refurbishment and volume increase activities.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section IV.D.1, page 147, second paragraph: The EA text states that: “*Enbridge evaluated six additional alternative locations...*” Per the submittal on May 8, 2009, Enbridge evaluated seven additional alternatives.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section IV.D.1, page 147, fifth paragraph: The EA text states that: “*The nine alternative project sites are shown in Figure 9 in Section III.C.1.*” Figure 9 shows the ten alternative project sites per the submittal on May 8, 2009.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section VI.B.3., pages 234 and 237: The EA text states that: “*Enbridge has initiated consultations with the U.S. Fish and Wildlife Service and the Wisconsin Department of Natural Resources for a review of the Natural Heritage Inventory to identify any federal and/or state-listed threatened and endangered species.*” Enbridge concluded its informal Section 7 consultations with the U.S. Fish and Wildlife Service (FWS). Sections 4.8.1 and 5.9 of the Final EIS, are attached as Exhibit 2.

The EA text states that Enbridge submitted to the WDNR on November 30, 2008 documents relating to threatened and endangered species. In its June 4, 2009 Construction Project Consolidated Permit Application, Enbridge documents additional submittals to the WDNR regarding threatened and endangered species. In addition, Enbridge submitted to WDNR a Request for Incidental Take Authorization on March 20, 2009. Enbridge requests that the WDNR include this additional T&E information as part of its WEPA review record.

Response: Yes, the comment is correct insofar as the additional information was received and was considered in the evaluation of environmental impacts. In fact, subsequent to March 20, 2009 Enbridge provided additional information regarding impacts to rare plants on May 19 and June 19. The EA is hereby amended with the addition of Exhibit 2.

Related to this comment, the status of the IT permit request is that we believe we will be successful in avoiding the state-threatened plant species that are the subject of the permit request and that ultimately an IT permit decision will not be needed. Conditions have been included in the wetland and waterway permits to ensure that our avoidance recommendations are met.

Comment: Section VII.A.6.a.01, page 288, first paragraph: The EA text states that: “*The preferred route intersects with three public maintained trails, two of which are considered snowmobile/ATV trails and one that is restricted to snowmobiles.*” The preferred route intersects with seven ATV trails, of which approximately six are also utilized as snowmobile trails per table 66 on page 292.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section VI.C.5, page 260: On May 14, 2009, Enbridge submitted to WDNR the “Phase II architectural History of Eight Properties for Enbridge Pipelines' Southern Lights Diluent and Alberta Clipper Pipeline Projects, North Dakota, Minnesota, and Wisconsin, Superior Terminal.” On June 5, 2009, Enbridge submitted to the WDNR the Lakehead Pipeline Corridor Historic District Assessment of Effects Study for Enbridge Pipelines' Southern Lights

Diluent and Alberta Clipper Pipeline Projects, North Dakota, Minnesota and Wisconsin. Enbridge requests that WDNR incorporate the information in these reports into its WEPA review.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section VII.A.1.a., page 261: Since the DNR was a cooperating agency in the development of the Environmental Impact Statement (EIS) prepared by the U.S. Department of State, Enbridge requests that the attached excerpts regarding greenhouse gas emissions and climate change from the Final EIS Sections 4.12.1.3 and 4.14.3.12, dated June 2009 (Exhibit 3), be included as part of the final WEPA determination.

Response: The DNR was not a cooperating agency for the federal EIS, but we did provide review comments on the dEIS. Nevertheless, we hereby amend the EA to include Exhibit 3.

Comment: Section VII.B.3.b.01., page 316: Per the submittal on 5/8/09 and Figure 9, Enbridge evaluated a tenth alternative. Enbridge requests that the following text be considered as part of the final WEPA determination: *"Alternative 10 considered the construction of the 2.5 acre footprint for the Southern Lights Pump Station in a portion of Enbridge's property within the existing maintenance facility west of Bardon Avenue. The available land on which to construct the pump station is 2.0 acres. This area was determined to be comprised of entirely of upland.*

Although this area is entirely upland, some of which includes existing facility roads, parking areas, and four existing Enbridge pipelines transect the site. Furthermore, the Alberta Clipper and Southern Lights Diluent pipelines are proposed to be installed in this area. The presence of the existing and proposed pipelines prohibits the construction of the pump station in this area.

Alternative 10 is not practicable as it is not large enough to construct the station and four existing pipelines transect the area in addition to the proposed Alberta Clipper and Southern Lights Diluent pipelines prohibiting further construction in his area."

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Comment: Section VII.D.1.a.02, page 334, second paragraph: The EA text states that: *"Enbridge is currently planning to refurbish and increase the volume of existing doomed external floating roof tank 3, which was constructed in 1989. Refurbishment of tank 3 is anticipated to commence in 2009. In addition, Enbridge is planning various maintenance activities of existing piping, valves, and flanges within the terminal that are scheduled to occur in 2009. The emission increase from these projects was below the 40 ton per year VOC significant threshold as defined in 40 CFR 52.21(b)23 and s. NR 405.02(27)(a); however, the aggregated emissions from previous projects resulted in combined emissions that exceeded the significance threshold. Therefore, a PSD permit application and BACT analysis will be submitted for review and approval by the DNR."* This paragraph should be stricken. Per the following paragraph in the EA, although Enbridge no longer intends to increase the volume of tank 3, it is currently out-of-service for routine maintenance. Therefore, Enbridge has withdrawn the air permit application for the refurbishment and volume increase activities.

Response: Comment noted. The EA is hereby amended as recommended in the comment.

Project Purpose and Need

Comment: The DNR also did not adequately demonstrate the need for the Alberta Clipper project. The most recent energy forecasts do not show an increased demand for Canadian crude oil in the coming years. The Obama Administration recently released an energy and environment plan that laid out its energy objectives aimed at reducing GHG emissions. The U.S. Congress is currently considering legislation with similar reduction goals. These, along with similar initiatives at the state and regional level, will have a direct effect on demand for the crude oil proposed to be transported through the Alberta Clipper. The DNR should have considered these factors in demonstrating the purpose of the project in the EA.

Response: NR 150.22(2)(b), Wis. Adm. Code, requires a description of the purpose and need for the proposal, it does not require a demonstration of need. The EA provides over nine pages of description of the project purpose and need.

Comment: The EA did not adequately or clearly quantify the need for the additional breakout storage tanks. Though plentiful narrative and numeric information was available to describe the purpose and need of the five new breakout tanks and pumping station, it was left to the reader to do the math to calculate how current petroleum inputs compared to available storage tank capacity. The numbers presented were scattered throughout the document and did not add up to justify the proposed fill. By our calculations on the data presented, the Superior Terminal has 2.7 million barrels of excess working storage available, more than sufficient to meet the 1.08 million barrels of storage needed.

Response: See the previous comment response.

Comment: The Department failed to evaluate the feasibility of increasing on-site storage by reconfiguring existing tanks. As we understand it, many tanks are operating at less than full capacity due, in part, to how Enbridge processes in batches, and also to design decisions made at the time of prior expansions. We question why the potential for tank reconfiguration was not thoroughly evaluated as part of the analysis for the proposed project and would appreciate a formal Department response to this concern.

Response: As stated in the EA, the purpose of the proposed breakout tanks is for both storage and operational flexibility. The no-build alternative is adequately discussed in the EA in section IV.E.1.a.

Waterways and Wetlands

Comment: Stream gauge data is needed. Storm events in the future are unknown. How will storms affect stream crossings.

Response: The Department considers stream flows when a waterway crossing is proposed, including USGS stream gage data, if available. Regardless of historic or future flow volumes, the Department requires waterway crossing construction to occur under normal or low flow conditions to prevent impacts associated with high flow or flooding conditions. Most storm events should not affect pipeline stream crossings since the pipes will be below the stream bed. Catastrophic storm events could potentially expose the pipes through erosion, resulting in the need for reconstruction to cover the pipes.

Comment: Recreating wetlands takes decades.

Response: Comment noted.

Comment: What's a wetland worth? Can it ever be cleaned up?

Response: Regulated wetland activities must meet the requirements of applicable state laws. In addition, the Federal and local unit of government also regulate wetland areas.

Comment: We were pleased to see a statement that Enbridge will attempt to segregate the organic layer in saturated wetlands (pg 96) and also support the plan to attempt segregation in normally unsaturated wetlands that are saturated at the time of construction.

Response: Comment noted.

Comment: We support the decision to use HDD to install pipes in the Pokegama Carnegie Wetland Complex (PCWC). We do have reservations about the potential environmental effects of plugging the hole with bentonite slurry and capping with cement grout should the bore need to be abandoned. The EA did not discuss these effects.

Response: Bentonite slurry is used to perform the HDD, and would be present below the surface whether the drill is successful or fails. Because the geotechnical subsurface data collected indicates that the project area has clay subsoils, utilizing bentonite or grout to fill subsurface drills is not anticipated to have an impact on wetlands.

Comment: The EA provides conflicting information about revegetation plans for wetlands. Pages 95 and 98 describe Enbridge's plans to allow natural revegetation in non-standing water wetlands and natural reforestation of the temporary workspace of forested wetlands. This is not consistent with practices required for the Southern Access project. Conversely, pages 73-74 say that reseeding of wetlands will be done in consultation with COE and WDNR and in accordance with Enbridge's Revegetation Plan. This plan was not included as an Appendix to the EA so we cannot comment on the adequacy of what has been proposed.

Response: Enbridge will allow natural revegetation, and will also use a seed mix for unsaturated wetlands. Enbridge has submitted a Revegetation and Restoration Monitoring Plan with their application, but this document will need to be revised before it could be approved.

Comment: I'm concerned about long term effects on wetlands and "Wetland Gems."

Response: Comment noted.

Comment: We must stop the destruction of our waterways and wetlands.

Response: Comment noted. Protection and preservation of waterways and wetlands is the purpose behind the Department's permit authority.

Comment: What about the Red River? This Saturday, March 28, 2009, the river is expected to crest at 41 ft. above flood stage, breaking history. It also flooded and broke history records in 1997, so it is only to be expected that it will flood again. What is the impact of putting a pipeline through this area with an external emergency situation?

Response: The Red River is not in Wisconsin. Therefore Red River issues are outside the Department's jurisdiction.

Comment: Opposed due to many wetland issues and impacts.

Response: Comment noted.

Comment: How far from the Pokegama River bank will HDD begin? Pokegama River crossing boring must be bored from a longer distance.

Response: Both the HDD entry and exit sites are located approximately 800-feet away from the river's edge.

Comment: The project will be constructed in an environmentally sensitive manner. Wetland impacts will be minimized.

Response: Comment noted.

Comment: Concerned about long term impacts on water.

Response: Comment noted.

Flora and Fauna

Comment: Concerned about animals, birds, and fish.

Response: Comment noted.

Comment: I'm concerned about rare plants.

Response: Comment noted.

Comment: Has the DNR done a study on the impact the tar sands are having on local Wisconsin song birds? I read an article about how the tar sands production in Alberta is destroying bird habitats and nesting grounds of our local song birds, and population numbers are dropping. If that article is true, then this pipeline will continue the decline of our song birds. Maybe that's something the DNR should look into when considering this pipeline, because it's all connected.

Response: No, the DNR has not conducted such a study. The proposed projects are for a transportation system. Enbridge is not an oil producing company. As the commenter notes, environmental effects have been occurring in Canada, although the Alberta Clipper pipeline has not yet been constructed. Pipeline system construction in the U.S. is not the cause of environmental impacts in the tar sands region of Canada. The environmental impact analysis looks at direct, indirect and cumulative impacts related to the proposed activity. Indirect impacts may be removed in space and time (i.e., they may occur offsite or after the activity has been completed). Cumulative impacts are from sources that are reasonably expected to occur in the project area in the future and that may have effects similar to those that occur from the proposed action. Recovery of petroleum products from tar sands is neither indirect nor cumulative in that it is unrelated to the pipeline construction in time or space and tar sands production occurs independently of whether the pipelines are built. For these reasons, we did not consider the impacts of tar sands production in relation to bird impacts for this project.

Comment: Endangered species are often "spot specific" and can easily be destroyed by a project like this.

Response: Agreed. For that reason, we asked Enbridge to complete habitat assessments and surveys for rare plants and birds so that we can anticipate and address impacts along the route based on the species and location along the proposed route.

Comment: Are you providing a list of endangered plants and animals? Who has identified them?

Response: Yes, the DNR provided a list of threatened, endangered and special concern plant and animal species to Enbridge that could be present in the area affected by the project.

Comment: The EA's treatment of potential impacts to wildlife was so general as to be meaningless. Nowhere does the EA describe potential impacts to specific wildlife species. The list of bird species in the project area provided in Table 27 (page 197), is nothing more than a list, probably picked up from a separate study. There is no discussion of the types of birds that may be more or less threatened by construction or operations, or of what minimization measures have been adopted to protect them. Though the description of the aquatic environment that begins on page 204 provides an extensive list of birds, fish, and other fauna that inhabit the St. Louis River Estuary, it is not clear how, or even whether, pipeline or storage tank construction will impact these species.

Prior to issuing permits, a minimum response to the gaps in the evaluation and disclosure of wildlife impacts should be: a) completion of threatened and endangered resources surveys along the pipeline corridor and at the Superior Terminal expansion sites, and b) completion of bird surveys and wildlife habitat assessments at the Superior Terminal expansion sites. If any species

of significance are found, details of those findings, as well as avoidance, minimization, and habitat restoration plans should be released for public review and comment.

Scant attention was paid to the potential impacts to threatened and endangered fauna. The evaluation and disclosure of the short and long-term environmental effects on threatened and endangered species is required under NR 150.22 and the Wisconsin Environmental Policy Act. It is not within the agency's discretion to limit this analysis to plants. Nor is it sufficient to indicate in a WEPA document that those studies are forthcoming.

Response: The EA makes clear that potential impacts to wildlife from construction of the proposed projects are related to loss, fragmentation, an/or alteration of habitat located at or adjacent to existing pipeline system facilities. Spills are also discussed as a potential threat to habitat. Measures to prevent, and address spills is also discussed in the EA. The EA is also hereby amended to include the information below in this comment response.

An evaluation of impacts to endangered resources was completed for this project. Although information about the name and location of rare species is generally not available to the public it was provided to Enbridge. As part of that evaluation and also as part of the wetland and waterway permitting, impacts to wildlife are also considered. For this project, we eliminated concerns over some groups of rare species primarily because of the habitat conditions in the project area. In this respect, we considered that impacts to rare turtles were unlikely to occur because the soil conditions were unlikely to support suitable nesting habitat because they are primarily clay soils and the surface water (e.g., waterways and wetland types) were unlikely to serve as foraging habitat. Specifically, there is more suitable habitat for these species offsite. We also considered impacts to rare invertebrates and fish, but again, the waterways at the crossing points do not support the hydrological and bed conditions typically associated with rare species in these groups. We also considered impacts to the American marten and wolves, but our species experts indicated that while the animals may be in the project area, the location of any dens would be toward the interior of the forest – not adjacent to roads, railroads or significant rights-of-ways as is the case with this project. Enbridge does have a protocol in place to contact the DNR in the event that wolves are observed during project construction.

Ultimately, we focused our attention on impacts to rare plants and birds. We spent considerable time to obtain information from Enbridge on the location of threatened, endangered and special concern plant species in their workspace. We have been successful in getting Enbridge to avoid loss of threatened or endangered plant species on public lands, which is the extent of our jurisdiction under Wisconsin's Endangered species law. Based on the information provided to us by Enbridge, they also expect to avoid loss of threatened or endangered plant species on private lands. There will be a loss of special concern plant species, however since not all occurrences of those species in the workspace could be avoided.

With respect to birds, the NHI database did not indicate the presence of any state-listed threatened or endangered bird species nesting within two miles of the project route. However, four special concern species were recorded within this search area:

- Upland sandpiper (*Bartramia longicauda*). SC. This species prefers tallgrass prairies, sedge meadows, unmowed alfalfa/timothy fields and scattered woodlands. The breeding season extends from early May through late September.
- Connecticut warbler (*Oporornis agilis*). SC. In Wisconsin, this species prefers mature, multi-layered pine stands, particularly jack pine, with dense understory. The breeding season extends from mid-June through mid-July.
- Western meadowlark (*Sturnella neglecta*). SC. This species prefers open grassland and cropland. Breeding occurs from late April to mid-July.
- LeConte's sparrow (*Ammodramus leconteii*). SC. Le Conte's Sparrows use open, level uplands and lowlands, with tall, thick herbaceous vegetation and thick litter in wetlands, sedge meadows, prairie.

