LINE 3 REPLACEMENT PROJECT

Application for Pipeline Routing Permit

Minnesota Public Utilities Commission
Appendix K

Enbridge Response to Sandpiper Comment Letters

Enbridge Energy, Limited Partnership ("Enbridge"), in its capacity as North Dakota Pipeline Company LLC ("NDPC"), provided additional information, agreed to meet certain requirements, and performed additional tasks requested by the Minnesota Pollution Control Agency ("MPCA") and the Minnesota Department of Natural Resources ("DNR") as part of its Routing Permit Application for the Sandpiper Pipeline Project ("Sandpiper"). As a result, Enbridge provided a written response to each agency, one to the MPCA dated October 1, 2014, and one to the DNR dated October 14, 2014. These letters responded specifically to MPCA and DNR comments dated April 4, 2014 (referred to as "Appendix A" in the Enbridge response letters) and May 30, 2014 (referred to as "Appendix B" in the Enbridge response letters). Enbridge hereby assures the MPCA and the DNR that the requirements and tasks it agreed to perform in Sandpiper's Routing Permit Application, which are further explained in the paragraphs below, will also be undertaken for the Line 3 Replacement Program.

Enbridge's response to the MPCA dated October 1, 2014, provided additional information and responded to the following concerns raised in Appendix A: access to the project; break-out tanks; cumulative impacts; emergency response, spill prevention, and remediation; inspection and monitoring; proposed waterbody crossing methods and time frames; wastewater, stormwater, and hydrostatic testing; and water quality, wetlands, and watersheds. Enbridge also addressed the following issues that were raised by the MPCA in Appendix B: inspection and monitoring; watershed restoration and protection strategy; greenhouse gas emissions; environmental justice; alternate route analysis; and cumulative impacts.

In its October 14, 2014 response to the DNR, Enbridge provided additional information and made commitments regarding the concerns raised by the DNR in Appendix A. Such concerns consisted of: alternative routes; environmental impacts of the proposed project; and general comments regarding NDPC's Application for a Routing Permit, Environmental Impact Report, and Environmental Protection Plan. Enbridge also addressed the DNR's concerns contained in Appendix B, which included the following topics: state lands and public resources; proposed and alternative routes; third-party monitoring; federally funded lands; and cumulative impacts.

Enbridge agrees to follow these previously made commitments in implementing its Line 3 Replacement Program, and looks forward to a continued dialog with the MPCA and the DNR as the project moves forward.

APPENDIX K		
Sandpiper Pipeline Project Agency Consultation Correspondence		
AGENCY	**DATE**	**CORRESPONDENCE/RESPONSE**
Minnesota Pollution Control Agency – Resource Mgmt. and Assistance Division	**10-01-2014**	NDPC Response to MPCA 04-30-2014 Letter and Comments
		Appendix A – NDPC Responses to MPCA Letter dated 04-04-2014
		Appendix A1 –MPCA Correspondence dated 04-21-2014
		Appendix A2 – MPCA Correspondence dated 04-25-2014
		Appendix A3 – Polyurethane Foam Ditch Pillow Report dated 02-2010
		Appendix B – NDPC Response to MPCA Letter dated 05-30-2014
Minnesota Department of Natural Resources	**10-14-2014**	MN-DNR Response to Comments to Sandpiper Pipeline Project Application for Pipeline Routing Permit (Docket No. PL-6668/PPL-13-474)
		Appendix A - NDPC Response to DNR Letter dated 04-04-2014
		Appendix B – NDPC Response to DNR Letter dated 05-30-2014

ENBRIDGE

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North Dakota Pipeline Company LLC
1409 Hammond Avenue, Second Floor
Superior, Wisconsin 54880

October 1, 2014

Patrice Jensen
Minnesota Pollution Control Agency
Resource Management and Assistance Division
520 Lafayette Road North
St. Paul, MN 55155-4194

Subject: North Dakota Pipeline Company LLC
Sandpiper Pipeline Project
Response to Comments - Pipeline Routing Permit Application for the Sandpiper Pipeline Project (MPUC Docket No. PL-6668/PPL-13-474)

Dear Ms. Jensen:

As part of the Minnesota Pollution Control Agency's ("MPCA") participation in the Minnesota Public Utilities Commission ("MPUC") proceeding for the North Dakota Pipeline Company LLC ("NDPC")[1] Sandpiper Pipeline Project ("Project") Pipeline Routing Permit Application ("Application"), MPCA submitted letters to Mr. Larry Hartman, dated April 4, 2014, and May 30, 2014, commenting on various technical and policy aspects of the Application and the Project. While the MPUC recently suspended the routing permit proceeding, we wanted to take this opportunity to formally respond to the MPCA letters to further the dialogue between MPCA and NDPC on these important technical and policy matters.

Many of MPCA's comments recommended specific data or topics for inclusion within the scope of the Comparative Environmental Analysis ("CEA") to be prepared by Minnesota Department of Commerce Energy Environmental Review and Analysis ("DOC-EERA") staff as part of the routing permit proceeding. NDPC understands that the MPUC and DOC-EERA determine the scope of the CEA. As such, this letter is not intended to address whether any particular topic should or should not be included within the CEA. Rather, this letter is intended to provide useful information to address MPCA's stated concerns and help to inform the continued coordination between MPCA and NDPC that is critical to the permitting process.

There are two attachments to this letter. Appendix A addresses major issues raised in MPCA's April 4, 2014 letter and Appendix B addresses major issues raised in its May 30, 2014 letter. In each appendix, we have duplicated provisions of the comment letters and provided our responses and explanations immediately following MPCA's original comments.

Major topics addressed in Appendix A include but are not limited to:

- Access to the Project;
- Break-out Tanks;
- Cumulative Impacts;
- Emergency Response/Spill Prevention/Remediation;
- Inspection and Monitoring;
- Proposed Waterbody Crossing Methods and Time Frames;
- Wastewater, Stormwater and Hydrostatic Testing; and
- Water Quality, Wetlands, and Watersheds.

Major topics addressed in Appendix B include but are not limited to:

- Inspection and Monitoring;
- Watershed Restoration and Protection Strategy;
- Greenhouse Gas Emissions;

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[1] The Applicant is NDPC, a Delaware limited liability company qualified to do business in Minnesota. NDPC is a joint venture between Enbridge Energy Partners, L.P. , NDPC's former sole parent entity, and Williston Basin Pipeline LLC, a wholly owned indirect subsidiary of Marathon Petroleum Corporation. NDPC owns and operates a crude oil interstate pipeline transportation system that gathers crude oil from points near producing wells in North Dakota and Montana and transports shipper's crude petroleum to both the Enbridge Mainline System and Minnesota Pipe Line Company at Clearbrook, Minnesota. This pipeline system is commonly referred to as the North Dakota Pipeline System or NDPC System. The NDPC System is operated by Enbridge Operating Services, L.L.C, and Enbridge Operating Services, L.L.C. will construct and operate the Project on behalf of NDPC. In this response, Enbridge Inc. and its affiliates are referred to collectively as "Enbridge" with the exception of North Dakota Pipeline Company LLC which is referred to as "NDPC".