Note that the NHI database records occurrences of species that are confirmed nesting, and does not record the many species that migrate through the area. In either case, we asked Enbridge to complete a raptor nest survey along the route. Two stick nests were identified near the Wisconsin portion of the route and their status will be verified prior to initiating construction in those areas. They are also completing a breeding bird survey in this season (June, 2009) prior to initiating construction to ensure that no state-listed threatened or endangered bird species are nesting within or adjacent to the project area. If any results are positive, our first and primary effort will be to work with Enbridge to ensure those areas are avoided until the birds are fledged and capable of surviving on their own.

Comment: Though surveys for rare flora appear to have been fairly thorough, it is clear from content provided on pages 234, 237, and 238, that the EA was released even before any meaningful information was collected or evaluated about the potential for impacts to rare, threatened, or endangered fauna.

Response: As noted above, the culmination of our endangered resources review was to focus on rare plants and birds. Our evaluation of impacts to rare plant species was driven by the Wisconsin's Endangered Species Law and the wetland and waterway permitting process. All the surveys were completed and evaluated prior to completing the EA. The only additional information on this subject that was provided after the draft EA were adjustments to and specific information about Enbridge's construction plan. This is because our primary focus on impacts to rare plants was to minimize direct loss of rare plants in the workspace and this was a highly iterative process with Enbridge.

With respect to birds, it is correct that the breeding bird survey is currently underway and the results are not available for the EA. This is because the best approach for surveys is to complete them in the season of construction so that real time decisions can be made regarding how to avoid or minimize impacts. In other words, had the surveys been done in June of 2008, we would still not be certain of the species or location of rare birds that need to be addressed for construction beginning in June or July of 2009.

Comment: The Pokegama River is a natural spawning bed for walleye, northern pike and suckers. This needs more consideration. Once disturbed it is a practical impossibility to bring it back to its natural state. Where will the fish and other aquatic species go during this "disturbance"? Once trees and other vegetation are removed, it will change the temperature and conditions of those spawning beds; they will never be the same. In addition, putting erosion control on river banks in an immediate emergency situation, such as a heavy rain-storm, is impossible.

Response: Department review of the proposed crossing includes feedback from the local Department Fisheries Biologist.

Cumulative Effects

Comment: It will mean Murphy Oil will expand and put more toxins into the environment.

Response: The Murphy Oil Company may indeed propose an expansion, but this would not be the result of the proposed projects. The proposed projects were not proposed based on speculation that Murphy Oil would expand.

Comment: The cumulative impacts discussion failed to disclose estimates of previous temporary and permanent disturbance of wetlands from pipeline projects in the clay plain region or to discuss known ecological problems along the existing right of way (e.g. ponding and/or disruption of hydrology above existing pipes). This information should be gathered and considered as part of the environmental review for this project, as it is needed to establish adequate construction, restoration, and monitoring conditions in the permit.

Response: Cumulative wetland effects are presented in EA section VII.2.d.2.b. The EA does not provide additional authority to condition permits.

Comment: We appreciate the effort to identify and disclose the cumulative impacts of wetland fill in the Superior region, and the discussion of the expected and potential secondary impacts associated with this project.

Response: Comment noted.

Canadian Tar Sands

Comment: This pipeline is just one piece of the huge Alberta tar sands puzzle. By allowing it to proceed means we are encouraging the tar sands production. Not only will this continue the massive destruction of the boreal forests of Alberta, it will mean Murphy Oil will expand and put more toxins into the environment, and it will mean more CO2 for us oil hungry Americans. Tar sands are dirty, and we shouldn't be messing with it.

We need to halt all projects associated with the tar sands. We need to understand that all these little projects, like the pipeline, are part of the problem not the solution.

We are concerned that, in preparing the Alberta Clipper EA, the DNR appears to have limited the scope of its environmental impacts analysis to local impacts. The Wisconsin Environmental Procedure Act, Wis Stat. § 1.11 (“WEPA”) requires DNR to consider all reasonably foreseeable significant adverse impacts on the human environment. Wis. Adm. Code NR 150.22(1)(e). The Alberta Clipper will also exacerbate the many ongoing environmental problems associated with tar sands development, such as destruction of boreal forests, pollution and depletion of water supplies, and impacts to wildlife. These should have been carefully considered in the EA.

Response: The proposed projects are for a transportation system. Enbridge is not an oil producing company. As the commenter notes, environmental effects have been occurring in Canada, although the Alberta Clipper pipeline has not yet been constructed. Pipeline system construction in the U.S. is not the cause of environmental impacts in the tar sands region of Canada. The Murphy Oil Company may indeed propose an expansion, but this would not be the result of the proposed projects. The proposed projects were not proposed based on speculation that Murphy Oil would expand. The market for petroleum products in the U.S. has developed in the absence of the proposed Alberta Clipper projects.

Greenhouse Gas Emissions

Comment: I'm concerned about the likelihood that this project will further increase CO2 levels in the atmosphere.

We are concerned that, in preparing the Alberta Clipper EA, the DNR appears to have limited the scope of its environmental impacts analysis to local impacts. The Wisconsin Environmental Procedure Act, Wis Stat. § 1.11 (“WEPA”) requires DNR to consider all reasonably foreseeable significant adverse impacts on the human environment. Wis. Adm. Code NR 150.22(1)(e). The Alberta Clipper will transport tar sands crude oil to US refineries, which will greatly increase greenhouse gas emissions (“GHGs”). This increase in GHG emissions will occur at every level of the project, from the mining of the tar sands in Canada, to the upgrading and refining of the tar sands crude oil, to the eventual end-use burning of the fuel by consumers. This should have been carefully considered in the EA.

I hope that the WI DNR will understand the big picture associated with this pipeline. When Doyle talks of reduction CO2 in Wisconsin, I think the DNR should back him up not only for Wisconsin's air, but the earth's air.

Not addressing global warming isn't moral. It also seems contradictory to see Obama trying to address global warming by creating green jobs, yet we are allowing this tar sands pipeline across Wisconsin.

Response: By means of this comment response document, we have amended the EA to include Exhibit 3, which is taken from the U.S. Department of State's fEIS.

Permitting

Comment: I'm concerned about this project causing waterway permit delays for other applicants like residents and highways.

Response: Waterway and wetland permitting for the pipeline projects is being handled by Water Management Specialists in the Department's Office of Energy and Environmental Analysis (OEEA). OEEA handles energy-related permitting so that other Department Water Management Specialists can attend to other permit applications. The wetland permitting for the breakout tanks project is being handled by the Department's Northern Region, however. Turnaround times for OEEA applications are based on statutory requirements and workload, and this project did not significantly affect these timeframes. Most public transportation projects in Wisconsin do not require waterway and wetland permits because they are handled under a Memorandum of Understanding between the DNR and the Department of Transportation.

Comment: Based on the inadequate demonstration of need for the pipeline and the significant impacts that the project is likely to have on human health and the environment, the Alberta Clipper pipeline should not be granted the permits it seeks from the State of Wisconsin.

Response: The Department permit decision must ensure that the proposal meets applicable state standards.

Comment: When I called the DNR Madison office and spoke to those working with these permits my concern about only grasses used to plant after these pipelines are placed. My question is after the Emerald ash borer comes to destroy the black ash - how will the river banks be contained? The DNR specialist I spoke with stated that they do not have this issue to change anything. Grasses and their seeds are it only. I think more needs to be looked at for future prevention from erosion.

Response: The project is not anticipated to compromise existing bank stabilization. If the revegetation would prove to be inadequate, additional measures would need to be implemented that are compliant with state standards.

Comment: Prior to issuing permits for the breakout tanks, the Department should disclose an accurate accounting of, and explanation for, the capacity constraints and current and projected demand at the Superior Terminal.

Response: This information is in EA sections III.A, III.D, and III.E.

Comment: We would like to see soil segregation commitments clearly articulated as conditions in project permits. Because these represent innovative practices, we recommend special permit conditions (e.g., monitoring) to track locations where innovative soil segregation efforts took place and to evaluate the extent to which these efforts improved wetland recovery.

Response: Comment noted.

Comment: We support the proposed plan to restrict the amount of open trench to approximately 14,000 feet per spread (Pg 63); however we were surprised to see this condition proposed as per

spread, per pipe. This creates up to six construction spreads and would allow up to 86,400 feet, or 16.36 linear miles, of open trench. We recommend limiting the amount of open trench to a maximum of 14,400 total feet per construction spread.

Response: "Spread" is a term Enbridge uses to refer to major sections of the entire pipeline project between Alberta and Superior. Spread number 4 includes the 13 mile Wisconsin portion, as well as a portion in Minnesota. Enbridge has agreed to not have that more than 14,000 feet of open trench in Wisconsin at any one time. The EA section quoted (as well as other similar EA sections) is not meant to imply otherwise. Enbridge intends to construct the two pipelines simultaneously.

Comment: Please consider requiring HDD and guided bore crossing methods through other sensitive wetland areas (in addition to the Pokegama-Canegie), particularly for wetlands adjacent to rivers and streams where guided bore will already be utilized.

Response: Comment noted.

Comment: Additional consideration should be given to the practicability of applying the construction right of way reductions proposed for the PCWC (pg 144) to the remainder of the corridor, or at least in other sensitive areas that are adjacent to lands unlikely to be developed.

Response: Comment noted.

Comment: The plan for maintenance of the right-of-way in riparian areas is to limit removal of woody vegetation to the area directly above the pipes (Pg 107). Permit conditions should similarly limit woody vegetation removal in sensitive wetlands as well. We would particularly like to see this condition associated with maintenance in the PCWC.

Response: Comment noted.

Comment: Post-construction permit conditions should require placement of signs, fencing, or other physical barriers (e.g., slash and logs) to deter use of permanent right-of-way by ATVs restoration. We would particularly like to see these steps required to deter motorized recreation traffic along the right-of-way through the PCWC.

Response: Comment noted.

Comment: We support and applaud the commitment to use information from an Order 1 Soil Survey to facilitate the segregation of topsoil and restoration of micro-topographic features (depressions, inter-depression ridges, and drainage-ways) at the PCWC. There is much to be learned from this effort. Permit conditions should be set to: a) help capture lessons learned from this work; b) evaluate the extent to which this additional effort facilitates wetland recovery; and c) evaluate whether this is a practicable minimization measure for consideration on future projects.

Response: Comment noted.

Comment: We oppose issuance of project permits before the details of restoration and monitoring plans are finalized. Wetland restoration permit conditions for this project should be at least as stringent as those required in the Southern Access permits. Seeding should be required to facilitate wetland recovery. In cases where normally unsaturated wetlands are saturated at the time of restoration, crews should be directed to return later in the season to complete survey and seeding work under drier conditions.

Response: Comment noted.

Comment: We strongly support the use of Independent Environmental Monitors (IEM) to oversee permit compliance. The IEMs must be selected by and report directly to WDNR.

Response: Comment noted.

Comment: We encourage WDNR to do all within its authority to set permit conditions that not only protect wetland resources, but will also improve our collective understanding of the wetland and waterway impacts of pipeline construction.

Response: Comment noted.

Comment: Who is going to "police" Enbridge and ensure it adheres to all it promises from the very first stage of the project all the way through to the end, and, who is going to police maintenance after the project is complete? Where will these resources be coming from? Who will pay for them? Will there be "report cards" available? If the terms promised are not met, what will happen?

Response: Independent Environmental Monitors (IEMs) work directly for the Department to document compliance with permits. Previous IEMs had educational background in natural sciences, and experience in pipeline construction monitoring. The IEM funding is provided by Enbridge. Violations of permit conditions are dealt with through an established enforcement process.

Comment: Supports waterway crossing permit.

Response: Comment noted.

Comment: I saw the notice for comments from the public on the latest application by Enbridge for permits to construct more lines between Superior and Minnesota. I own land which has an Enbridge easement through it. I know first hand about environmental damage to my property which was not identified as temporary workspace, and worse, not properly identified as a serious problem even after being seen by an IEM observer. I have copies of a number of letters passed back and forth between you and me in regard to problems I had with Enbridge. If the WI DNR and Enbridge come with a line of baloney to convince the media and landowners that they are looking out for landowner environmental interests during this round of construction – it will not be tolerated. Landowners were lead to believe that the IEM's were out in the field to control

damage to ALL property – not just DNR property. The smoke screen (IEM) put in place by the WI DNR and Enbridge was only meant to camouflage a fast track permit process which is the agenda of the politicians and lobbyists who are continuously at the Enbridge trough.

I had the opportunity to read through the reports on my property and they were absolutely terrible. They had missing days, the wrong dates, pictures which were worthless, and the company would not respond directly to me about these problems because they apparently do not have to answer to me – the landowner. The WI DNR supposedly has jurisdiction over my property because it is considered a wetland. Yet, the IEM's had no one to monitor their behavior or the methods they used. The IEM company which was hired was drastically understaffed and was more effective as a puppet of Enbridge than they were as an advocate for the landowners and taxpayers of WI.

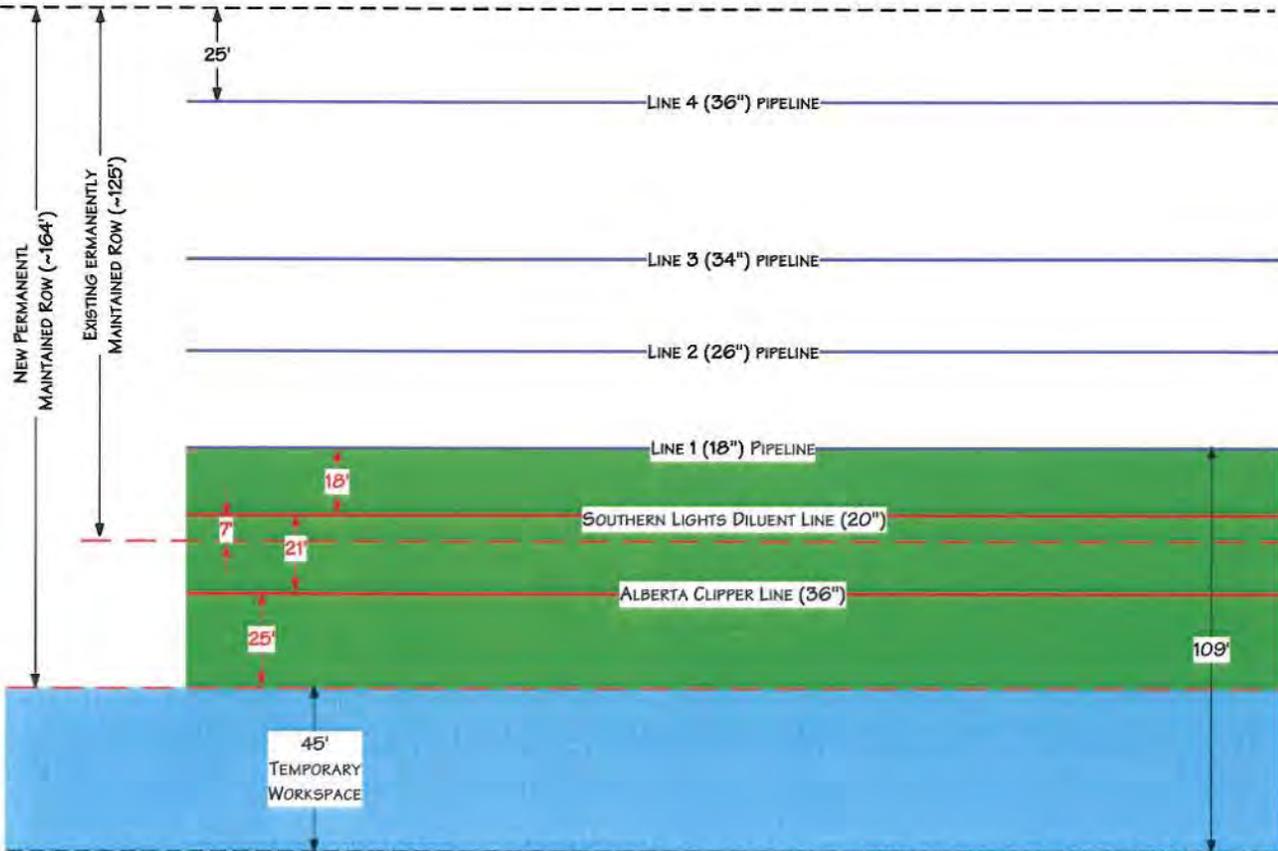
The entire permitting process is a sham in my opinion. The IEM process is a scam to move the permit process along quickly. It has no teeth as the IEM has no authority to force shutdowns along the route. By the time the IEM (if of course they are even around enough to see them) reports are reviewed by the WI DNR people who can shut construction down – major damage has already occurred or has been covered up by Enbridge.

We had many instances where IEM's never saw violations because of clear understaffing on the entire project. Of the over 300 reported violations the IEM's did report - only a few over 100 were actually prosecuted and, Enbridge, in a deal with the State made sure no landowner could use any of the violations as evidence against Enbridge.

The law firm representing Enbridge, to the best of my knowledge, has also represented various State of WI agencies in the past and this certainly paid big dividends when the final plea bargaining between the State DOJ and Enbridge was going on. There is so much rot going on between the State, the politicians, and Enbridge that the stench can be smelled from Superior to the IL line. Enbridge deserves to have to go through the most rigorous questioning ever given and they cannot be trusted to do what they claim they will do. Any new projects should have no less than triple the number of IEM observers in the field compared to the last project, the IEM's need to have authority to immediately shut operations down at any sight, the IEM's need to be paid directly by the WI DNR and NOT by Enbridge, and the WI DNR MUST be certain any IEM company has zero ties to Enbridge. All funds for the required IEM's would be paid by Enbridge direct to the WI DNR and ALL reports would be required to not only be given to the WI DNR but each and every landowner would be provided the IEM reports no less than twice per month. The hammer must be put down on this company because they have proven they cannot be trusted and the State of WI and the WI DNR need to clean up their acts as well. It is time for the government to “serve and protect” the citizen landowners who are taking on this burden for the “public good”.

Response: Comment noted.

Exhibit 1



- TYPICAL EXISTING ROW BOUNDARY DEFINED BY LOCATION OF NORTHERN MOST PIPELINE: 25 FEET TO THE NORTH AND 100 FEET TO THE SOUTH.
- TEMPORARY WORKSPACE ADJACENT TO NEW ADDITIONAL ROW WILL BE REQUIRED TO INSTALL THE PIPELINE(S). TYPICALLY 45' IN WIDTH AND THE LENGTH OF THE ROW WILL BE RENTED FROM LANDOWNERS. ADDITIONAL TEMPORARY WORKSPACE AT CIVIL AND ENVIRONMENTAL CROSSINGS OF UP TO 75' IN WIDTH AND UP TO 300' IN LENGTH ON EACH SIDE OF THE CROSSING WILL BE RENTED.



For environmental review purposes only.

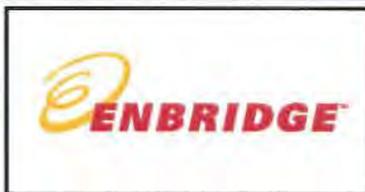
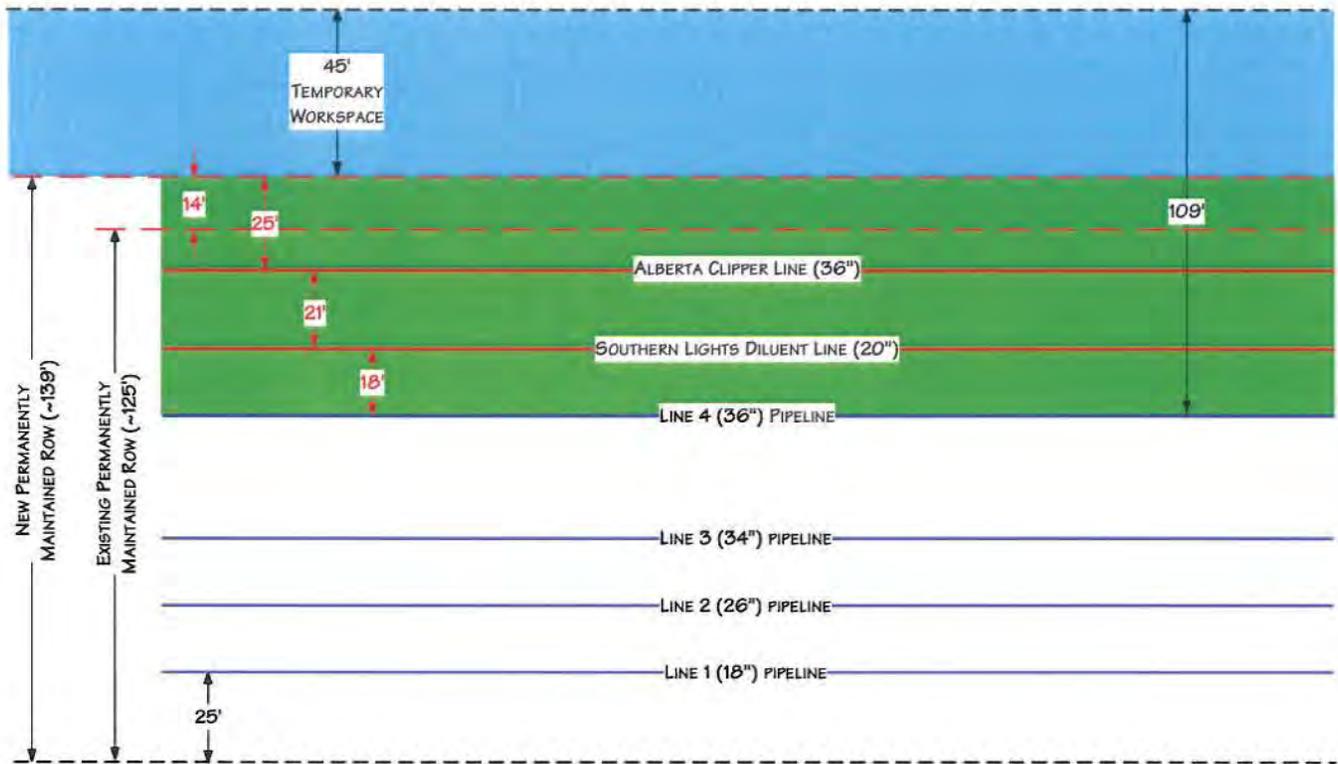


Figure 3.2.1-1
Alberta Clipper and Southern Lights Diluent Projects
 Typical Right-of-Way Configuration In Wetlands
 South of Existing Lines (Wisconsin Only)

| | |
|----------------------------|--|
| DATE: 5/23/2007 | |
| REVISED: 12/11/08 | |
| SCALE: NTS | |
| DRAWN BY: RSMcGregor | |
| K\335\WI_EMP\FIGURE02B.VSD | |



- TYPICAL EXISTING ROW BOUNDARY DEFINED BY LOCATION OF SOUTHERN MOST PIPELINE: UP TO 25 FEET TO THE SOUTH AND 100 FEET TO THE NORTH.
- TEMPORARY WORKSPACE ADJACENT TO NEW ADDITIONAL PERMANENT ROW WILL BE REQUIRED TO INSTALL THE PIPELINE(S). TYPICALLY 45' IN WIDTH AND THE LENGTH OF THE ROW WILL BE RENTED FROM LANDOWNERS. ADDITIONAL TEMPORARY WORKSPACE AT CIVIL AND ENVIRONMENTAL CROSSINGS OF UP TO 75' IN WIDTH AND UP TO 300' IN LENGTH ON EACH SIDE OF THE CROSSING WILL BE RENTED.



For environmental review purposes only.



Figure 3.2.1-2
Alberta Clipper and Southern Lights Diluent Projects
 Typical Right-of-Way Configuration In Wetlands
 North of Existing Lines (Wisconsin Only)

| | |
|----------------------------|--|
| DATE: 5/23/2007 | |
| REVISED: 12/11/08 | |
| SCALE: NTS | |
| DRAWN BY: RSMcGregor | |
| K:\335IW\EMP\FIGURE02A.VSD | |

Exhibit 2

4.8 THREATENED, ENDANGERED, AND SENSITIVE ANIMALS AND PLANTS

This section addresses species that are federally-listed, state-listed, or tribally designated as endangered, threatened, or candidate species, and species of conservation concern (defined as conservation priority by North Dakota; special concern species by Minnesota, FDL, and Wisconsin; or sensitive species by the CNF Regional Forester and LLBO). Information on species occurrence, life history descriptions, and impact assessments is based on available literature; correspondence and communications with federal, state, and tribal agencies; agency required site-specific surveys; websites; and review of state natural heritage programs including element occurrence records.

4.8.1 Federally-Listed Threatened, Endangered, and Candidate Species

In accordance with Section 7 of the ESA, DOS (as the lead agency), in coordination with FWS, must ensure that any action authorized, funded, or carried out does not jeopardize the continued existence of a federally-listed threatened or endangered species, or result in the adverse modification of federally designated critical habitat for any federally-listed species. For actions involving major construction activities with the potential to affect listed species or designated critical habitats, DOS must report its findings to FWS in a Biological Assessment (BA). To comply with Section 7 of the ESA, we requested in the DEIS that FWS consider the EIS and Appendix W as the BA for the proposed Project.

Enbridge, as DOS's non-federal designee, initiated Section 7 informal consultation with FWS in August 2006 by sending a Project overview and information request letter. The FWS field offices participating in the consultation are Bismarck, North Dakota; Twin Cities, Minnesota; and Green Bay, Wisconsin. Meetings between Enbridge, FWS, and other federal agencies were held in August 2006 and in May 2008. The Section 7 informal consultation with FWS has been completed, and FWS has concurred with the determinations presented below for federally-listed threatened, endangered and candidate species (FWS 2009).

Federally listed threatened, endangered, or candidate species identified by FWS as potentially being affected by the Alberta Clipper Project include Kirtland's warbler, piping plover, Canada lynx, gray wolf (the gray wolf was officially delisted on May 4, 2009), Dakota skipper, and western prairie fringed orchid (FWS 2006a, 2006b, 2008b) (Table 4.8.1-1). The distribution, life histories, and habitat requirements for these species are discussed below, followed by an analysis of Project impacts, proposed and recommended mitigation, and a preliminary determination of effects. The species occurrence was determined based on the Minnesota Natural Heritage element occurrence records database review (Appendix W).

4.8.1.1 Kirtland's Warbler

Background

The Kirtland's warbler is federally-listed as endangered throughout its range and is one of the rarest birds in North America. This species has very specialized nesting habitat requirements, with a nesting period lasting from late May to early July. Threats to this species include breeding habitat loss and degradation due to a reduction in fires and forestry practices, potential loss of critical wintering habitat, cowbird parasitism, and physical dangers to migrating birds (Kreitingner and Paulios 2007).

| Species | Federal Status | State and Tribal Status ^a | Counties/State | Preferred Habitat | Preliminary Determination |
|--|------------------|---------------------------------------|--|---|--------------------------------|
| Birds | | | | | |
| Kirtland's warbler (<i>Dendroica kirtlandii</i>) | E | WI/SC | Douglas/WI | Nests in stands of scrubby jack pine. Breeds May and June. No current records and no suitable habitat crossed by right-of-way. | No effect |
| Piping plover (<i>Charadrius melodus</i>) | E | ND/SC, MN/E, WI/E, LLBO/E | St. Louis, Cass/MN; Douglas/WI | Suitable habitats in open sandy areas, saline flats, sandbars, and sand and gravel beaches along rivers and gravel pits. Breeds April to September. No current records and no suitable habitat crossed by right-of-way. | No effect |
| Mammals | | | | | |
| Canada lynx (<i>Lynx canadensis</i>) | T | MN/NL, WI/SC, LLBO/E | Aitkin, Beltrami, Carlton, Cass, Clearwater, Hubbard, Itasca, Marshall, St. Louis/MN; Douglas/WI | Boreal regions dominated by coniferous or mixed forests. Dens in mature or old-growth forests with high density of logs. Breeds late winter-early spring. | Not likely to adversely affect |
| Gray wolf (<i>Canis lupus</i>) | E/T ^b | ND/SC, MN/SC, WI/SC, LLBO/SC | Pembina/ND, All counties/MN, Douglas/WI | Suitable habitats in the Project area include hardwood forest, mixed forest, and grasslands. Dens dug in suitable soils or uses dens initiated by other animals. Breeds February to late-June. | Not likely to adversely affect |
| Insects | | | | | |
| Dakota skipper (<i>Hesperia dacotae</i>) | C | MN/T | Kittson, Polk/MN | Prefers native prairies (lowland and upland prairies) containing a high diversity of wildflowers and grasses. Not reported in habitats crossed by the proposed Project. | NA |
| Plants | | | | | |
| Western prairie fringed orchid (<i>Platanthera praeclara</i>) | T | ND/SC, MN/T | Kittson, Pennington, Polk, Red Lake/MN | Occurs in mesic-wet tall-grass native prairie, herbaceous wetlands, and dune complexes. Blooms May to August. Reported east of the right-of-way in Kittson County, Minnesota. | Not likely to adversely affect |

TABLE 4.8.1-1 (continued)
Federally Listed Threatened, Endangered, and Candidate Species Potentially Occurring along the Alberta Clipper Project Route

C = Candidate.

E = Endangered.

NA = Not applicable.

NL = Not listed.

SC = Species of conservation concern.

T = Threatened.

- ^a Species designated as E, T, or SC by North Dakota (ND), Minnesota (MN), Wisconsin (WI), and the Leech Lake Band of Ojibwe (LLBO) tribe that potentially occur in counties crossed by the Alberta Clipper Project.
- ^b Designations for the gray wolf have varied over the past year; however, the population that occurs within the proposed Project area was delisted in a final rule published April 2, 2009, effective May 4, 2009).

Sources: MDNR 2006, 2008c; MNR 2008a; NDGFD 2006a; WDNR 2007; FWS 2006a, 2006b, 2008b; FDL 2007; LLBO 2008.

Kirtland's warblers nest in jack pine forests, usually in patches greater than 500 acres in area, and most often in much more extensive forest patches. Jack pine stands favored by this species are young, ranging from 5.0 to 6.5 feet tall. As stands mature, their suitability as nesting habitat decreases. Kirtland's warblers nest on the ground, concealing the nest among grasses often at the base of pine trees. Surrounding vegetation may include grasses, sedges, cherry, blueberry, and ferns (Kreitinger and Paulios 2007). Kirtland's warblers exist in several Wisconsin locations (Kreitinger and Paulios 2007). Singing summer males have been recorded in Douglas County, Wisconsin; the first successful nesting was recorded in Adams County, Wisconsin in 2008 (FWS 2008c). No Kirtland's warblers or suitable habitats have been reported along the Alberta Clipper right-of-way (FWS 2006a, 2006b).

Impact Assessment

The Kirtland's warbler is not known to inhabit the proposed Alberta Clipper Project area. This species requires young stands of jack pine greater than 500 acres. Fragmentation of patches of forest habitats would be exacerbated by widening of the existing right-of-way from 125 to 200 feet. Construction of the Alberta Clipper Project would reduce the availability of suitable nesting habitat for this species, if suitable nesting habitat occurred. No jack pine forest stands documented within the Minnesota County Biological Survey Native Plant Communities database (MCBS 2008) would be crossed by the Alberta Clipper Project; therefore, it is unlikely that any suitable habitat for this species would be lost due to construction or operation of the Alberta Clipper Project.

Mitigation and Monitoring

As discussed in Section 4.6.3, and in accordance with expected permitting requirements, we recommended that Enbridge finalize plans to survey for migratory bird nests during the nesting season and continue to develop measures to avoid impact to migratory bird nests that occur in the Project area. As the Kirtland's warbler is a migratory bird species protected by the MBTA, mitigation measures developed by the Applicant in consultation with FWS would further minimize potential impacts to the Kirtland's warbler. As stated in Enbridge's Migratory Bird Plan (Appendix V), clearing within Douglas County, Wisconsin would occur within the nesting period for this species; however, Enbridge would conduct pre-construction nesting surveys for this area and would implement site-specific measures to protect any nest encountered.