- Environmental Justice;
- Alternate Route Analysis; and
- Cumulative Impacts.

When reviewing the information contained in this response, we ask that you keep the following background information in mind:

The Project's purpose is to transport crude oil from NDPC's Beaver Lodge station near Tioga, North Dakota, to Clearbrook, Minnesota, and then on to the Superior terminal in Superior, Wisconsin. The region's pipeline system is highly integrated, and the Project design utilizes important features of the existing system while addresses capacity shortfalls within the existing system. Connections at Clearbrook and Superior are essential to optimize the performance of the overall pipeline system and to enhance the reliability of deliveries to Midwest refineries, including those located in Minnesota. By tying to existing pipeline infrastructure, the Project reduces the overall need to construct new pipeline facilities.

NDPC undertook an extensive process during route planning to develop a route that meets the Project's purpose while minimizing potential impacts on natural, cultural, and social resources. NDPC minimized the creation of new rights-of-way (greenfield routes) by siting the pipeline within or adjacent to existing rights-of-way where practical. Approximately 75 percent of NDPC's Preferred Route follows existing rights-of-way. Installation of a new pipeline along an existing cleared right-of-way (such as another pipeline, electric transmission line, road, or railroad) is usually environmentally preferable to the construction of a new right-of-way, and construction effects and cumulative impacts can normally be reduced by routing adjacent to a previously cleared, disturbed corridor.

We also conducted field surveys and other resource inventories along the Preferred Route to identify natural resources that may potentially be adversely impacted by construction, including waterbodies; wetlands; rare plant and animal species; archaeological and cultural features; tribal land; national forest property; and soil, hydrologic, and geologic features. We made numerous route adjustments, both major and minor, to minimize impacts on these sensitive resources. Much of the detail regarding NDPC's efforts to reduce impacts through these route adjustments will be available once NDPC files its direct testimony in the routing permit docket.

Where resources could not be avoided, we committed to implementing Project-specific minimization and mitigation measures as outlined in our comprehensive Environmental Protection Plan ("EPP"). NDPC's EPP outlines the construction-related environmental policies, procedures, and protection measures that will be utilized during construction of the Project. The EPP is based on Enbridge's experience implementing best management practices ("BMPs") during construction, as well as the Federal Energy Regulatory Commission's ("FERC's") Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures (May 2013 Versions). NDPC's EPP contains mitigation measures that meet or exceed federal, state, tribal, and local environmental protection and erosion control requirements, specifications and practices.

NDPC will design, construct, test, operate, and maintain our pipeline in accordance with criteria that have been established by the U.S. Department of Transportation's ("DOT") Pipeline and Hazardous Materials Safety Administration ("PHMSA"). PHMSA administers the national regulatory program to ensure the safe transportation of crude oil and other hazardous materials by pipeline. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents, and requires operators like NDPC to develop written plans to identify areas where a pipeline release could cause considerable harm to people or the environment. NDPC will be preparing these plans as part of this Project.

Thank you for your comments, and again, we look forward to a continued dialogue with the MPCA as the Project moves forward. Collaboration with your agency is a key component of Project development. If you have any questions, please contact me by telephone, (715) 398-4730, or email Sara.Ploetz@enbridge.com.

Sincerely,

Sara Ploetz

Sara Ploetz
Senior Environmental Analyst
North Dakota Pipeline Company LLC

Enclosures: Appendix A – NDPC Response to MPCA Letter Dated April 4, 2014
Appendix A1 - MPCA Correspondence Dated April 21, 2014
Appendix A2 - MPCA Correspondence Dated April 25, 2014
Appendix A3 - Polyurethane Foam Ditch Pillows Report Dated February 2010
Appendix B – NDPC Response to MPCA Letter Dated May 30, 2014

cc: John Stine, MPCA Commissioner
Bill Sierks, MPCA Manager, Environmental and Energy Section
Deborah Pile, DOC-EERA – electronic copy
Larry Hartman, DOC-EERA – electronic copy
Jamie Schrenzel, Minnesota Department of Natural Resources – electronic copy
Ralph Augustin, U.S. Army Corps of Engineers – electronic copy

Appendix A

NDPC Response to MPCA Letter Dated April 4, 2014

Appendix A
NDPC Response to MPCA Letter Dated April 4, 2014

NDPC has incorporated the text of MPCA's letter below (in italics), with NDPC's response inserted below the text to which it is responding.

I. Access to the Project

MPCA Letter:

ACCESS TO THE PROJECT
Obtaining access to a remote area of the Project in the event of a release to the environment is of significant concern. Numerous segments of the proposed Project route extend through large expanses of bog or open water wetland that have limited or no access under seasonal conditions. When vehicles cannot access a potential leak location under seasonal conditions, the risk of large-scale environmental damage and costly clean-up increases.

The LaSalle Creek crossing is a good example of an area in which it would be extremely difficult, if not impossible, to access downstream impacts and deploy equipment necessary to contain and clean up a spill. Large expanses of bog and some forest are located between the proposed crossing of La Salle Creek and Big La Salle Lake; consequently, there are no existing locations to access the water that could potentially be carrying leaked oil until after it has entered Big La Salle Lake. The environmental damage that would occur as a result of a leak at this location could be massive, and the obstacles to containing the leak or performing clean-up activities could be insurmountable. The MPCA strongly recommends that alternate routes around the LaSalle Creek and LaSalle Lake areas be considered. A suggested route could include constructing the Project parallel to Highway 108 located west of LaSalle Lake, extending southward along Highway 200 until Highway 200 intersects with 400th Street. At 400th Street, the Project would extend eastward until it rejoins with the proposed route.

NDPC Response: NDPC agrees that access to the Project is an important part of safely operating the line. For this reason, Enbridge employs numerous and overlapping methods of ensuring access to its pipeline for daily operations and in the event of an emergency. The access methods described below are fully vetted through NDPC's Integrated Contingency Plan ("ICP"), which is also described in this section.

A. Access Methods

Enbridge has operated up to six (6) pipelines for approximately 65 years through numerous segments of large expanses of bog or open water wetlands in Minnesota. Enbridge has also operated thousands of miles of pipeline in remote northern Alberta which also consists of large bog areas that are much more remote than northern Minnesota. These areas may appear on the face of a map to have limited or difficult accessibility during varying seasonal conditions. From an emergency response perspective, however, if a pipeline can be built in an area, emergency responders can reach the pipeline.