Determination of Effect

Because no Kirtland's warblers, designated critical habitat, or habitats suitable for the Kirtland's warbler are known to occur along the proposed Alberta Clipper right-of-way, and because additional surveys would be conducted prior to construction in Douglas County, Wisconsin, the Alberta Clipper Project would not affect the Kirtland's warbler.

4.8.1.2 Piping Plover

Background

The Great Lakes population of the piping plover is federally-listed as endangered, is state-listed as endangered in Minnesota and Wisconsin, and is designated as an endangered species on the LLR. Piping plovers occurring in the Alberta Clipper Project area likely would belong to the Great Lakes population, which has increased from 20 breeding pairs in the early 1990s to over 60 breeding pairs in 2007 (FWS 2008a). Some migrant birds, however, especially those noted as migrants through Cass County, Minnesota on the LLR may belong to the federally-listed threatened Northern Great Plains population, which has a nesting colony on Lake of the Woods near the northern border of Minnesota.

Piping plovers forage for invertebrates on exposed beach substrates, nesting on unvegetated or sparsely vegetated sandbars in river channels and wetlands from about April 15 through September 15. Critical habitat for the Great Lakes population of piping plovers has been designated along the shoreline of Lake Superior at Duluth Harbor in St. Louis County, Minnesota and at Wisconsin Point in Douglas County, Wisconsin (FR 66[88]:22938–22969 May 7, 2001).

Channel constrictions caused by bridges, causeways, bridge approaches, roadway embankments, bank stabilization, levees, and other unnatural obstructions can result in the loss of broad, shallow, unobstructed channel and sandbar complexes used as feeding and nesting habitats by piping plovers. Poorly timed human activities in the vicinity of feeding and nesting habitats can disturb piping plovers, resulting in diminished reproduction.

Impact Assessment

Piping plovers are known to nest along the Lake Superior shoreline and may nest on the major river systems in North Dakota, Minnesota, and Wisconsin. Consultation with federal, state, and tribal resource agencies has indicated that, with the exception of possible migrants, the piping plover does not occur in habitats crossed by the proposed Alberta Clipper pipeline and would not be affected by construction or operation of the proposed Project. Designated critical habitats for this species along the shorelines of Lake Superior do not occur within the Project area and would not be affected by construction or operation of the proposed Alberta Clipper pipeline.

Mitigation and Monitoring

As discussed in Section 4.6.3, and in accordance with expected permitting requirements, we recommended that Enbridge finalize plans to survey for migratory bird nests during the nesting season and continue to develop measures to avoid impact to migratory bird nests that occur in the Project area. As the piping plover is a migratory bird species protected by the MBTA, mitigation measures developed by the Applicant in consultation with FWS would further minimize any potential impacts to the piping plover.

Determination of Effect

Because the piping plover is not known to, and is not expected to, occur in the Project area and no designated critical habitats would be crossed by the Project, the Alberta Clipper Project would not affect the piping plover.

4.8.1.3 Canada Lynx

Background

The Canada lynx was federally-listed as threatened in 2000. Within the proposed Project area, it occurs in Minnesota and Wisconsin; however, the species is not known to occur in North Dakota. The lynx was once hunted and trapped in Minnesota and throughout its range but has been protected in Minnesota since 1984. The lynx is a solitary animal that lives in dense forests across northern Canada and in northern Minnesota. Snowshoe hares are their main prey; but birds, small mammals, and roadkill also are eaten. Lynx do not occur where snowshoe hares are absent, and their abundance follows that of their primary prey. Mating occurs in late winter, and one to five kittens are born about 65 days later.

MDNR has been tracking lynx sightings since they were federally-listed; and the species has been sighted in many counties crossed by the proposed Alberta Clipper Project area, including Aitkin, Beltrami,

Carlton, Cass, Clearwater, Hubbard, Itasca, Marshall, and St. Louis Counties in Minnesota (MDNR 2008a). In addition, lynx have been reported in the vicinity of the proposed pipeline in Carlton, Cass, Clearwater, Hubbard, Itasca, and St. Louis Counties in Minnesota. Evidence of lynx reproduction has been recorded in Carlton and St. Louis Counties. Lynx also have been sighted in Douglas County, Wisconsin (Wiedenhoeft and Wydeven 2006). Critical habitat for this species has been designated in northeastern Minnesota in Cook, Lake, Koochiching, and St. Louis Counties (FR 73[40]:10860-10896). Additional analysis of the Canada lynx is presented in Appendix W.

Impact Assessment

The Canada lynx rarely occurs within the Alberta Clipper Project area. These secretive cats would be most likely to inhabit forested portions of the Alberta Clipper Project area in Minnesota and Wisconsin. Canada lynx range widely in search of snowshoe hares. If hares occur in high numbers in the Project area during construction, the likelihood of encounters between construction equipment and Canada lynx would increase. Construction of the Alberta Clipper Project would affect an estimated 855 acres of state and national forestlands. Approximately 1,948 acres of upland and wetland forested habitat potentially used by lynx or supporting prey species in Minnesota and Wisconsin would be cleared during construction of the Alberta Clipper Project. Of this, approximately 1,033 acres would be permanently maintained in an herbaceous state.

The large majority of the right-of-way would be collocated with the existing Enbridge right-of-way. Fragmentation of forested habitats would be exacerbated by widening of the existing right-of-way from 125 to 200 feet where the Alberta Clipper Project is collocated with the existing Enbridge right-of-way. Although rare in the proposed Project area, they have been documented to cross the existing right-of-way (Appendix W), the widened pipeline right-of-way would be unlikely to block or alter movements of lynx. Critical habitat has been designated for the Canada lynx in St. Louis County, Minnesota; however, at the closest point, the critical habitat is approximately 6.6 miles north/northwest of the proposed Project.

Mitigation and Monitoring

Enbridge has committed to implementing the following measures in its state-specific EMPs (Appendix C) to protect wildlife and wildlife habitats that would minimize impacts to the Canada lynx and their primary prey:

- Open trenches would have sloped ends (more so than the side walls) to allow small mammals to escape if they were to fall in the trench.
- Soil compaction would be minimized to maintain or restore suitable burrowing habitat for small mammals by suspending specific construction activities on susceptible soils, conducting compaction testing, and using tillage equipment to alleviate compaction.
- Temporarily cleared areas (rights-of-way and workspaces) would be reseeded to reestablish suitable habitat to bring back temporarily displaced wildlife.
- Tree removal would be minimized where windbreaks and shelterbelts would be crossed by minimizing the width of the right-of-way necessary for the trench line and vehicle traffic. Trees would be felled into the right-of-way to minimize damage to off-right-of-way vegetation.
- Wildlife buffers would be installed in riparian habitats by reestablishing suitable woody species to provide cover for wildlife travel corridors in riparian areas.

Determination of Effect

Because no designated critical habitat for Canada lynx would be crossed by the Project and lynx would occur only rarely in the Project area, the Alberta Clipper Project would not affect designated critical habitat and may affect, but is not likely to adversely affect, the Canada lynx (FWS 2006a, 2006b; Appendix W).

4.8.1.4 Gray Wolf

Background

The gray wolf was federally-listed as endangered in North Dakota and Wisconsin; is federally-listed as threatened in Minnesota; however, a final rule dated April 2, 2009 (effective May 4, 2009) delisted the gray wolf in the Project area. The species is also listed as a state species of conservation concern in North Dakota, Minnesota, and Wisconsin. It has also been listed as sensitive on the LLR by LLBO. The gray wolf that occurs throughout the Alberta Clipper Project area belongs to the Great Lakes Region population and the Western Great Lakes distinct population segment (WGL DPS). On March 12, 2007, the gray wolf was removed from the endangered species list in the Alberta Clipper Project area: in North Dakota, Minnesota, and Wisconsin. On September 29, 2008, however, the U.S. District Court for the District of Columbia vacated the final rule to remove the WGL DPS from the list of endangered and threatened wildlife and the final rule reinstating ESA protection for the WGL DPS was issued on December 11, 2008. On January 14, 2009, a final rule to delist the WGL DPS of the gray wolf was published; however, on January 20, 2009, this rule was withdrawn. On March 6, 2009, the Secretary of the Interior affirmed the decision to delist the WGL DPS, and the final rule to officially designate the WGL DPS, and delist it, was published on April 2, 2009. Because the listing status for this species has changed numerous times, it has been retained for evaluation of potential Project impacts. Previously designated critical habitat for this species has been designated in northeastern Minnesota in Beltrami, Cook, Itasca, Coochiching, Lake, Lake of the Woods, Roseau, and St. Louis Counties (FR 43[47]:9607-9615); however, the designation of critical habitat within these counties was revoked in the April 2, 2009 final rule.

The most recent population survey data (2003 to 2006) indicate that about 3,020 wolves occur in Minnesota and 465 wolves occur in Wisconsin (FWS 2007b). For gray wolves in the WGL DPS, remaining threats are primarily the various forms of human-caused mortality that have been reduced by provisions of the ESA, including wolves killed legally and intentionally for depredation control, threat reduction, research, or other reasons; accidental mortalities (e.g., vehicle collisions and incidental trapping mortalities); and illegally killed wolves.

Wolves live in social groups called a “pack,” with six to 10 animals, including the dominant male and female (the breeding pair), pups from the previous year (yearlings), the current year's pups, and occasionally other subordinate adults. The dominant pair raises the young, selects denning and rendezvous sites, captures food, and maintains the territory. A wolf pack's territory may cover from 20 to 120 square miles. Wolves are carnivores that feed on white-tailed deer, beavers, snowshoe hares, mice, squirrels, muskrats, and other small mammals. The bulk of their diet is white-tailed deer. Wolves are likely to occur throughout the Alberta Clipper Project area in North Dakota, Minnesota, and Wisconsin. Gray wolf den and rendezvous habitats potentially occur along the Project route.

Impact Assessment

The gray wolf may occur regularly throughout the Alberta Clipper Project area. The Alberta Clipper Project could affect gray wolves by interrupting foraging and reproductive activities due to exposure to

Project-related noise and from increased human activity. The Alberta Clipper pipeline would cross 13 miles of Douglas County, Wisconsin that is considered primary wolf habitat (WDNR 1999). Historically, this area has been an occupied wolf territory based on field signs and reports of wolf observations (WDNR 1999). Construction of the Alberta Clipper Project would likely displace a few gray wolves and alter used habitats, especially if packs currently use the existing right-of-way as a travel corridor. Construction-related disturbance at den sites could reduce pup survival. Post-construction disturbances, such as public and private use of all-terrain vehicles (ATVs) along the Enbridge right-of-way, including snow machines and ATVs, could reduce habitat suitability for use by the gray wolf. In addition, wolf-vehicle collisions continue to be a major contributor to wolf mortality. The Alberta Clipper Project is south of all designated critical habitat for the gray wolf in Beltrami, Itasca, and St. Louis Counties, Minnesota.

Mitigation and Monitoring

Mitigation of Project-related impacts on the gray wolf would be similar to those described for the Canada lynx in Section 4.8.1.3. In addition, Enbridge has committed to the following mitigation specific to the gray wolf:

- Avoid construction activity within 0.5 mile of known den or rendezvous sites from March 1 through July 31 in Minnesota or Wisconsin;
- Provide Environmental Inspectors with copies of wolf management guidelines, which describe how wolf dens and rendezvous sites would appear in the field; and
- Notify FWS and MDNR or WDNR immediately if Environmental Inspectors or other Project personnel observe any wolves or possible dens or rendezvous sites prior to or during construction.

Determination of Effect

Construction of the Alberta Clipper pipeline would result in a small reduction in available habitats and short-term displacement of a few individual gray wolves from the Project area. Impacts to gray wolves would be minimized by implementation of Enbridge's state-specific EMPs (Appendix C), as discussed for the Canada lynx in Section 4.8.1.3 and the specific mitigation measures for wolves, as discussed above. No designated critical habitat for the gray wolf would be crossed by the proposed Alberta Clipper Project. The Alberta Clipper Project may affect, but is not likely to adversely affect the gray wolf or the WGL DPS of the gray wolf and would have no effect on the previously designated critical habitat for the gray wolf in Minnesota (the designation was revoked per the April 2, 2009 final rule).

4.8.1.5 Dakota Skipper

Background

The Dakota skipper (butterfly) is a federal candidate species and state-listed threatened species in Minnesota. Their historical range is unclear because extensive destruction of native prairies preceded widespread biological surveys; however, records of the species have been found from northeast Illinois to southern Saskatchewan. Today, the Dakota skipper is found in North Dakota and Minnesota prairies containing a high diversity of wildflowers and grasses. In the vicinity of the Alberta Clipper Project, the Dakota skipper occurs in Kittson and Polk Counties in Minnesota.

One of the best indicators for Dakota skipper habitat is the presence of food plants for larva and nectar plants for adults. Habitats include low (wet) prairie dominated by bluestem grasses, wood lily, harebell,

and smooth camas; and upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers, and blanketflower. Nectar provides the nutrients and carbohydrates for Dakota skippers to meet the energetic demands of flight. Grassland sites with a diverse mix of native forbs, one or two of the known larvae or pollen plants, and proximity to other native grassland areas are considered suitable habitats.

Threats to Dakota skipper habitat include burning, haying, grazing, pesticide use, and invasion by non-native plants—including exotic pasture grasses. All of these activities have the potential to increase prairie fragmentation. Increased prairie fragmentation isolates remaining populations, preventing the reestablishment of populations made extinct by burning, grazing, or other causes—or reducing the genetic diversity that may be needed to adapt to environmental changes. Disturbed prairie soils are extremely slow to redevelop; and the disruption of prairie sod encourages establishment of exotic pasture grasses, especially smooth brome, and establishment of noxious weeds.

Impact Assessment

The Alberta Clipper Project would cross remnant prairie habitats potentially containing the Dakota skipper at the following locations:

- Kittson, Minnesota – MP 816 to MP 817 – Mesic Prairie Remnant; and
- Polk, Minnesota – MP 885.7 to MP 890 – Mesic/Wet Prairie Remnant.

Continued consultation with FWS indicates that the Dakota skipper is not known to occur in the native prairie remnants crossed by the Alberta Clipper Project. In addition, these native prairie remnants would be preserved intact, as they are adjacent to railroad rights-of-way and would be crossed by horizontal bore.

Mitigation and Monitoring

As noted, native prairie remnants considered potential habitat for the Dakota skipper within the construction right-of-way would be crossed by horizontal bore, avoiding direct impacts to the habitats. To further minimize impacts to these habitats, Enbridge would implement measures in the state-specific EMPs (Appendix C), Revegetation and Restoration Monitoring Plans (Appendix K), and Noxious Weed Plans (Appendix H) to ensure that no sediment flows off right-of-way areas, disturbed areas are reseeded with appropriate seed mixes, and revegetation occurs in a way that avoids or minimizes the potential for noxious weed invasion.

Determination of Effect

Although the Dakota skipper is a federal candidate species and a determination of effect to the species is not required, we have evaluated the likelihood of occurrence of this species in the Project area and the conservation measures proposed by the Applicant. The Alberta Clipper Project may affect the Dakota skipper but is not likely to contribute to listing of the species as threatened or endangered under the ESA.

4.8.1.6 Western Prairie Fringed Orchid

Background

The western prairie fringed orchid is federally-listed as threatened, state-listed as threatened in Minnesota, and a species of conservation concern in North Dakota. The species is found in tall-grass calcareous silt loam or sub-irrigated sand prairies in North Dakota and Minnesota. The species also may occur along

ditches or roadsides. Flooding may be an important agent of seed dispersal (Hof et al. 1999), although seeds develop into flowering plants only under appropriate hydrologic and other conditions. In the vicinity of the Alberta Clipper Project, the western prairie fringed orchid reportedly occurs in Kittson, Pennington, Polk, and Red Lake Counties in Minnesota. Recent surveys along the pipeline right-of-way documented a population east of the right-of-way in Kittson County.