First, NDPC carefully designed a route that takes into consideration various environmental and emergency response regulations, which require NDPC to have access to its right-of-way. This type of thorough route evaluation is iteratively honed and developed through tens of thousands of hours conducting detailed environmental surveys, landowner discussions and constructability reviews by staff experienced in pipeline construction and design.

Second, even in areas that are seemingly remote and inaccessible, Enbridge can and will ensure adequate access. In order to construct a pipeline, Enbridge needs to establish access to the entire pipeline right-of-way in order for personnel and equipment to work on the right of way. As a result, once the line is in-service, Enbridge will have a thorough understanding of what is required to continue access to the right-of-way in order to maintain it. As necessary, access roads built for construction can be maintained when the pipeline goes into operation. To date, a number of the roads have been identified as permanent access roads, which would serve as points of entry for maintenance and, if necessary, emergency response.

Third, the right-of-way itself also provides direct access to a pipeline. Federal law requires pipeline rights-of-way to be kept free of vegetation that would interfere with inspection, so emergency responders will be able to travel down the right-of-way.

Fourth, Enbridge has specialized equipment that can, in any condition and at any time of year, traverse the environments and ecosystems identified by the MPCA. If conditions are not conducive to regular vehicles traveling down the right-of-way, Enbridge has specialized vehicles that can travel through swamp and marsh areas to access an incident. These vehicles include airboats, Marsh Master utility vehicles (specialized amphibious work vehicles that can transport equipment and personnel through wetlands and other difficult to access areas), all-terrain vehicles (ATVs), and work boats. Tracked mini-vacuum systems and portable tanks are also available to respond to incidents. Another example of this equipment is an amphibious excavator specifically designed to maneuver in marshy, swampy areas and soft terrain, and it can also float on water. Enbridge can also use a helicopter to bring in containment booms, staff, and other supplies to ensure a rapid response to any emergency situation in any location.

Finally, while those vehicles can transport equipment and personnel to a response site quickly, Enbridge can also build temporary access roads or mat roads through difficult terrain along the right-of-way in short order to bring additional equipment and response personnel to an incident site.

With regard to the specific area around LaSalle Creek and LaSalle Lake mentioned by MPCA, Enbridge is developing permanent access roads and identifying equipment necessary to ensure continuous access to the right-of-way in all conditions. The MPUC has also identified two route alternatives, RA-09 and RA-10, in this area to evaluate other potential means of routing through this area.

B. NDPC's Integrated Contingency Plan

NDPC, as an affiliate of Enbridge, has an ICP approved by PHMSA under regulations set forth in 49 Code of Federal Regulations (CFR) 194. That regulation provides standards and guidelines for preparing emergency response plans, including the listing of resources and capabilities of responding to a potential incident.

Enbridge developed ICPs for each region in which it has pipeline operations. The ICP will serve as the Emergency Response Plan ("ERP") for NDPC's pipelines in North Dakota, Minnesota and Wisconsin. As part of the ERP, Enbridge evaluates the equipment and/or access points required to ensure personnel and equipment are able to access the entire right-of-way so that it is able to respond to an incident. Enbridge's ICP was approved by PHMSA on July 11, 2013.

The ICP follows an industry recognized format for response planning, which was developed by the National Response Team ("NRT") as a means by which to consolidate multiple facility response plans. The U.S. Environmental Protection Agency ("USEPA"), U.S. Coast Guard, and the U.S. Occupational Safety and Health Administration, among other agencies, all provided input into the ICP format. Those federal agencies agreed that the ICP, when prepared in accordance with that guidance, will be the preferred method of response planning and documentation (refer to NRT ICP Guidance, at 61 Federal Register 28642 [June 5, 1996]). Enbridge's ICP is the first and only industry plan thus far to undergo an extensive, multi-agency review process, which included participation by USEPA.

The primary purpose of the ICP is to ensure an effective, safe, and comprehensive response to all types of incidents, regardless of what the incident is, where the incident occurs, or what type of resource may be impacted. The "Core Plan" serves as the primary response tool within the ICP and is supported by additional Annexes, known as Emergency Response Action Plans ("ERAPs"), which are region-specific, condensed versions of the ICP tailored to the unique features of the region. The ERAPs are publicly-available documents.

The Project will be subject to the North Dakota and Superior Region ERAPs. These ERAPs include High-Consequence Area ("HCA") maps, which show the location of HCAs in the region, and Control Point ("CP") maps, which show downstream water access and collection points. The purpose of the CP maps is to identify, in advance, the best locations for deploying emergency response equipment, such as booms. This allows emergency responders to know exactly what to do in the event of an incident. These maps will be created for the Project once the route is finalized. Facility Response Plans will also be created for terminal and pump sites once the route is finalized.

The ERAPs meet or exceed all local, state, and federal requirements. For these reasons, NDPC respectfully disagrees with MPCA's assertion that certain areas of the Preferred Route are inaccessible, or impossible to reach in response to an emergency response event.

II. Break-out Tanks

BREAK-OUT TANKS

As you are aware, the MPCA is a potential responsible governmental unit for the environmental review of projects involving the construction of hazardous material storage capacity (ref. Minn. R. 4410.4300, subp. 10(B)). Further, it is understood that the break-out tanks proposed to be constructed in Clearbrook will be addressed in the Comparative Environmental Analysis (CEA) prepared by the Department of Commerce. The assessment of impacts related to the tanks should, therefore, be evaluated to ensure adequate prevention and containment measures are incorporated into the Project design and operations, in order to prevent future releases and remediation. A secondary permeability assessment should be included in the CEA and construction and operation of the Project and break-out tanks should be completed in compliance with the Minnesota Office of Pipeline Safety and in accordance with Minnesota secondary containment standards.

NDPC Response: In recognition of MPCA being the Responsible Governmental Unit for the break out tanks proposed at the new Clearbrook West facility, NDPC submitted a request for Single Source Determination to the MPCA on April 10, 2014. On July 21, 2014, MPCA confirmed that the proposed crude oil terminal constitutes a separate stationary air emissions source under existing Prevention of Significant Deterioration regulations. NDPC will be filing an application for a Registration Permit per Minnesota Rules 7007.1110–7007.1130 that meets both MPCA requirements and USEPA Clean Air Act requirements for emission controls.