The western prairie fringed orchid is difficult to detect and flowers from mid-June to mid-July. Declines in western prairie fringed orchid populations have been caused by drainage and conversion of its habitats to agricultural production, channelization, siltation, road and bridge construction, grazing, haying, and herbicide application.

Impact Assessment

Suitable habitat for western prairie fringed orchid in Minnesota includes wet or moderately moist (mesic) prairie or sedge meadows, with level or gently sloping topography. No critical habitat has been designated for the western prairie fringed orchid. The Alberta Clipper Project would cross remnant prairie habitats in counties potentially containing habitat suitable for supporting the western prairie fringed orchid at the following locations:

- Kittson, Minnesota – MP 816 to MP 817 – Mesic Prairie Remnant;
- Pennington, Minnesota – MP 853 to MP 854 – Mesic Brush Prairie; and
- Red Lake/Polk, Minnesota – MP 885.7 to MP 890 – Mesic/Wet Prairie Remnant.

Mitigation and Monitoring

With the exception of the native prairie remnant that would be crossed between MP 853 and MP 854, each of the remnants that potentially contain habitat for the western prairie fringed orchid would be crossed by horizontal bore or avoided during construction. To further minimize impacts to these habitats, Enbridge would implement measures in its state-specific EMPs (Appendix C), Revegetation and Restoration Monitoring Plans (Appendix K), and Noxious Weed Plans (Appendix H) to ensure that no sediment flows off right-of-way areas, disturbed areas are reseeded with appropriate seed mixes, and revegetation occurs in a way that eliminates or minimizes the potential for noxious weed invasion.

Impacts to the potential habitat between MP 853 and MP 854 would be minimized by construction of the pipeline on the north side of the right-of-way, where the habitat is less sensitive; however, to further minimize impacts to this habitat, and in accordance with expected COE and MPUC permitting requirements, we recommended in Section 4.5 that Enbridge develop a Construction and Mitigation Plan (CMP) for COE approval prior to construction through the area. The CMP would provide, among other things, an endangered resource plan; identification and inventory of existing plant communities; a preliminary wetland restoration plan; a replanting and reseeding plan; and a preliminary 5-year, site-specific, post-construction monitoring plan. In addition, we recommended that Enbridge take all necessary and reasonable measures to protect the wetland complex and submit proposed site plans to MDNR and MPUC 14 days prior to construction through the area.

Determination of Effect

Evaluation of the likelihood of occurrence of this species in the Project area, the conservation measures proposed by the Applicant, and the current and expected permitting requirements indicate that the Alberta Clipper Project may affect, but is not likely to adversely affect, the western prairie fringed orchid.

5.9 THREATENED, ENDANGERED, AND SENSITIVE ANIMALS AND PLANTS

Federally-listed threatened, endangered, or candidate species identified by FWS as potentially being affected by the proposed Project include Kirtland's warbler, piping plover, Canada lynx, gray wolf (delisted by FWS in a final rule dated April 2, 2009; effective May 4, 2009), Dakota skipper, and western prairie fringed orchid. In addition to the federally-protected species identified, several state- and tribal-designated threatened, endangered, and sensitive species were identified as potentially being affected by the proposed Project.

Construction of the Alberta Clipper Project would result in a small reduction in available habitats for some sensitive bird species, mammals, aquatic animals, and plants. Enbridge has identified mitigation procedures in its state-specific EMPs (Appendix C), Revegetation and Restoration Monitoring Plans (Appendix K), and Noxious Weed Plans (Appendix H), as well as in the AMP (Appendix F) and Migratory Bird Plan (Appendix V) that would reduce impacts on special-status species. Pipeline construction would be conducted in accordance with required permits. Impacts to sensitive mammals, plants, and aquatic animals would be minimized by implementation of measures described in these plans and measures recommended by the COE, FWS, state resource agencies, and tribes.

Further, DOS recommends that Enbridge, in accordance with FWS requirements, finalize plans to survey for migratory bird nests during the nesting season; continue to develop measures to avoid impacts to migratory bird nests, such as avoidance of land clearing during the primary nesting season (May 1 through July 15 within the Project area); and continue to consult with FWS to develop compensatory mitigation for migratory bird nesting habitat loss. Enbridge should relocate the creek heelsplitter mussels encountered in the Swan River (MP 1024.2) prior to instream construction and/or in accordance with COE requirements associated with these waterbody crossings.

With these measures, DOS concludes that the proposed Project either would have no effect or may affect, but would not be likely to adversely affect, federally-listed or candidate species. Section 7 informal consultation with FWS has been completed, and FWS has concurred with the determinations presented in the EIS for federally-listed threatened, endangered and candidate species.

5.10 LAND USE

Land uses that would be affected by the proposed Alberta Clipper Project include agriculture, open land, wetlands, waterbodies, residential land, and recreational and other special interest areas. In general, lands required for construction would be temporarily impacted, while lands required for operation of the Project would be permanently impacted. Construction of the proposed Project would affect the following land use categories: forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetland/open water (1,346.2 acres). Total land use acres that would be affected by construction of the proposed Project are 6,402.1 acres.

To address potential impacts to agricultural lands, Enbridge has proposed a number of mitigation measures that are detailed in the AMP (Appendix F). Further, Enbridge would compensate all landowners for lost crops during construction and any documented damage caused by construction activities. After construction, Enbridge would repair or restore drain tiles, fences, and land productivity as these may be damaged during the construction process. After construction, agricultural land could revert to its previous uses, except for land that would be set aside for permanent access roads; Enbridge would directly purchase such land from individual landowners. All negotiations between Enbridge and the affected landowner or tenant would be voluntary and in accordance with the terms of negotiated easements. Construction impacts to general agricultural activities are expected to be minor and temporary; operations impacts would be minor but permanent.

Exhibit 3

if a release did occur. The regulations contain a list of substances and threshold quantities for determining applicability to stationary sources. If a stationary source stores, handles, or processes one or more substances on this list in a quantity equal to or greater than specified in the regulation, the facility must prepare and submit a Risk Management Plan. If a facility does not have a listed substance onsite, or if the quantity of a listed substance is below the applicability threshold, the facility does not need to prepare a Risk Management Plan. No hazardous materials subject to the Chemical Accident Prevention Provision/ Risk Management Plan (40 CFR Part 68) would be stored at any of the Alberta Clipper Project aboveground facilities in quantities equal to or greater than the threshold quantities; therefore, a Risk Management Plan is not required.

Title V Operating Permits

Title V of the federal CAA requires individual states to establish an air operating permit program. The requirements of Title V are outlined in 40 CFR Parts 70 and 71, and the permits required by these regulations often are referred to as Part 70 or 71 permits. Because the proposed Project would not include operation of significant stationary sources of air pollutants, the proposed Project would not trigger Title V permitting.

General Conformity Rule

The General Conformity Rule was designed to require federal agencies to ensure that proposed projects conform to the applicable State Implementation Plan (SIP). General Conformity regulations apply to project-wide emissions of pollutants for which the project areas are designated as nonattainment (or, for ozone, its precursors nitrogen oxides [NO_x] and VOCs) that are not subject to NSR and that are greater than the significance thresholds.

A General Conformity analysis is required for pollutant emissions not subject to NSR (for example, mobile source emissions) that would occur in nonattainment areas. General Conformity is not applicable to the proposed Project because all construction and operations would occur in attainment areas.

4.12.1.3 Potential Impacts and Mitigation

Two types of impacts on air quality were considered for this analysis: temporary impacts from construction-related emissions and long-term impacts associated with emissions generated from continued operation of a stationary source (e.g., pump stations).

Construction Impacts

Air quality impacts associated with construction of the proposed Project would include emissions from fugitive dust, and emissions from fossil-fueled construction equipment, open burning, and temporary fuel transfer systems and associated storage tanks.

Fugitive Dust

Fugitive dust is a source of respirable airborne particulate matter, including PM₁₀ and PM_{2.5} (particulate matter less than 10 and 2.5 microns in diameter, respectively), that could result from blasting and vehicle traffic on paved and unpaved roads. The amount of dust generated is a function of construction activities, silt, moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions would be greater during drier month, and in fine-textured soils.

4.14.3.11 Cultural Resources

In regard to cultural resources, the primary cumulative impact would be related to soil disturbance from project construction (other pipelines and the Murphy Oil Refinery expansion). The impacts of these projects would be similar to those of the proposed Project in that additional soil disturbance could cause adverse effects to known and undiscovered historic properties. The Alberta Clipper pipeline would largely be collocated with the Diluent pipeline, the LSr pipeline, and the other existing pipelines in the Enbridge right-of-way. As with the Alberta Clipper Project, the other large-scale projects in the ROI feature or have featured a level of federal government involvement that requires compliance with 36 CFR 800, the ACHP's regulations for implementing Section 106 of the NHPA. The lead federal agencies for those projects have been or would be required to consult with the appropriate SHPOs, Indian tribes, and other applicable consulting parties; identify and evaluate cultural resources; and avoid, minimize, or mitigate any effects upon historic properties. For any non-federal actions in the ROI, project proponents would be required to comply with any identification and evaluation procedures and mitigation measures required by the state where the action is proposed. Such regulations could address inadvertent discoveries of cultural resources, the disposition of discovered human remains, and other resource protection laws. Enbridge has mitigated possible effects on potentially eligible cultural and historic properties through avoidance wherever possible. Because of collocation with existing disturbed alignments for substantial distances along the proposed right-of-way and avoidance of potentially eligible properties wherever possible, the incremental impact of the Alberta Clipper Project (and the Diluent Project) to cultural resources in the ROI would be expected to be minor. No modifications to the setting of historic properties would occur from the proposed Project or the Superior Terminal expansion.

4.14.3.12 Air Quality, Greenhouse Gases, and Climate Change

The following discussion identifies potential impacts to air quality associated with construction and operation of the proposed Alberta Clipper Project and other large-scale projects in the ROI. In addition, the discussion includes potential impacts to air quality associated with refining of heavy crude oil that would be transported via the Alberta Clipper Project and end use of that refined product. Potential air quality impacts from mining projects, along with a proposed power plant, are discussed in the watershed-by-watershed analysis in Section 4.14.4 below.

Pipelines

The primary impact of the proposed Alberta Clipper Project and other pipelines in the area associated with emission of criteria pollutants would occur (or did occur) during construction due to dust generated by excavation and materials handling, operation of construction equipment, and open burning. Construction emissions for the Alberta Clipper Project and the Superior Terminal Expansion Project are presented in Section 4.12.1. Construction emissions of the Alberta Clipper Project would not overlap with those from the other pipeline projects in the ROI, except the Diluent Project, since construction for those projects has been completed, and any impacts to air were localized and occurred during the short duration of the construction period for each spread.

Construction emissions would also include GHG associated with construction activities and soil/sediment disturbance. Direct GHG emissions during construction of the Alberta Clipper Project and the Superior Terminal would total approximately 27,000 metric tons of carbon dioxide (CO₂) (see Section 4.12.1). In addition to direct emissions, soil/sediment disturbance during construction would result in carbon emissions. Carbon emissions associated with habitat disturbance would be less in some specific habitats and greater in others, such as wetlands, especially peat bogs, and forested areas, due to the carbon sequestration in these habitats. Peat bogs in Minnesota may sequester an average of over 750 metric tons of stored carbon per acre (Anderson et al. 2008). Forestlands may contain approximately 100 metric tons

per acre in aboveground and belowground biomass. Disturbance of these carbon sources can result in relatively rapid decomposition and rapid release of CO₂ into the atmosphere. The rate of carbon release would vary widely based on habitat type, magnitude and extent of disturbance, decomposition rate, and deposition method of biomass (e.g., wood burning or lumber). Therefore, it is not possible to develop accurate estimates of this carbon release associated with construction. Following construction, the disturbed wetlands would continue to function as wetlands, the permanent right-of-way would immediately be reseeded to initiate revegetation, and the forested areas in the construction right-of-way would regenerate as forest (although it may take decades). In addition, wetland impacts would require compensatory wetland mitigation, which would also serve to offset carbon releases.

With the exception of the Diluent Project, construction of the other pipeline projects would not overlap in time with that of the Alberta Clipper Project. To the extent that construction of the Diluent Project or any other nearby construction activities are simultaneously underway in a specific locality, cumulative impacts to air quality may occur, but potential impacts would be minor and short term.

During operations, direct emissions from the proposed Project would be limited to the operation of inspection vehicles and fugitive emissions from the flanged valves and fittings. The operation of vehicles for inspection is a low-emission, temporary activity. Fugitive emissions from the Alberta Clipper Project would be up to 0.5 ton of VOCs per year, primarily from three pump stations (0.3 tpy). These emissions are not expected to cause substantial cumulative impacts to air quality. Indirect emissions during operation would include electrical generation for the pump stations. Emissions of criteria pollutants from the electrical generating facilities are permitted by EPS and/or the appropriate state agencies (emissions from these facilities would be permitted and the permitting process would include avoiding significant cumulative impacts to air quality and visibility). Enbridge estimates that the incremental electrical demands of the pump stations to transport the oil volume proposed for the Alberta Clipper Project (450,000 bpd) will result in approximately 0.3 million metric tons of CO₂ per year emitted from power plants. Direct emissions associated with operation of the Superior Terminal Expansion Project would primarily consist of VOCs. As described in Section 4.12.1.4, the project emissions would be 39.1 tpy compared to current terminal operations, which total almost 100 tpy.

Recent and current pipeline construction projects include the LSr, MinnCan pipeline, and Keystone pipeline projects in the general vicinity of the Alberta Clipper Project. While all these projects have been completed in the ROI prior to initiation of construction of the Alberta Clipper Project, minor restoration and recovery of the natural resources associated with short-term impacts of construction in the ROI could be continuing. The Alberta Clipper and Diluent Project pipelines would be constructed at approximately the same time in the same right-of-way. The emissions associated with this concurrent construction would be minor and short term, as described in Section 4.12.1.3.

During operation, the pipelines in the ROI would use electricity for pump stations along oil pipelines and natural gas for compressor stations. Since natural gas generally results in lower emissions than the oil or coal used to generate electricity for the pumps stations, it is expected that the emission estimates for the Enbridge pump stations would be higher than those for compressor stations. Compressor stations would be permitted as minor sources. Therefore, little if any measurable impact to regional air quality would be expected because of operation of the pump stations or compressor stations for these pipelines.

For comparison, transport of crude oil to the U.S. Midwest from Canada via pipeline would result in substantially lower emissions, including GHG, than transporting the crude oil via tanker from historical oil sources in the Mideast, Africa, and South America. This is especially true because the crude oil delivered to the Midwest from those foreign sources would typically require off-loading at ports along the U.S. Gulf Coast and transporting the oil to the Midwest via pipelines that would be substantially longer than the Alberta Clipper Project and roughly approximate the length of the pipeline necessary to transport

the crude oil from Hardisty, Alberta, Canada to refineries in the United States. Thus, all emissions, including GHG, from the ocean-going tankers would generally be over and above those required for pipeline transport within North America. Delivering the volume of crude provided by the Alberta Clipper from the Persian Gulf to the U.S. Gulf Coast would result in CO₂ emissions solely due to tanker transportation of approximately 0.8 million metric tpy (Barr Engineering 2008).

Refineries

Enbridge is a common carrier of oil in its pipeline system and would continue to be a common carrier for the oil that would be transported via the Alberta Clipper Pipeline. With minimal exception, Enbridge has no ownership interest in the oil that would be transported via the Alberta Clipper Project (less than 0.1 percent) and has no ownership interest in the refineries that could receive the oil. In addition, Enbridge has no commercial control of the specific grade, destination, refinery operations, or ultimate type of refined products associated with the oil that would be transported via the Alberta Clipper Project. DOS also has no jurisdiction or regulatory authority over oil refining in the United States. Although not part of the proposed Alberta Clipper Project, air emissions from the refinery operations could result in some degree of cumulative impacts to air quality in the ROI and beyond, and are, therefore, being considered further as part of this cumulative impacts analysis.