NDPC agrees that a secondary permeability assessment should be conducted and that the construction and operation of the Project and break-out tanks will be completed in compliance with the Minnesota Office of Pipeline Safety, which is the Minnesota agency that enforces the federal regulations issued by PHMSA. NDPC's secondary containment design standard meets or exceeds American Petroleum Institute Standards which incorporate National Fire Protection Association 30 requirements. NDPC is proposing a 12-inch clay liner with a soil permeability of 1.0 x 10-6 cm/second if field tested or 1.0 x 10-7 cm/second if lab tested. In addition, NDPC will install a Claymax liner underneath the tank to contain anything inside the ringwall as well as a center sump that connects to a sump outside of the ringwall and leak detection ports for visual leak inspection. NDPC will construct the breakout tank within a containment berm designed to handle 110 percent of the volume of the largest tank (minus the volume taken up by other tanks) plus additional volumes resulting from a 24-hour, 25-year storm event volume. NDPC will remove rainwater within the containment area as needed to maintain the required containment design volume.

III. Cumulative Impacts

CUMULATIVE IMPACTS

In addition to the Project proposal, a second effort has been proposed to upgrade Enbridge's Line 3 from Neche, North Dakota, to Superior, Wisconsin. The Great Northern Transmission power line, which will transport energy from Manitoba to Grand Rapids, is also in the planning process. These three projects, and any additional future energy infrastructure in the area, will have the potential to fragment and impact ecosystems. Under these circumstances, serious consideration should be given to an evaluation of the potential cumulative effects of past, present and future projects with respect to the disruption of the habitat and the continuity of natural, relatively undisturbed landscapes that remain in Minnesota. This could include planning of common corridors, considering risk assessment, access and the minimization of impacts while meeting the needs of electrical, natural gas and oil transmission.

Past pipeline routes have followed corridors that were created when a power transmission line was put in place. While there are benefits to following an existing corridor, power lines and pipelines are different types of projects that present different potential impacts. There are points on the Project route, such as the LaSalle Creek area, where a power line crossing has a relatively low risk of harming natural resources in the event of an accident. However, a pipeline accident, such as a large drilling mud release (frac-out) or an oil leak in the same location would be devastating to the pristine natural areas downstream from the crossing site.

NDPC Response: On May 30, 2014, NDPC provided supplemental information to address cumulative impacts of the Line 3 Replacement Project. The supplemental information provided updates to the tables in the Environmental Information Report ("EIR") filed with NDPC's Application showing the potential additive impacts of the Line 3 Replacement project.

In addition, as part of the U.S. Army Corps of Engineers ("ACOE") permitting process, NDPC anticipates that the ACOE will prepare a cumulative impacts analysis on aquatic resources that considers potential impacts of the Project's Preferred Route when added to past, present, and reasonably foreseeable future projects.

NDPC agrees with MPCA's comment above to "include planning of common corridors," which is consistent with the Minnesota Rule 7852.1900, subpart 3.F which encourages use, paralleling and sharing of existing rights-of-way. Consistent with this rule, approximately 75 percent of NDPC's Preferred Route is co-located with existing utility corridors.

NDPC recognizes the different impact of a pipeline incident as compared to a power line incident. The Preferred Route crosses LaSalle Creek upstream of the three (3) existing crude oil pipelines not owned or operated by NDPC. NDPC met with the Minnesota Department of Natural Resources ("DNR") on November 12, 2013 to discuss lessons-learned regarding waterbody crossings on past projects and how NDPC might be able to implement procedures through modified waterbody crossing methods.
NDPC carefully develops its construction plan for all waterbody crossings, taking into account the various methods of crossing waterbodies. Although MPCA's pipeline accident example assumes that the crossing of LaSalle Creek would entail a horizontal directional drill ("HDD"), NDPC has determined that an HDD may not be the best crossing method of LaSalle Creek based on recent geotechnical investigation results and consultation with the DNR; as such, NDPC is presently recommending an isolated dry crossing for LaSalle Creek.

In areas where an HDD is used, NDPC recognizes the importance of collecting geotechnical data prior to construction to appropriately design a drill for the type of soils possibly encountered at each specific water body. Further, in the unlikely event an inadvertent release of drilling fluid were to occur, containment, response and clean-up equipment will be available at both sides of the HDD crossing location prior to commencing the HDD to assure a timely response. Containment and response equipment includes but is not limited to:

- straw bales and staking;
- pre-filled sandbags;
- turbidity curtain (not necessary for guided or road bores that do not involve a waterbody);
- silt fence;
- plastic sheeting and/or geotextile fabric;
- shovels, brooms, buckets, and other appropriate hand tools;
- pumps and sufficient hose;
- fluid storage tanks (may not be necessary for guided or road bores);
- vacuum truck on 24-hour call;
- one small boat (for larger rivers and open water wetlands); and
- light plant/generator (only necessary where operations are conducted outside of daylight hours)

IV. Emergency Response/Spill Prevention/Remediation

EMERGENCY RESPONSE/SPILL PREVENTION/REMEDIATION
The CEA should identify the locations of the shut off valves for the Project's new line and describe how these will be installed strategically to prevent and/or minimize flow or backflow of the line contents into sensitive areas in the event of a line break. Procedures and time frames for activating shut off valves should be described. The CEA should also identify the worst-case discharge for the response zones of the Project per Section 194.105 of the Department of Transportation Pipeline and Hazardous Materials Safety Administration regulations, including the worst-case volume, maximum release time in hours, shutdown response time and line drainage volume.

If EPND's contractor generates a hazardous waste from materials brought on-site (e.g., paint clean-up solvents, waste paints, etc.), then the contractor is responsible for proper waste collection, storage and disposal in accordance with all applicable regulations. Any release of the hazardous waste as a result of the improper handling, storage or disposal by the contractor in this instance is the responsibility of the contractor to rectify to the satisfaction of EPND and all applicable regulatory agencies. The CEA should address how EPND will ensure that proper responsibility is taken for hazardous waste generated.

Additionally, EPND's contractor is to report spills to the Minnesota State Duty Officer and appropriate federal, state and local agencies as soon as possible. A listing of federal, state and local agencies including reporting thresholds and timeframes is provided in Appendix G of the

Application. The contractor, in coordination with EPND and the appropriate federal, state and local agencies will ensure that additional parties or agencies are properly notified and that all cleanup activities are satisfactorily completed and documented. Again, the CEA should address how EPND will ensure that this occurs.

NDPC Response: The placement of valves along the Project is regulated by PHMSA in accordance with 49 CFR Part 195. Specifically, 49 CFR 195.260 provides guidance on where valves should be located. To meet these requirements, Enbridge reviews potential impacts from a release and determines the most effective placement of valves by conducting an Intelligent Valve Placement ("IVP") study for its pipelines, including the Project. The IVP identifies optimal valve locations that will protect major water crossings and HCAs in the event of a pipeline release. HCAs are defined by federal law, and include the following four areas:[1]

1. High Population Area;
2. Other Populated Area;
3. An Unusually Sensitive Area (which means a drinking water or ecological resource area); and
4. A Commercially Navigable Waterway.