With the global increase in oil demand and the decrease in both domestic oil supplies and the availability of other historical foreign supplies to the United States, it is likely that most of the oil volume transported from Canada would serve to replace dwindling supplies instead of substantially increasing U.S. supplies. Absolute estimates of the proportion that would replace other oil supplies are not certain since they are dependent on the complexities of global supply and demand, domestic and global economic health, and political decisions across the globe. However, for context, the United States receives about 99 percent of the heavy crude oil produced from oil sands exported from Canada that are expected to total approximately 1.3 million bpd in 2008 (CAPP 2008). It is expected that these heavy crude oil exports will increase as domestic supply decreases and oil consumption remains relatively stable (EIA 2009). As described in Section 1.2.2.1, EIA (2009) projects that “unconventional oil supply” from Canada will grow from approximately 1.5 million bpd in 2008 to over 4.3 million bpd in 2030. During this same period, refining capacity for the entire United States is expected to increase by approximately only 0.1 million barrels per day between 2010 and 2030 (EIA 2008). Thus, the large majority of this increase in potential export to the United States over the next two decades would be expected to replace existing refining capacity of crude oil from other sources. Potential environmental impacts to air and water associated with refining this oil would not be in addition to current refining emissions but based on incremental changes associated with refining heavy crude oil from oil sands relative to other crude oils that are currently refining heavy and/or light crude oil.

The Alberta Clipper pipeline would connect to the existing pipeline infrastructure in the upper Midwest; thus oil transported via the Alberta Clipper pipeline could be delivered to over 25 refineries in the United States that are currently capable of refining heavy crude oil (see Table 4.14.3-1). Overall, these refineries are located in over a dozen states extending from the U.S./Canada border to the Gulf of Mexico. However, approximately 75 percent of Canadian crude oil currently imported to the United States is delivered to refineries in the Midwest, specifically the area composed of Petroleum Administration for Defense District II, which includes Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, and nine other states generally considered in the Midwest and upper Midwest (EIA 2008).

**TABLE 4.14.3-1
Refineries Connected Directly or Indirectly to Enbridge/Lakehead System^{a,b,c}**

| Refinery | Location | Capacity (bpd) | Receive Heavy Oil? ^d | Total Light Imports ^{e,f} (kbbpd) | | Total Heavy ^g Imports (kbbpd) | | Total Light Canadian Imports (kbbpd) | | Total Heavy ^g Canadian Imports (kbbpd) | |
|----------------------------------|--------------------------|-------------------|------------------------------------|--|------|--|------|---|------|--|------|
| | | | | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 |
| Marathon Petroleum Co. | St. Paul Park, Minnesota | 70,000 | Yes | 27 | 33 | 13 | 11 | 27 | 33 | 13 | 11 |
| Flint Hills Resources | Rosemount, Minnesota | 323,000 | Yes | 6 | 13 | 205 | 215 | 6 | 13 | 205 | 212 |
| Murphy Oil USA Inc. | Superior, Wisconsin | 33,250 | Yes | 0 | 1 | 18 | 8 | 0 | 1 | 18 | 8 |
| ExxonMobil Refining & Supply Co. | Joliet, Illinois | 240,000 | Yes | 175 | 45 | 47 | 170 | 175 | 45 | 47 | 170 |
| Citgo Petroleum Corp. | Lemont, Illinois | 158,650 | Yes | 0 | 0 | 143 | 149 | 0 | 0 | 143 | 149 |
| BP PLC | Whiting, Indiana | 405,000 | Yes | 64 | 45 | 28 | 57 | 55 | 45 | 27 | 57 |
| Marathon Petroleum Co. | Robinson, Illinois | 192,000 | Yes | 57 | 38 | 5 | 13 | 3 | 0 | 2 | 4 |
| WRB Refining LLC | Wood River, Illinois | 306,000 | Yes | 44 | 49 | 82 | 70 | 2 | 0 | 82 | 70 |
| Countrymark Cooperative | Mt. Vernon, Indiana | 23,500 | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Marathon Petroleum Co. | Cattlettsburg, Kentucky | 222,000 | Yes | 100 | 90 | 2 | 2 | 2 | 1 | 2 | 2 |
| Marathon Petroleum Co. | Canton, Ohio | 73,000 | Yes | 16 | 9 | 11 | 11 | 3 | 4 | 10 | 10 |
| Husky Energy Corp. | Lima, Ohio | 161,500 | Yes | 0 | 1 | 0 | 29 | 0 | 1 | 0 | 29 |
| BP PLC | Toledo, Ohio | 160,000 | Yes | 1 | 5 | 34 | 27 | 1 | 5 | 34 | 27 |
| Sunoco Inc. | Toledo, Ohio | 140,000 | | 48 | 33 | 38 | 33 | 48 | 30 | 38 | 33 |

**TABLE 4.14.3-1 (continued)
Refineries Connected Directly or Indirectly to Enbridge/Lakehead System^{a,b,c}**

| Refinery | Location | Capacity (bpd) | Receive Heavy Oil? ^d | Total Light Imports ^{e,f} (kbbpd) | | Total Heavy ^g Imports (kbbpd) | | Total Light Canadian Imports (kbbpd) | | Total Heavy ^g Canadian Imports (kbbpd) | |
|-------------------------|----------------------|-------------------|------------------------------------|--|------|--|------|---|------|--|------|
| | | | | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 |
| Marathon Petroleum Co. | Detroit, Michigan | 100,000 | Yes | 26 | 21 | 42 | 34 | 24 | 20 | 41 | 34 |
| United Refining | Warren, Pennsylvania | 66,700 | Yes | 1 | 3 | 59 | 64 | 1 | 3 | 59 | 64 |
| Imperial Oil | Nanticoke, Ontario | 112,000 | Yes | NA | NA | NA | NA | NA | NA | NA | NA |
| Imperial Oil | Sarnia, Ontario | 120,800 | Yes | NA | NA | NA | NA | NA | NA | NA | NA |
| Shell Canada | Corunna, Ontario | 71,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Suncor Energy Products | Sarnia, Ontario | 70,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nova Chemicals (Canada) | Corunna, Ontario | 80,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Coffeyville Resources | Coffeyville, Kansas | 100,000 | Yes | 0 | 2 | 10 | 13 | 0 | 0 | 8 | 11 |
| WRB Refining LLC | Borger, Texas | 146,000 | Yes | 11 | 0 | 11 | 22 | 0 | 0 | 11 | 22 |
| ConocoPhillips | Ponca City, Oklahoma | 187,000 | Yes | 1 | 9 | 30 | 27 | 1 | 0 | 15 | 12 |
| Frontier Oil Corp. | El Dorado, Kansas | 110,000 | Yes | 4 | 1 | 15 | 20 | 4 | 1 | 15 | 20 |
| NCRA | McPherson, Kansas | 82,700 | Yes | 0 | 0 | 7 | 5 | 0 | 0 | 7 | 5 |
| Sinclair Oil Corp. | Tulsa, Oklahoma | 70,000 | Yes | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Sunoco Inc. | Tulsa, Oklahoma | 85,000 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Valero Energy Corp. | Ardmore, Oklahoma | 91,500 | Yes | 30 | 13 | 3 | 0 | 0 | 0 | 0 | 0 |
| Valero Energy Corp. | Sunray, Texas | 166,660 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| TABLE 4.14.3-1 (continued) Refineries Connected Directly or Indirectly to Enbridge/Lakehead System ^{a,b,c} | | | | | | | | | | | |
|--|-----------|-------------------|------------------------------------|---|------|---|------|--|------|---|------|
| Refinery | Location | Capacity (bpd) | Receive Heavy Oil? ^d | Total Light Imports ^{e,f} (kbpd) | | Total Heavy ^g Imports (kbpd) | | Total Light Canadian Imports (kbpd) | | Total Heavy ^g Canadian Imports (kbpd) | |
| | | | | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 | 2007 | 2008 |
| Wynnewood Refining Co. | Wynnewood | 52,500 | Yes | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Total | | 1,091,360 | | | | | | | | | |

bpd = Barrels per day.

Kbpd = Thousand barrels per day.

NA = Not available.

^a Canadian refinery capacities as published in Oil & Gas Journal December 24, 2007.

^b U.S. refinery capacities as published in the Oil & Gas Journal December 24, 2007.

^c U.S. Gulf Coast refining capacity is limited to the capacity of the Pegasus pipeline from Patoka, Illinois to Beaumont, Texas.

^d Information available through U.S. import data from the EIA and Oil & Gas Journal for refinery units.

^e Information available through the U.S. Energy Information Administration, except for Ontario. Data for 2008 include July.

^f Data for Ontario include Canadian and foreign imports of crude. Source: CNEB. Data for 2008 include June.

^g Heavy measurement is less than 30 degrees American Petroleum Institute.

Source: Enbridge 2008a.

It is likely that the refineries actually receiving the Alberta Clipper oil (and the volumes being received) would vary over time based on future long-term and short-term supply and demand conditions. However, at least 15 refineries in Petroleum Administration for Defense District II capable of refining heavy crude oil are connected directly or indirectly to the Enbridge pipeline infrastructure and could theoretically receive oil via the Alberta Clipper Project (Table 4.14.3-1).

In general, these existing refineries are currently capable of receiving and refining substantial volumes of heavy crude oil, including imported oil sands from Canada (See Table 4.14.3-1). The emissions from these existing refineries are authorized by existing air permits that define maximum emissions levels for criteria pollutants. Thus, if the oil transported via the Alberta Clipper Project was entirely transported to existing refineries capable and permitted to refine those volumes of heavy crude oil, there would be little, if any, incremental increase in existing permitted air emissions of the Alberta Clipper Project relative to current permitted conditions. The air permitting process also includes consideration of these emissions in a regional context to avoid significant cumulative impacts to air quality.

Some of these existing refineries have recently been permitted to upgrade their refinery capacities for processing additional heavy crude oil. These include the Marathon Detroit Oil Refinery in Detroit, Michigan; the BP Whiting, Indiana Refinery; and the ConocoPhillips refinery in Roxana, Illinois. Based on the locations and the recent/current increases in heavy crude oil refining capacity, the emissions from these refineries are considered representative of impacts of any incremental increases in emissions related to increasing refining capacity of heavy crude oil in the Midwest for oil potentially transported via the Alberta Clipper Project.

In theory, air emissions associated with the refining of heavy crude oil from oil sands results in greater emissions than those associated with the historical refining of light crude oil. Thus, there could be an incremental increase in actual emissions associated with refining heavy crude oil instead of light crude oil (within permitted limits), especially those associated with existing refineries that have not been recently upgraded or would not be upgraded. In practice, any refineries that are already processing heavy crude oil, including oil sands from Canada, and any refineries that have recently been or would be upgraded to process the heavy crude oil transported via the Alberta Clipper Project have been or would be required to update their permits (which would establish new emission limits) and implement BACT to control and limit emissions. Federal regulations require implementation of current BACT whenever there are major upgrades to refineries; and these same refineries would not be required to implement BACT if they continue historical refining practices, including historical refining of heavy crude oil from Canada. As a result, recent permitted upgrades to allow the processing of heavy crude oil at some refineries in the Midwest have resulted in some emissions increasing and some emissions remaining relatively comparable, while other emission types have decreased relative to historical emissions at those facilities.

In addition, all existing, existing but upgraded, or future refineries must obtain and adhere to air permitting requirements that are designed to limit cumulative impacts to regional air quality to levels that are protective of human health, air quality, and visibility.

Refinery Upgrades

Since it is expected that the oil transported via the Alberta Clipper Project would largely replace current supplies to refineries in the Midwest, refineries that have historically processed heavy crude oil would not be expected to increase air emissions above their currently permitted emission levels. Existing refineries that may increase their actual refining of heavy crude oil without upgrades could result in incremental increases in emissions, but within permitted thresholds designed to avoid significant impacts to air quality (or be required to re-initiate the air permitting process to avoid significant impacts). Refineries that are considering upgrading their facilities, but have not formally proposed upgrades, may theoretically be of

interest; but they typically have no publicly available projected emission estimates or permitted emission levels. Therefore, the best quantitative estimates of incremental increases in emissions associated with the refining of oil transported via the Alberta Clipper Project may be associated with Midwest refineries that have recently completed permitting to upgrade their facilities in order to refine additional heavy crude oil.

In the Midwest, at least three major refineries have recently received permits to upgrade their facilities to refine relatively large volumes of heavy crude oil. These include the Marathon Detroit Oil Refinery, the BP Whiting Indiana Refinery, and the ConocoPhillips Roxana refinery in Illinois.

Together, these refineries are in the process of increasing their overall capacity for refining heavy crude oil by approximately 480,000 bpd (the capacity of the Alberta Clipper Project, as proposed, would be 450,000 bpd). As part of the permitting process for these three refineries, maximum emissions of certain criteria pollutants, and in some cases of GHG, have been identified.

Marathon Detroit Oil Refinery. On June 20, 2008, the Michigan Department of Environmental Quality (MDEQ) issued an air permit to upgrade Marathon Oil Corporation's Detroit refinery. Construction of the Detroit Heavy Oil Upgrade Project commenced immediately following permit issuance and is projected to be completed in the fourth quarter of 2010 (MPC 2008). However, a reduction in gasoline demand, coupled with a delay in Marathon's Canadian crude production, has pushed the completion date to mid-2012. The construction that began in June 2008 has not stopped but is continuing at a slower pace (Oil & Gas Journal 2009). This project will increase the refinery's total capacity from 102,000 to 115,000 bpd, including the resulting capacity to refine an additional 80,000 bpd of heavy crude oil.

The MDEQ found that there will be no significant net emission increase above the past actual baseline emissions for any criteria pollutants with the Detroit Heavy Oil Upgrade Project. Although the project will increase carbon monoxide (CO) emissions, Marathon was able to mitigate CO emissions with catalytic oxidation beds and by accepting lower CO emission limits in the permit.

Decreased emissions for certain other pollutants, including PM₁₀, sulfur dioxide (SO₂), nitrogen oxides (NO_x), CO, and VOCs will occur because of upgrades to equipment and operational changes within the existing refinery (Table 4.14.3-2). The net emissions increase as a result of the Detroit Heavy Oil Upgrade Project will be less than the significance thresholds for all criteria pollutants (MPC 2007).

The MDEQ addressed climate change in its decision to issue the air quality permit. GHG generation increases as energy consumption increases. Heat integration and heat recovery will be improved at several units at the refinery, and the new units will be energy efficient. The project proposes to improve energy efficiency compared to the existing refinery's operations, but total energy use will increase due to the increased capacity to refine heavy crude oil. The energy efficiency steps taken by Marathon will partially mitigate GHG emissions, but the Detroit Heavy Oil Upgrade Project will result in increased GHG emissions.

| TABLE 4.14.3-2 Potential to Emit of Criteria Pollutants for Marathon Detroit Oil Refinery | | |
|--|---------------------------------------|---|
| Pollutant | Significance Level (tons per year) | Estimated Net Increase (or Decrease) in Emissions (tons per year) |
| Particulate matter (PM) | 25 | 0.01 |
| PM ₁₀ (10 microns or less) | 15 | -11.1 |
| Sulfur dioxide (SO ₂) | 40 | -0.8 |
| Nitrogen oxides (NO _x) | 40 | -0.5 |
| Carbon monoxide (CO) | 100 | 84.6 |
| Volatile organic compounds (VOC) | 40 | -1.5 |

Source: MDEQ 2008.

BP Whiting, Indiana Refinery. On May 1, 2008, the Indiana Department of Environmental Management (IDEM) issued an air permit to upgrade BP's Whiting Refinery. Construction of the BP Whiting Refinery Modernization Project commenced shortly after permit issuance and is projected to be completed in 2012 (BP America 2009). This project will allow the BP Whiting Refinery to refine an incremental increase of 260,000 bpd of heavy crude oil.

Based on available emission estimates, BP will lower its overall air emissions for the refinery after completion of the BP Whiting Refinery Modernization Project. To offset the projected emission increases of the project, BP has already installed pollution controls in recent years. As integral parts of this project, BP will also replace existing equipment with more modern technology and will install emission controls on upgraded and existing units.

The project emission increases and net emission increases are provided in Table 4.14.3-3. BP is decreasing its overall emissions. BP has accepted several operational and emission limits to maintain its emissions below these levels.