NDPC has expanded this list by subdividing the "Unusually Sensitive Area" definition into two types of sensitive areas to create the following five HCA types:

1. High Population Area;
2. Other Populated Area;
3. Drinking Water Resource;
4. Environmentally Sensitive Area; and
5. A Commercially Navigable Waterway.

The IVP complies with all PHMSA regulations, including 49 CFR 195.260 (e), which requires the installation of valves "on each side of a water crossing that is more than 100 feet (30 meters) wide from high-water mark to high-water mark unless the [PHMSA] Administrator finds in a particular case that valves are not justified. The IVP also considers:

- Locations that will reduce the potential consequence of a release;
- Construction limitations;
- Pump station locations;
- Presence of potential HCA as defined by PHMSA;
- Proximity to densely populated areas;
- Accessibility;
- Operational considerations; and
- Future pipeline expansion potential.

The sectionalizing valves on the Project will be remotely monitored and controlled by Enbridge's control center in Edmonton, Alberta. In the event of a release, NDPC can remotely close these valves from the NDPC console within the Enbridge Control Center, thereby significantly decreasing response time and helping mitigate the impact of any release. The initial response would depend on the source of the alarm. The main response would be to shut down the line by turning off the pump(s) and then closing the valve(s) so that there is not a pressure build-up in the pipe.
The Control Center will use multiple systems to monitor the pipeline. The first is a computational pipeline monitoring ("CPM") system, which uses measurements and pipeline data, such as differences in measured and expected pressures and flow rates in a pipeline, to detect potential leaks and trigger leak alarms, which precipitate the shutdown of the line. The second is a Supervisory Control and Data Acquisition ("SCADA") system, which is designed to remotely control the pipeline, detect anomalies, issue controller alarms, and initiate a station shutdown when certain conditions are present. Examples of SCADA data alarms include explosive vapor alarms, pump seal failure alarms, equipment vibration alarms, and fire alarms. Examples of SCADA-initiated shutdown triggers include high pressure limits, low pressure limits, and unintentional valve closures. The third system is line balance calculations, which compare the volume of oil injected into the pipeline to the amount delivered to identify unexpected losses of oil that would indicate a leak. Line balance calculations will be performed every two hours, and negative line balances that exceed the detection thresholds will result in the line being shut down. The fourth system is controller monitoring, where employees will monitor the pipeline on a 24/7 basis in the control center.

[1] 49 CFR 195.450.

These controllers monitor the SCADA system and other monitors to identify potential leaks, which can be detected through sudden changes in pressure, changes in pump speed, and changes in flow rates. NDPC will also rely on third-party reports of damage or other anomalies.

The amount of time required to identify a release, and thereby initiate shutdown, depends on the nature of the release. A full line rupture would result in multiple leak triggers and alarms that would notify controllers immediately. Small leaks would be typically detected by the CPM system and the line balance process. The smaller the leak, the more time it takes for these systems to alarm. The highest sensitivity setting requires 24 hours to trigger an alarm. Each controller will be required to shut down the line in the event they suspect an issue with pipeline operation.

As described above, NDPC, as an affiliate of Enbridge, has an "ICP approved by PHMSA under regulations set forth in 49 CFR 194. That regulation provides standards and guidelines for preparing emergency response plans, including the listing of resources and capabilities of responding to a potential incident.

Enbridge reviews the ICP annually to reflect operational or regulatory changes annually or when required. NDPC will submit regional annex changes to PHMSA prior to completion of the Project. In short, the NDPC ICP is exhaustive, thorough, and was compiled in accordance with stringent guidelines.

NDPC is also implementing changes to its Pipeline Public Awareness and Emergency Response Programs by:

- Developing an online and in-person training tool to provide NDPC-specific information to emergency responders in its host communities;
- Addition of Community Relations positions in key locations along NDPC liquid pipeline routes;
- Increased spending ($50 million) between 2012 and 2013 to improve programs, equipment and capabilities, develop better tools to deal with particular waterborne spills, and improve training programs;
- Implementation of specialized training for a cross-business unit response team, to respond to large-scale events anywhere in North America that would require more resources than a single NDPC liquid pipeline operating region or business unit could provide;
- Conducting an emergency-response preparedness assessment to identify additional strategic equipment purchases to enhance capabilities to more rapidly respond and contain a significant release anywhere in the NDPC system; and
- Addition of personnel in each NDPC liquid-pipeline operating region to improve emergency-preparedness planning and coordination.

Enbridge's Superior Region currently has response equipment located in 11 different areas, including Bemidji, Minnesota and at the Superior, Wisconsin Terminal. Enbridge is planning to increase the number of storage locations with the addition of the Project. Also, Enbridge contracts with a full-service environmental and emergency response company and a classified Oil Spill Response Organization to supplement Enbridge's own resources located at designated terminals, pumping stations, and pipeline maintenance facilities along the existing pipeline system. Those companies are located in many areas throughout the United States and maintain response teams equipped to quickly respond to emergencies upon notification.

NDPC also provides Material Safety Data Sheet ("MSDS") information to local responders on an annual basis in accordance with PHMSA requirements. In addition, Enbridge can utilize a helicopter to bring in containment booms, staff, and other supplies to ensure a rapid response to any emergency situation in any location.

Section 10 of the Project EPP describes planning, prevention and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction. NDPC requires its contractors to implement proper planning and preventative measures to minimize the likelihood of spills, and to quickly and successfully clean up a spill should one occur. Enbridge has procedures in place to ensure notifications occur within the timeframes specified by applicable rules. As MPCA noted, a listing of federal, state, and local agencies including reporting thresholds and timeframes is provided in Appendix G of the EPP. NDPC ensures proper notifications occur through required training of all staff prior to work on an NDPC construction project.

Per Section 9.1 of the Project EPP, if a contractor generates a hazardous waste from materials they have brought on-site (e.g., paint clean-up solvents, waste paints, etc.), then the contractor is responsible for proper waste collection, storage and disposal in accordance with all applicable regulations. The contractor remains responsible for the proper handling, storage and disposal of the hazardous waste. Any release of the hazardous waste as a result of the improper handling, storage or disposal by the contractor in this instance is the responsibility of the contractor to rectify to the satisfaction of NDPC and all applicable regulatory agencies. Contract specifications will incorporate environmental protection and mitigation measures required by regulation, NDPC specifications, and environmental permits. NDPC's contractors will be obligated to implement these measures in the field.