In October 2008, EPA issued a Notice of Violation to BP, indicating that BP had not obtained the valid permits for the expansion project (EPA 2008a). Further permitting efforts could alter emission estimates and any subsequent permitted emission levels.

| TABLE 4.14.3-3 Potential to Emit of Criteria Pollutants for BP Whiting, Indiana Refinery (tons per year) | | | | | | | |
|--|--------|-------------------------------|-----------------------|------------------|-------|-----------------|-------|
| | PM | PM ₁₀ ⁵ | SO ₂ | VOC ⁶ | CO | NO _x | Pb |
| Project emissions increase | 138.9 | 216.7 | 277.7 | 225.6 | 541.8 | 456.7 | 0.041 |
| Net emissions increase (NEI) with past contemporaneous increases and decreases | -17.5 | 60.5 | (see footnote) *** | 239.0 | 602.2 | 538.6 | -0.02 |
| Net emissions increase / (decrease) (NEI) with future contemporaneous decreases related to CXHO (phased construction) ^{1,4} | -204.2 | -5.0 | (see footnote) *** | 163.9 | 351.6 | 18.7 | -0.02 |
| Net emissions increase/(decrease) (NEI) with future Contemporaneous decreases – non-CXHO (phased shutdown) ¹ | -281.9 | -1.6 | (see footnote) *** | -6.3 | -23.7 | -28.9 | -0.02 |
| Total for modification after netting ² | -281.9 | -41.6 | (see footnote) *** | -6.3 | -23.7 | -28.9 | -0.02 |
| Significant level of major source threshold | 25 | 15 | 40 | 25 | 100 | 40 | 0.6 |

*** = SO₂ emissions decrease.

CO = Carbon monoxide.

NO_x = Nitrogen oxides.

Pb = Lead.

PM = Particulate matter.

PM₁₀ = Particulate matter (10 microns or less).

SO₂ = Sulfur dioxide.

VOC = Volatile organic compounds.

^{1,2,3,4,5,6} – Refer to First Significant Source Modification to Part 70 Permit No. T089-6741-00453.

Source: Permit No. T089-6741-00453, First Significant Source Modification.

ConocoPhillips Refinery in Roxana, Illinois. In September 2008, the Illinois EPA issued an air permit to upgrade ConocoPhillips' Wood River Refinery. Construction of the Coker and Refinery Expansion (CORE) Project commenced shortly after permit issuance and is projected to be completed in 2011 (Energy Business Review 2008, Downstream Today 2009). The project will allow the ConocoPhillips' Wood River Refinery to refine an incremental increase of 140,000 bpd of heavy crude oil and will include other capacity changes.

By implementing BACT, ConocoPhillips will lower its air emissions for the refinery for all pollutants except for CO and volatile organic matter (VOM). Emissions of other pollutants will be reduced as part of the CORE Project. The project emission increases and net emission increases are shown in Table 4.14.3-4 (IL EPA 2007).

**TABLE 4.14.3-4
Potential to Emit of Criteria Pollutants for ConocoPhillips-CORE Project^a (tons per year)**

| | NO_x (PSD) | NO_x (NA NSR) | CO | SO₂ | VOM | PM | PM₁₀ | PM_{2.5}^b |
|--|---------------------------------|------------------------------------|-----------|-----------------------|------------|-----------|------------------------|-------------------------------------|
| Refinery CORE increases | 986.7 | 948.6 | 1,039.1 | 1,548.3 | 329.0 | 319.2 | 224.8 | 224.8 |
| Terminal CORE increases | 9.5 | 9.5 | 23.8 | 0.0 | 54.0 | 10.0 | 1.9 | 1.9 |
| Refinery CORE decreases (shown as negative values) | -1,043.7 | -1,043.7 | -15.5 | -11,131.4 | -0.3 | -131.3 | -131.3 | -131.3 |
| Creditable contemporaneous emission increases | 775.4 | 896.6 | 171.3 | 148.8 | 140.8 | 53.7 | 53.7 | 53.7 |
| Creditable contemporaneous emission decreases (shown as negative values) | -732.6 | -822.9 | -288.4 | -1,733.6 | -116.5 | -396.0 | -381.2 | -398.6 |
| Net emissions increase (or decrease) | -4.7 | -11.9 | 930.3 | -11,167.9 | 407.0 | -144.4 | -232.1 | -249.5 |

- CO = Carbon monoxide.
- NA NSR = Not applicable to New Source Review.
- NO_x = Nitrogen oxides.
- PM = Particulate matter.
- PM₁₀ = Particulate matter with a diameter of 10 microns or less.
- PM_{2.5} = Particulate matter with a diameter of 2.5 microns or less.
- PSD = Prevention of Significant Deterioration.
- SO₂ = Sulfur dioxide.
- VOM = Volatile organic matter.

^a Annual emissions of the project include the Wood River Products Terminal.

^b Emissions of PM_{2.5} in this table are expressed as emissions of PM₁₀, which is being used as a surrogate pollutant.

Source: IL EPA 2007.

Air dispersion modeling indicated that the project will have an insignificant impact on CO concentrations (IL EPA 2007). BACT was applied to all new and modified emission units, including affected process heaters, fluidized catalytic cracking units, flares, thermal oxidizers, and the loading racks. Emission limits of CO were established for each of these units. An additional impacts analysis was also required by PSD regulations. The project is not expected to adversely affect visibility.

To offset increases in VOM emissions, ConocoPhillips is required to provide 440.1 tpy of emissions offsets from other sources within the St. Louis/Metro-East nonattainment area. A lowest available emission rate (LAER) demonstration for VOM is also required for all new and modified emission units, including affected process heaters, fluidized catalytic cracking units, flares, thermal oxidizers, loading racks, storage tanks, wastewater treatment, and components. Emission limits of VOM were established for each of these units.

Other Refinery Upgrades. In addition to these refineries with recently permitted upgrades to increase refining capacities in the upper Midwest, other refineries have publicly announced plans to expand their heavy crude oil refining capabilities but have not formally applied for expansion permits. While some

anecdotal information is available on these possible expansions, little or no quantitative information is available on associated emissions. These include expansion of the Murphy Oil Refinery in Superior, Wisconsin, and the BP-Toledo Refinery in Ohio. It has been reported that the Murphy Oil Refinery expansion would increase the capacity of the refinery from 35,000 to 235,000 bpd, and all of the increased capacity would be for refining heavy crude oil. Murphy Oil has not submitted any air permit applications; thus, no quantitative information on potential emissions is available. As mentioned above, the project is on indefinite hold while Murphy Oil seeks a business partner to provide the heavy crude oil (Superior Telegram 2008). At this time, no specific information is available with respect to anticipated post-modification emissions. The BP-Toledo Refinery has publicly announced plans to upgrade the refinery to process approximately 170,000 bpd of heavy crude oil (BP America 2007) but has not submitted any permit applications. If these expansion plans were implemented, each of the refineries would submit to the air quality permitting process, which would involve developing approved emission estimates intended to protect human health and the environment, including consideration of cumulative impacts to air quality.

Summary. If it is assumed that the heavy crude oil transported via the Alberta Clipper Project would not replace existing heavy crude oil supplies and that refineries would need to upgrade to handle the volume of the Alberta Clipper Project, it is possible to estimate the incremental increase in emissions associated with this volume at upgraded refineries. Based on the cumulative net emissions from the three refinery upgrades, it is expected that the emissions associated with the 450,000 bpd transported via the Alberta Clipper Project could increase CO emissions by approximately 1,000 tpy, increase VOC emissions by approximately 400 tpy, and decrease emissions of other pollutants based on increased efficiency and improved controls. These estimated results are based on the specific refinery upgrade projects. Cumulative emissions from refining the oil at other refineries would not necessarily be similar to the emissions from refining the oil at the Marathon Detroit, BP Whiting, and ConocoPhillips Roxana refineries. Emissions from refining the oil at other refineries would depend on the process and pollution control equipment used at those unspecified refineries.

New Refineries

In addition to the upgrades to existing refineries in Petroleum Administration for Defense District II, a new refinery proposed in South Dakota is called the Hyperion Energy Center. If approved and constructed, this refinery would be the first new refinery built in the United States in 30 years. The proposed refinery is currently undergoing the permitting review, and on June 3, 2008, Union County, South Dakota voters approved a referendum changing zoning for the Energy Center site from agriculture to a planned development, which was considered a major hurdle in the approval process for the project. The approximately 48-month construction phase would begin in 2010, with full operation beginning in 2014 (Downstream Today 2008).

As proposed, the facility could refine up to 400,000 bpd of heavy crude oil. The refinery would be located hundreds of miles from the Alberta Clipper Project route, and it would not be connected via pipeline to the Alberta Clipper Project or any other identified pipeline based on current information. However, the available information from the air permitting application for the Hyperion Refinery provides another example of the relative magnitude of emissions that may result from refining heavy crude oil from oil sands. Based on the current air permitting application for Hyperion, annual emissions would total approximately 17.2 million metric tons of CO₂, 1,999 tons of CO, 773 tons of NO_x, 1,046 tons of PM, 863 tons of SO₂, and 473 tons of VOCs (SDNR 2008).

Water Discharges

Depending upon the source, heavy crude oils may contain higher concentrations of heavy metals, nitrogen, and sulfur compared to light oil. Processing the heavy crude oil may require upgrades to the refineries' wastewater treatments systems to meet discharge limitations of the NPDES permits under which wastewater discharges are permitted.

Recent refinery upgrades have required reassessment of NPDES permits. For the Detroit Heavy Oil Upgrade Project, Marathon will install \$50 million in new wastewater treatment equipment (Michigan Environmental Council 2007). Marathon has agreed to continue to meet discharge quality requirements in its existing NPDES permit. For the BP Whiting refinery, BP agreed to keep pollutant discharges within the limits of the original permit. Enhanced pollution controls associated with the Whiting Refinery Modernization Project will include a new sour water stripper, increased stormwater storage capacity, desalter brine treatment, more efficient final water filters, and other wastewater reduction projects. These measures are designed to ensure that wastewater and stormwater discharges meet NPDES permit limitations and protect the quality of the receiving waters.

Based on these examples, existing refineries that upgrade to increase their capacity to refine heavy crude oil can do so without increasing pollutants in water discharges. New refineries or other existing refineries that propose upgrades would be required to satisfy NPDES discharge requirements to avoid significant impacts to water quality.

End Use

The end use of refined petroleum products could include combustion (e.g., vehicles, power generation, or other industrial facilities) or non-combustion uses (e.g., motor oils or other lubricants). The volume of crude oil that would be transported via the Alberta Clipper Project would total about 3 percent of the crude oil processed in the United States. Neither Enbridge nor DOS would control the destination of the oil or the ultimate refined product. In addition, it is expected that neither the source nor the volume of oil transported via the Alberta Clipper would influence the ultimate type(s) of petroleum products refined. As a result of the refining process, the emissions associated with the end use of the oil by the consumer are not expected to be influenced by the source oil. Thus, the emissions associated with the ultimate use of the refined product would not differ from those end use emissions from other source oils.

Independent of source, the criteria pollutant emissions from consumer and manufacturing use of refined petroleum products are regulated under permits for some uses (e.g., mass transportation vehicles and petrochemical processing) and not for others (e.g., private vehicles) beyond standard quality rules designed to reduce pollutants (e.g., oxygenated fuels and low-sulfur diesel).

While there is no basis to expect that GHG emissions by end users would be influenced by the source oil, GHG emissions from end uses of refined products are not regulated by the federal government or most states.

Greenhouse Gas Emissions

Currently, no rules or regulations have been promulgated by any federal or state agency to define as "significant" any source of GHG emissions. There are also no currently applicable facility-specific emission limitations or caps for GHG emissions. Thus, there is no regulatory or guidance mechanism for determining standards of significance for GHG impacts, including General Conformity thresholds. However, on March 10, 2009, EPA proposed a rule making requiring suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and all facilities that emit 25,000 metric tons or more per

year of GHG emissions to submit annual reports to EPA. While the proposed Alberta Clipper Project would not be required to comply with the rule since it would not approach these thresholds, other projects discussed in this EIS would be subject to the rule and its reporting requirements.

With regard to state GHG programs, North Dakota has not yet adopted any guidelines for reducing GHG. In Minnesota, the governor signed into law the 2007 Next Generation Energy Act. This law builds on the state's nation-leading energy policies of more renewable energy, more energy savings, and lower carbon emissions and specifies the development of a comprehensive plan to reduce Minnesota's GHG emissions. The Minnesota Climate Change Advisory Group prepared a Climate Mitigation Action Plan for presentation to the governor and the legislature. The plan contains nine policy recommendations for reducing GHG emissions; none directly pertain to oil pipelines.

In April 2007, the governor of Wisconsin signed EO 191 that created a group of key Wisconsin business, industry, government, energy, and environmental leaders known as the Task Force on Global Warming. The Task Force was charged with creating a state plan to reduce GHG emissions. In July 2008, the Task Force voted to finalize its report, *Wisconsin's Strategy for Reducing Global Warming*. The report includes goals for reducing GHG emissions as follows: (1) a return to 2005 levels no later than 2014; (2) a 22-percent reduction from 2005 levels by 2022; and (3) a 75-percent reduction from 2005 levels by 2050.

According to the Association of Environmental Professionals, there are currently no published thresholds or recommended methodologies for determining the significance of a project's potential cumulative contribution to global climate change (Hendrix et al. 2007). Even very large individual projects do not generate sufficient GHGs to individually influence global climate change. Nevertheless, there is a general scientific consensus that the cumulative effects of GHG have led to climate change on a global scale, which is considered a significant cumulative effect.

The principal GHG of concern related to crude oil pipeline construction and operation is CO₂, which enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions (e.g., manufacture of cement). CO₂ is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Other GHGs include methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

As stated previously, GHG emissions during construction of the Alberta Clipper Project (and the Superior Terminal Expansion Project) would directly total approximately 27,000 metric tons, primarily associated with the operation of diesel-powered equipment (indirect emissions cannot be meaningfully quantified). Operations of the Alberta Clipper Project would result in relatively little direct emissions and they would be due to periodic operation of inspection vehicles and fugitive emissions (up to 0.5 ton of VOC per year). Indirect GHG-related emissions during operation would be associated with electrical generation for the pump stations (approximately 0.3 million metric tpy). Thus, the construction and operation of the Alberta Clipper Project would incrementally increase GHG emissions.

Refining of the oil transported by the Alberta Clipper Project would also emit GHGs. Refining at existing refineries that are not upgrading to increase their capacity for processing heavy crude oil would not be expected to cause a substantial increase in GHG emissions relative to those associated with refining heavy crude oil currently. GHG emissions from upgraded refineries or new refineries would represent an incremental increase in GHG.

Comprehensive information on GHG emissions from refineries in general is not available, but there is some information on the relative magnitude of incremental GHG emissions relative to refinery upgrades

and literature on the carbon emissions for refining a barrel of oil. For the BP Whiting Indiana Refinery, BP reports that the upgrade project will result in a 30- to 40-percent increase in CO₂ emissions for the refinery, resulting in an incremental increase in CO₂ emissions up to 0.5 million tpy (total emissions up to 2 million tpy) based on current estimates. Since the BP Whiting refinery upgrade would increase the capacity to refine heavy crude oil by approximately 260,000 bpd, applying this value to the volume transported by the Alberta Clipper Project indicates that the incremental increase in GHG emissions represented by the Alberta Clipper Project could be up to about 0.9 million tpy. As mentioned previously, emission estimates from specific refineries are refinery specific, and emission rates at different refineries could vary broadly.

Information also is available on the total GHG emissions associated with refining a barrel of heavy crude oil independent of a specific refinery. A report by the University of Toronto (2008) estimates that refining one barrel of heavy crude oil from oil sands emits a total of 47.4 kilograms of carbon, including the refining process itself and energy generation for the refining process. Applying these values to the volume transported by the Alberta Clipper Project indicates that carbon emissions from refining could total up to 7.8 million metric tpy.

Similarly, preliminary estimates by the Natural Resources Defense Council (NRDC 2008) indicate that GHG emissions from refining heavy crude oil from oil sands would apparently range from approximately 9.4 to 31.5 kilograms per barrel. Applying these values to the Alberta Clipper Project indicates that total GHG emissions for refining the volume proposed for the Alberta Clipper Project could range from 1.5 to 5.2 metric tpy.