V. Inspection and Monitoring

> ***INSPECTION AND MONITORING***
> *EPND must ensure that workings are well-inspected for compliance and should describe how this will occur. Eventually, EPND must provide assurances that inspections will occur. The MPCA believes that construction should not take place without a third-party inspector present and on-site, and that a minimum of one third-party inspector will be required for every "spread" of construction (the spread distance will be determined in the Clean Water Act Section 401 Certification for the U.S. Army Corps of Engineers Permit). Additional spreads must be authorized in advance with additional third-party inspectors. The MPCA seeks a significant commitment to third-party inspectors from EPND and with MPCA oversight to ensure compliance with all permit conditions.*

NDPC Response: Consistent with past practice, NDPC has confirmed during discussions with MPCA National Pollutant Discharge Elimination System ("NPDES") permitting staff that designated Environmental Inspectors ("EIs") will be assigned to the Project. Environmental inspection will be conducted during and following construction. Contract specifications will incorporate environmental protection and mitigation measures required by regulations, NDPC specifications, and environmental permits. NDPC's contractors are obligated to implement these measures in the field. The EIs act as a resource for construction personnel and a liaison between the contractor, NDPC's Project Management, and agency officials.

The EIs are responsible for assisting with pre-construction field tasks such as marking wetland and waterbody boundaries, clarifying environmental requirements, identifying possible issues and challenges ahead of construction, conducting environmental training of construction staff, offering advice and consultation to NDPC's contractors, and conducting inspections/monitoring in accordance with applicable laws, permits and/or Project plans. The EIs are also required to document environmental compliance throughout the duration of the Project and are responsible for monitoring construction activities to ensure compliance with all applicable environmental laws, regulations, permits and NDPC's Project-specific plans.

In addition to EIs, NDPC will hire inspection staff to ensure compliance with all design specifications and other non-environmental based regulations. All Inspectors must complete NDPC's Safety & Environmental Orientation prior to commencing work in the field and compliance with those measures is required. These inspectors include:

- Clearing/fencing/access and grade plan inspectors ensure the right-of-way is accessible, surveyed, staked, and prepared for clearing. Topsoil removal inspectors examine topsoil removal and segregation along the right-of-way. The grading inspector examines the right-of-way to ensure it is cleared and graded, as necessary, to provide construction access and safe movement of equipment and personnel during construction.

- Safety and buried facility locating inspectors ensure appropriate safety measures are implemented before excavation begins, including notification through the One-Call system to ensure third-party utilities and adjacent pipelines are properly marked.

- Pipe stringing and pipe bending inspectors examine the formed pipe for possible defects. Welding inspectors examine every weld by monitoring ultrasonic or x-ray tests that inspect the integrity of each weld. Welding Inspectors use calipers and micrometers to assess each section for exact tolerances on diameter, roundness and straightness. Cathodic protection specialist measure the soil resistivity of the pipe and field coating inspectors examine the protective fusion-bond epoxy coating as it is applied to the pipe.

- Ditching/trenching inspectors oversee pipeline trenching activities. Trench plug inspectors determine the locations of trench plugs along the right-of-way and ensure they are installed per design specifications. HDD and bore inspectors oversee trenchless crossings to ensure

compliance with permits and NDPC's Project-specific crossing plans.

- Lowering-in inspectors and tie-in inspectors ensure the prepared pipe is lowered into the trench and, where applicable, tied-in to existing facilities. The bedding/padding inspectors ensure precautions, such as padding the trench with soil, are taken during backfilling to protect the pipe from rock damage. The buoyancy control inspectors determine where weights or anchors are required per design specifications. The backfill inspectors ensure subsoil is replaced first and then the topsoil is replaced.

- Pigging and hydrostatic testing inspectors oversee hydrostatic testing of the pipeline to ensure its integrity prior to the line being filled with crude oil and placed into service. Clean-up inspectors ensure the right-of-way is then cleaned-up and restored to preconstruction conditions, as practicable. Reclamation inspectors ensure temporary and permanent stabilization measures, such as slope breakers, mulching and seeding are in place.

NDPC regards workplace safety and protection of the environment as integral to the conduct of its business and has established policies to ensure compliance with both of these objectives. An inspector working on the Project is expected to adopt and uphold the policies on safety and the environment and has a moral obligation and the authority to stop work whenever they observe or perceive a non-compliance, probability of rework, and/or perceive 'imminent danger' to persons safety or the environment.

In regards to third-party monitors, NDPC has constructed numerous projects with the oversight of third-party monitors as suggested by the MPCA and supports the recommendation by both the DNR and MPCA regarding the use of third-party monitors. NDPC will continue to work with the appropriate agencies to define the role, qualifications and supervision of third-party monitors to ensure they are experienced in the type of construction they will be observing and knowledgeable regarding the resources potentially impacted. NDPC's recently submitted proposal to MPCA, DNR and the ACOE regarding independent/third-party monitors is intended as starting point in the discussion to outline a commitment to State agencies regarding our willingness to collaborate.

NDPC looks forward to having discussions with participating agencies in order to establish a third-party monitoring program. NDPC recognizes that the success of an inspection program is tied directly to ensuring that the duties of the monitors and their authority is clearly identified and understood by all parties. NDPC continues to look to facilitate a meeting with interested agencies to discuss the structure and responsibilities as part of the monitoring and inspection plan. NDPC would appreciate MPCA's assistance in coordinating or facilitating these meetings so that a comprehensive monitoring program can be developed as soon as possible. NDPC agrees that costs for the monitoring program will be borne by NDPC, which is consistent with past monitoring programs.

VI. Proposed Waterbody Crossing Methods and Time Frames;

PROPOSED WATER BODY CROSSING METHODS AND TIME FRAMES

All waters of the state that may be impacted by the proposed Project need to be identified in relevant plans, as was required during construction of the Alberta Clipper project. The Application and related documents prepared for this Project (e.g., the Environmental Protection Plan dated October 13, 2013) do not contain this information, and will need to be revised accordingly.

Further, EPND is proposing to use an "open cut" method for installing the pipeline in the majority of streams and water bodies. This method was determined to be unacceptable for the previous project. Consequently, the CEA should clearly identify that water bodies with stable banks in mineral soil and with any noticeable flow at the time of construction will be crossed using a Dry Crossing Construction method, including horizontal directional drilling (HDD), guided bore, dam and pump, or flume. Only water bodies that are dry during construction and selected water bodies, such as ditches in peat lands with no banks or impoundments, can be allowed to be crossed using an open cut and/or push pull methods.

In addition to the identification of waters (both impaired and unimpaired) that are being crossed by the proposed Project, waters downstream (and upstream in lentic waters) of the crossing points must also be identified. Identification includes the name and type of the water body, its impairment status, and the distance from the crossing point. It is imperative to MPCA's review and permitting that these features are clearly identified on maps to ensure adequate mitigation measures are in place to protect water bodies during the construction of the Project. Map features required for MPCA's review are included in Appendix A.

Many of the crossing points of the proposed Project are upstream from very high quality surface waters which must be protected or impaired waters which must be improved in order to meet water quality standards. Examples of this include the La Salle Creek crossing (less than 1,000 yards upstream of Big LaSalle Lake and also upstream from the La Salle Lake Aquatic Management Area), or Jail Lake in Crow Wing County, a lake impaired by excess nutrients. The potential impacts from an oil leak may go far beyond the water body being crossed. In many cases the proposed route threatens not only one but several lakes or rivers downstream from the proposed route.

The Twin Lakes, east of a line between Park Rapids and Hubbard, are listed as impaired by excess nutrients and mercury in fish tissue. The Twin Lakes contain significant wild rice beds and both basins are identified as wild rice lakes by the Department of Natural Resources (DNR). In addition to this, the area between the lakes and the proposed Project crossing is inaccessible by any type of equipment that would be needed for clean-up efforts and is buffered by hundreds of acres of several types of wetlands. To further compound the environmental risk of this location, the Twin Lakes empty to the Shell River, a tributary of the Crow Wing River. The MPCA strongly recommends that alternate routes around the Twin Lakes area be considered. A suggested route could include constructing the Project eastward along Highway 14 (located west of Hubbard); Highway 14 then junctions with Highway 87. Before Highway 87 junctions with Highway 6, there is a transmission line easement that runs southward, somewhat parallel to Highway 87/6. The Project could be constructed along the transmission line southward where it intersects Arbor Road, heading eastward to where it intersects Highway 6. Here, the Project could parallel Highway 6 south until it intersects the current proposed route.

In any instance where pipelines cross sensitive aquatic environments, such as those described above, an assessment of the risk of doing so, relative to other available routes, needs to be provided. Such an assessment is needed in order to understand potential impacts that may result from a leak, including costly and environmentally destructive cleanups. The connectivity of water bodies, soil types, access to potential spill sites and the potential of destruction of other critical habitat downstream of a crossing location must be the subject of more risk assessment prior to approving a proposed route. Cost or time factors to the proposer should be subordinate to the prevention of environmental destruction and the proper assessment of the risks to humans and the natural environment.

NDPC Response:

A. Reducing Risk of Potential Impacts to Surface Waters

NDPC recognizes the importance of understanding how the Project could impact surface waters crossed by or downstream of the Project.

It is important to note that a lake or wild rice water must have a hydrologic connection to the Project (e.g., via a stream, a wetland, or topography) to have any chance of being affected by a crude oil release. In the unlikely event of a release, emergency response protocols will be in place to contain and remove oil in streams, lakes, wetlands, and from the ground surface. If crude oil migrating in a stream were not contained before it reached a lake, the oil movement would slow significantly when it entered the low-energy environment of a lake. As such, emergency response activities would be expected to contain the oil in the first downstream lake it entered, and block it from flowing any further downstream. Thus, a crude oil release is unlikely to affect downstream lakes or wild rice waters that are not the first lake downstream of the Project. Crude oil also has the potential to reach a lake or wild rice water hydrologically connected to the Project via a wetland or topography. However, crude oil typically moves more slowly via wetland or topography than in a stream, which increases the likelihood that the release would be contained prior to reaching a hydrologically-connected lake or wild rice water.

In the unlikely event that crude oil was to migrate to a wild rice stand, it could stain or coat the wild rice plants. If wild rice plants were extensively coated with crude oil, the plants would be cut and removed to prevent oil from continuing to impact surface waters. The removal of oiled wild rice plants would result in the loss of that year's harvest, and might have a short-term impact on natural reseeding of the stand. Wild rice restoration techniques are available to reseed a damaged stand and promote recovery from the effects of a crude oil release if the loss of one year's seed rain negatively impacts a stand.

It should be noted that NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and

industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has developed procedures for handling abnormal operating conditions and emergencies. The Control Center has a protocol for addressing abnormal operating conditions, which consists of shutting down the pipeline if it cannot verify the alarm within 10 minutes and notifying local emergency responders to respond to the site of a suspected release. NDPC would supplement the initial response with personnel from other Enbridge locations and contract resources as necessary.

In accordance with 49 CFR 195.402, NDPC will monitor its liquid petroleum pipelines 24 hours a day, 7 days a week using four primary methods, each having a different focus and featuring different technology, resources, and timing. Used together, those methods provide an overlapping and comprehensive leak detection capability. PHMSA inspects each of the methods for compliance with Integrity Management Rules for Pipelines in HCAs, as per regulatory requirements set forth at 49 CFR 195.

The Control Center will use the following systems to monitor the pipeline. The first is a CPM system, which uses measurements and pipeline data, such as differences in measured and expected pressures and flow rates in a pipeline, to detect potential leaks and trigger leak alarms, which precipitate the shutdown of the line. The second is a SCADA system, which is designed to remotely control the pipeline, detect anomalies, issue controller alarms, and initiate a station shutdown when certain conditions are present. Examples of SCADA data alarms include explosive vapor alarms, pump seal failure alarms, equipment vibration alarms, and fire alarms. Examples of SCADA-initiated shutdown triggers include high pressure limits, low pressure limits, and unintentional valve closures. The third system is line balance calculations, which compare the volume of oil injected into the pipeline to the amount delivered to identify unexpected losses of oil that would indicate a leak. Line balance calculations will be performed every two hours, and negative line balances that exceed the detection thresholds will result in the line being shut down. The fourth system is controller monitoring, where employees will monitor the pipeline on a 24/7 basis in the control center. These controllers monitor the SCADA system and other monitors to identify potential leaks, which can be detected through sudden changes in pressure, changes in pump speed, and changes in flow rates. NDPC will also rely on third-party reports of damage or other anomalies.

Additionally, visual surveillance and reports of oil or oil odors from third parties and from NDPC's aerial and ground line patrols play a significant role in leak detection. NDPC will handle third-party reports through an emergency telephone line. NDPC will typically conduct aerial line patrols every two weeks as per PHMSA requirements. It also may conduct a focused additional aerial and ground patrol upon review of the status of a pipeline. NDPC has an extensive public awareness program, which will facilitate communication with those who live along the pipeline route; public officials, excavators and emergency responders. As part of that public awareness program, NDPC will provide information on how to recognize, react and report abnormal conditions or observations that could be the result of an oil release.