As a third example, Marathon reports that GHG emissions for all their refining operations total approximately 33 kilograms per barrel of oil (Marathon 2006), which falls between the range of values reported by the University of Toronto and NRDC. Applying the Marathon value to the Alberta Clipper volume indicates that GHG emissions could total 5.4 million metric tons.

Based on these values, refining the oil transported by the Alberta Clipper Project would result in total carbon emissions in the range of 1.5 to 7.8 million metric tpy if one assumes that every single barrel transported via the Alberta Clipper Project would be in addition to the current supply. It is likely that the actual incremental increase would be significantly less since it is expected that the oil transported via the Alberta Clipper Project would largely replace oil from other sources, including other heavy crude oil sources. If this heavy crude oil replaced existing light crude oil, there could be some incremental increases in emissions and emission rates would be dependent on refinery-specific permitted thresholds, potential upgrades and implementation of BACT, etc. From a global perspective, it is expected that the oil sands in Canada would continue to be developed and the refinery emissions from that oil would still occur whether in Canada, the United States, or overseas even if the Alberta Clipper Project were not built.

For context, the total GHG emissions for the United States (CO₂ equivalents from anthropogenic activities) totaled 7,054 million metric tons in 2006, and global CO₂ emissions totaled 28,193 million metric tons in 2005 (CO₂ equivalents from fuel combustion) (EPA 2008b), therefore refining of the heavy oil transported via the Alberta Clipper Project represents up to 0.001 and 0.0003 percent of the national and global GHG emissions, respectively. Construction activities associated with the proposed Project would result in 27,276 tons (0.027 million metric tons [see Table 4.12.1-4]) of CO₂ equivalents, which represents 0.0004 and 0.0001 percent of the national and global GHG emissions, respectively. Nearly all construction emissions would occur in Minnesota, where construction emissions of GHG for the proposed Project represent 0.02 percent of the GHG emissions inventory in Minnesota (estimated at 163.8 million metric tons in 2010 [CCS 2008]). For context, the GHG emissions inventory for Wisconsin was 123.1 million metric tons in 2003 (CO₂ equivalents from anthropogenic activities) (WRI 2008). The GHG emissions inventory for North Dakota was not available at the time of this EIS.

While there are no federal regulations or guidance to definitively identify the significance of the GHG emissions associated with operation of the Alberta Clipper Project, the amount of GHG emissions from Alberta Clipper operations (0.3 million metric tons) would not constitute a substantial contribution to the emissions from specific refineries (as discussed above), total U.S. emissions, or global emissions.

In general, the mitigation measures implemented as part of the Alberta Clipper Project following construction would serve to offset some of the GHG emissions associated with the proposed Project. These measures would include revegetation of the construction work areas, restoration of wetland functions, and compensatory wetland mitigation for wetland impacts. Specific revegetation measures would be coordinated with land managers, NRCS, and landowners. LLBO indicates that Enbridge has agreed to reseed construction areas with native species specifically found to sequester atmospheric carbon to further offset GHG impacts. Minimal direct GHG emissions would be associated with operation (e.g., vehicle operation and fugitive emissions), and indirect emissions would be associated with electrical generation for the pump stations.

At the request of EPA, Enbridge has identified voluntary measures that Enbridge is implementing or would implement to reduce GHG emissions. From a system-wide perspective (oil and gas pipelines), Enbridge has initiated measurement of GHG emissions, replaced older pipe with cast iron pipe, replaced compressor seals and documented reductions in subsequent fugitive emissions from natural gas pipelines, expanded the use of “cold weather” technology to reduce fuel needs for heating natural gas, and investigated geothermal and solar energy technologies to replace gas-fired boilers. From a corporate perspective, Enbridge has implemented voluntary measures to reduce or offset GHGs, including development of wind power projects, initiating fuel cell pilot studies powered by recovered gas from their pipeline system, initiating a carbon sequestration project, and participating in EPA’s STAR program.

Finally, the potential impacts of climate change would not be expected to affect the proposed Project. An increase in temperatures may increase wildfires in the Project area. An increased intensity of storm events, should this occur, may result in additional flooding in some areas near the Project. The Project would be designed to the appropriate standards; however, as discussed in Section 4.13, it would not be subject to new types of impacts that would not be accounted for in the Project design and the plans that are proposed. Other effects of climate change, such as air quality degradation, health effects, reduced snow pack, and agricultural issues, would not impact the proposed Project.

4.14.3.13 Reliability and Safety

The Alberta Clipper pipeline would largely be collocated with an existing Enbridge pipeline right-of-way. It would also be collocated with the Diluent Project between the Clearbrook Terminal and the Superior Terminal. In addition, the Alberta Clipper pipeline would cross or be collocated with other non-Enbridge pipelines for limited areas. Cumulative impacts could be incurred should incidents occur on one or more collocated pipelines within the same time frame. Large release events are rare; therefore, the likelihood of major events occurring in the same general area within two separate pipeline systems is remote. As described in Section 4.13, Enbridge is required to comply with DOT and state and local regulations regarding pipeline safety, leak detection, and spill response.

The Alberta Clipper pipeline also would be collocated with the Great Lakes Gas pipeline for a small part of its route. Because the Great Lakes Gas pipeline would transport natural gas rather than any type of liquid material, cumulative effects caused by spills and leaks of crude oil are not expected from the two collocated pipelines.

Emissions of particulate matter arising from fugitive dust are regulated by state and local agencies. Tribal regulations may also apply on tribal lands. North Dakota has authority to regulate fugitive dust under North Dakota Administrative Code 33-15-17, Minnesota has authority under Minnesota Administrative Rules 7011.0150, and Wisconsin has authority under NR 415.04. Each of these regulations requires measures to prevent fugitive dust from becoming airborne and leaving the property boundary. Enbridge proposes to apply water to the right-of-way for dust suppression. The majority of pipeline construction activity would pass by a specific location within a 30-day period, thereby resulting in short-term impacts at any one location during construction.

Fossil-Fueled Construction Equipment

Large earth-moving equipment, skip loaders, trucks, and other mobile sources may be powered by diesel or gasoline and are sources of combustion emissions, including NO_x, CO, VOCs, SO₂, PM₁₀, PM_{2.5}, and small amounts of HAPs. Construction equipment also emits greenhouse gases. Expected emissions from construction are shown in Table 4.12.1-4. Gasoline and diesel engines must comply with the EPA mobile source regulations in 40 CFR Part 86 for on-road engines and 40 CFR Part 89 for non-road engines. These regulations are designed to minimize emissions. Furthermore, to implement the CAA, EPA has established rules to require that sulfur content in on-road and off-road diesel fuel be significantly reduced. On June 1, 2006, 80 percent of diesel fuel for on-road use produced by U.S. refineries was required to be reduced from 500 to 15 ppm sulfur. Additionally, on June 1, 2007, diesel fuel for non-road engines was reduced from 5,000 to 500 ppm sulfur. On June 1, 2010, EPA will require all on-road and off-road (non-road) diesel fuel to meet a limit of 15 ppm sulfur. Enbridge would encourage its construction contractors to use 15 ppm sulfur diesel fuel prior to June 1, 2010 depending upon availability in the construction area. There are currently no federal regulations or guidelines for maximum GHG emissions.

In addition to the use of low-sulfur fuel, Enbridge would maintain all fossil-fueled construction equipment in accordance with manufacturer's recommendations to minimize construction-related emissions.

| Emission Source | PM_{2.5} (tons) | PM₁₀ (tons) | NO_x (tons) | SO₂ (tons) | CO (tons) | VOCs (tons) | GHG (tonnes) |
|---------------------------|------------------------------------|-----------------------------------|----------------------------------|----------------------------------|----------------------|------------------------|-------------------------|
| Diesel-fueled equipment | 18.8 | 20.0 | 359.7 | 8.5 | 52.1 | 20.8 | 25,037 |
| Gasoline-fueled equipment | 0.3 | 0.3 | 4.3 | <0.1 | 20.3 | 1.6 | 2,240 |
| Paved road PM | 1.8 | 11.9 | - | - | - | - | - |
| Unpaved road PM | <0.1 | 0.2 | - | - | - | - | - |
| Total | 20.9 | 32.4 | 364.0 | 8.5 | 72.4 | 22.4 | 27,276 |

PM = Particulate matter.

PM_{2.5} = Particulate matter less than 2.5 microns in diameter.

PM₁₀ = Particulate matter less than 10 microns in diameter

NO_x = Oxides of nitrogen.

VOC = Volatile organic compound.

GHG = Greenhouse gas expressed as carbon dioxide (CO₂) equivalent.

Open Burning

Burning cleared materials has been proposed as a possible method for clearing the right-of-way of woody debris along the route and is fairly typical during pipeline construction. Open burning of cleared materials from construction activities has the potential to affect air quality. However, prior to construction it is unknown how much open burning would occur and in what quantities and locations. Timber valuations have not been conducted to characterize and quantify the timber resources along the route, including the volume of potentially merchantable timber. Other variables with regard to open burning would include the identification of markets for cleared timber and consultations with individual landowners.

All of the states along the route of the proposed Project regulate open burning through local permitting, approval, and/or notification processes. Additionally, tribal open burning permits may be required on tribal lands. Enbridge would obtain all necessary open burning permits, approvals, and make notifications prior to conducting any open burning of land-clearing materials. Enbridge would follow all open burning regulations during such activities, including restrictions on burn location, material, and time, as well as consideration of local air quality.

Temporary Fuel Transfer Systems and Associated Storage Tanks

Temporary fuel transfer systems and tanks have the potential to release VOC emissions. Because most construction equipment would use diesel fuel with a low vapor pressure (<0.01 psi), releases of VOCs would be minimal.

Enbridge's EMP (Appendix C) provides guidelines regarding minimum distances for fuel storage and refueling. Enbridge's SPCC Plan (Appendix E) provides general conditions and additional guidelines, including signage, required on-site mitigation materials and tools, and secondary containment. The following information from the SPCC Plan further addresses these concerns:

For storage and handling of fuels/hazardous liquids, the Contractor would follow proper fuel storage practices, including, but not limited to the following:

- Fuel storage must be at contractor yards only or as approved by Enbridge.
- Proper signage at and adjacent to fuel storage areas must include "Fuel Storage Area – No smoking within 50 feet."
- A minimum of two 30-pound or four 20-pound fire extinguishers must be located and readily available at all fuel storage locations. The extinguishers must be located not less than 25 feet and not more than 75 feet from these locations.
- Tools and materials to stop the flow of leaking tanks and pipes must be kept on-site. Such equipment may include, but not be limited to, plugs of various sizes, 3M tank patches, a hammer, assorted sizes of metal screws with rubber washers, a screwdriver, and plastic tape. Spill kits (see Section 2.3 of the SPCC [Appendix E]) must be located at fuel storage areas.
- Fuels, lubricants, waste oil, and any other regulated substances must be stored in aboveground tanks only.
- Storage tanks and containers must conform to all applicable industry codes.
- A suitable secondary containment structure must be utilized at each fuel storage site. These structures must be lined with suitable plastic sheeting, provide a minimum containment

volume equal to at least 150 percent of the volume of the largest storage vessel, and provide at least 1 foot of freeboard.

- If earthen containment dikes are used, they must be constructed with slopes no steeper than 3:1 (horizontal to vertical) to limit erosion and provide structural stability.
- Secondary containment areas must not have drains. Precipitation may be drawn off as necessary. If visual inspection indicates that no spillage has occurred in the secondary containment structure, accumulated water may be drawn off and sprayed on the surrounding upland areas. If spillage has occurred in the structure, accumulated waste must be drawn off and pumped into drum storage for proper disposal.
- Vehicle maintenance wastes, including used oils and other fluids, must be handled and managed by personnel trained in the procedures outlined in this plan. Vehicle maintenance wastes would be stored and disposed of in accordance with Section 7.0 of the SPCC Plan (Appendix E).

With regard to refueling practices, the following measures from the SPCC Plan (Appendix E) would be implemented:

- Fuels must be dispensed by authorized personnel during daylight hours only.
- Fuel dispensing operations must be attended by authorized personnel at all times. Personnel must be stationed at both ends of the hose during fueling unless both ends are visible and are readily accessible by one person.
- Fuel dispensing equipment (i.e., portable gas cans, nozzles, and hoses) must be of the appropriate type.

Conclusions

Because pipeline construction moves through an area relatively quickly, air emissions typically would be localized, intermittent, and short term. Emissions from fugitive dust, construction equipment combustion, open burning, and temporary fuel transfer systems and associated tanks would be controlled to the extent required by state and local agencies as explained above.

Enbridge would ensure that all construction equipment for the proposed Project is maintained in accordance with the manufacturer's specifications. In addition, to reduce construction emissions of criteria and hazardous air pollutants, Enbridge would encourage its contractors to adopt the following measures (consistent with EPA recommendations for the proposed Project):

- Ensure that diesel-powered equipment is properly maintained and shut off when not in use;
- Prohibit engine tampering to increase horsepower;
- Where practical, operate equipment as far as possible from residential areas and sensitive receptors (schools, daycare centers, and hospitals);
- Use ultra-low sulfur diesel fuel for their equipment if it is available for purchase within a reasonable distance to the construction spreads;
- Minimize, to the extent practical, construction-related trips of workers and equipment; and
- Where practical, use 1996 or newer model year equipment and vehicles.

Further, Enbridge commits to the following measures for its employees driving company-owned or leased vehicles:

- Ensure that diesel-powered equipment is properly maintained and shut off when not in use;
- Prohibit engine tampering to increase horsepower;
- Use ultra-low sulfur diesel fuel for vehicles if it is available for purchase within a reasonable distance to the construction spreads;
- Minimize, to the extent practical, construction-related trips; and
- Where practical, use 1996 or newer model year vehicles.

If Enbridge complies with applicable regulations, emissions from construction-related activities associated with the proposed Project would not significantly affect local or regional air quality.

Operations Impacts

At capacity in 2010, Enbridge estimates that electricity use for the entire system would be 1.8 million megawatt hours. After 2010, it is expected that this value would increase over time, based on the hydraulics of the system. Consequently, no long-term emissions would result from operations associated with the proposed Project, except for fugitive VOC emissions from valves and pumping equipment. Because operating emissions are minimal, no operational permits would be required. There are no ambient air quality standards or increments for VOC, although there are ozone standards for which VOC is a precursor. Regardless, operation of the proposed Project would not cause or contribute to a violation of any federal, state, or local air quality standards.

4.12.1.4 Connected Actions

Enbridge operates the Superior Terminal located in Douglas County, Wisconsin. Five new 250,000-barrel crude oil tanks would be constructed at the Superior Terminal to accommodate higher crude oil throughput from the proposed Project. Five 207-horsepower and one 335-horsepower diesel-fueled existing emergency generators would be used to provide backup power. The emergency generators would operate less than 200 hours/year and are not part of the proposed Project.

The Superior Terminal is currently a petroleum storage and transfer facility with more than 7,227,000 barrels of storage. The Superior Terminal emitted 100.9 tons of VOCs in 2007. The Superior Terminal meets the definition of a major stationary source given at 40 CFR 51.166(b)(1)(i)(a). Actual average emissions for 2006–2007 were 97.6 tons of VOCs per year, and proposed project emissions are 39.1 tons of VOCs per year. When this project's emissions are considered with emissions from recently permitted projects at the facility, the total emission exceeds the major modification threshold of 40 tpy of VOCs. Therefore, the proposed expansion at Superior Terminal is a major modification and is subject to PSD review, which would require an air quality analysis. The new tanks are subject to best available control technology (BACT) analysis as part of PSD. The Superior Terminal is within 100 kilometers (61 miles) of a Class I area. Specifically, the Rainbow Lake Wilderness is located 61 kilometers (about 37 miles) from the Superior Terminal. Therefore, expansion of the terminal is subject to a federal Class I area impact assessment as part of the air permitting process.

Subpart Kb of 40 CFR 60, Standards of Performance for Volatile Organic Liquid Storage Vessels, lists affected emission sources as storage vessels containing volatile organic liquids. Regulatory applicability is dependent on the construction date, size, and vapor pressure of the storage vessel and its contents. Subpart Kb applies to new tanks, unless otherwise exempted, with a storage capacity between 75 m³