B. Identifying Surface Waters at Risk for Potential Impacts

NDPC undertook a risk assessment during the course of developing its Preferred Route and made adjustments to minimize the possible adverse impact of the Project on the environment and the public. The risk assessment also forms the basis for the IVP study discussed above, which determines the optimal placement of valves to minimize impacts to the environment and the public. Further, the ERPs are developed using a risk-based approach to ensure the availability of appropriate resources and personnel in the region to minimize impacts to the environment and the public. Finally, throughout the design, procurement, installation, and operation of the Project, the company assesses the risks posed at each stage and implements plans to minimize these risks.

NDPC will develop Environmental Alignment Sheets prior to construction that identify all waters of the state crossed by the Project. For example, in past projects, specifically the Alberta Clipper project referenced in MPCA comments, this information was developed prior to construction and after the issuance of a Route Permit by the MPUC. As requested by MPCA in Appendix A of its April 4, 2014, letter to Mr. Hartman, NDPC has informed MPCA that wetlands and waterbodies crossed by the Project are identified in Appendix D of the ACOE application, provided to MPCA on March 20, 2014.

Subsequently, on April 21, 2014, and April 25, 2014, NDPC responded to a MPCA information request regarding the identification of waters downstream of those proposed to be crossed by the Project (refer to Appendix A1 and Appendix A2, respectively). In furtherance of responding to MPCA's request for information and concerns regarding water crossings, NDPC has requested meetings with ACOE, DNR and MPCA and continues to reach out to agencies in an effort to coordinate the development of site-specific plans that address all agencies' information requests regarding construction plans. NDPC will proceed to reach out to individual agencies in an effort to identify specific concerns and respond to them.

C. Methods for Crossing Waterbodies

NDPC is not clear as to which project MPCA is referring to in the statement that the "open cut" crossing method: "was determined to be unacceptable for the previous project." Accordingly, NDPC would appreciate additional detail regarding MPCA's conclusion and the basis for it as soon as possible so that this information can be taken into account when developing NDPC's construction plan. NDPC understands that from past projects in Minnesota, if stream flow exists at the time of crossing, a dry crossing or trenchless crossing technique may be preferred by the ACOE and/or DNR.

It should be noted that NDPC respectfully disagrees with MPCA's statement "only waterbodies that are dry during construction and selected water bodies, such as ditches in peat lands with no banks or impoundments, can be allowed to be crossed using an open cut and/or push pull methods". The optimal crossing method is determined on a case-by-case basis, and the plan is reviewed and permitted by all agencies with jurisdictional authority. Proposed and alternate PWI stream crossing methods will be proposed to, and reviewed and permitted by the DNR. All other proposed and alternate stream crossing methods will be permitted by the ACOE and supporting MPCA 401 Water Quality Certification.

NDPC has provided a general discussion of stream and river crossing construction methods in Section 2.5 of the EPP. The wet trench method will be used to cross streams and rivers not permitted to be flumed, dam and pumped, or directionally drilled. The dam and pump method is a dry crossing technique that is suitable for low flow streams and is generally preferred for crossing meandering channels. The flume method is a dry crossing technique that is suitable for crossing relatively narrow streams that have straight channels and are relatively free of large rocks and bedrock at the point of crossing.

D. Impaired Waters

With respect to the MPCA concerns relating to impaired waters, the nutrient and mercury impairment within the Twin Lakes is not the result of, nor will it be impacted by, pipeline construction or operation. For example, the Twin Lakes, located east of a line between Park Rapids and Hubbard, are listed as impaired for excess nutrients and mercury in fish tissue, and these impairments would not be affected by either Project construction or operation. According to the Crow Wing River Watershed Total Maximum Daily Load ("TMDL") Study, pollutant sources include watershed runoff (associated with agricultural and residential development, etc.), loading from upstream waterbodies, atmospheric deposition, internal lake loading, point sources, feedlots, septic systems, and in-stream alterations. The excess nutrient impairment is resulting from excess phosphorus from sources such as phosphorus-containing fertilizer, manure, and the decay of organic matter that can adsorb to soil particles and enter nearby waterbodies via wind/water erosion and stormwater runoff. Organic material such as leaves and grass clippings can leach dissolved phosphorus into standing water and runoff or be conveyed directly to waterbodies where biological action breaks down the organic matter and releases phosphorus.

The Statewide Mercury TMDL suggests that almost all of the mercury that contaminates Minnesota's lakes and rivers is delivered by the atmosphere. About a third of the mercury in the atmosphere comes from naturally occurring sources, such as minerals in rocks and volcanoes. Most of the mercury in the atmosphere is a consequence of human activities, including burning coal to produce electricity, processing taconite, and using mercury in products. Again, impairments for mercury are not the result of nor impacted by typical pipeline construction; therefore, NDPC proposes that pipeline construction will not impact mercury levels within the Twin Lakes.

Although the impairments of the Twin Lakes are not related to the Project, construction is subject to the MPCA NPDES/State Disposal System ("SDS") permit and all requirements therein. NDPC will work with NPDES staff to ensure the Project's Stormwater Pollution Prevention Plan ("SWPPP") will protect soils and prevent potential discharges to waterbodies including impaired waterbodies. Temporary erosion and sediment controls, as described in Section 1.9 of the EPP, include, but are not limited to, slope breakers, sediment barriers (i.e., silt fence, straw bales, bio-logs, etc.), stormwater diversions, trench breakers, mulch, and revegetation subsequent to seeding of exposed soils. NDPC will install temporary erosion control devices ("ECDs") after clearing and prior to grubbing and grading activities at the base of sloped approaches to streams, wetlands, and roads and at the edge of the construction right-of-way as needed, and/or in other areas determined by the EI, to slow water leaving the site and prevent siltation of waterbodies and wetlands down slope or outside of the construction right-of-way (e.g., swales and side slopes). NDPC will also place temporary ECDs across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from tile line inlets, drainage ways, wetlands, and/or waterbodies until the area is revegetated and there is no potential scouring or sediment transport to surface waters. Adequate room will be available between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

VII. Wastewater, Stormwater and Hydrostatic Testing

WASTEWATER, STORMWATER AND HYDROSTATIC TESTING

The CEA should clearly address the management methods and BMP's needed to ensure compliance by EPND's contractors and employees as these relate to: hydrostatic testing (especially allowable discharge exceedance/dispersal methods/discharge rates); erosion control; sediment transportation control; and, scouring control at sites/results from hydrostatic/trench dewatering discharges activities.

For handling erosion and sediment, stabilization of a spread should be conducted within two days. Additionally, the CEA should clearly describe the roles for EPND and its contractors so that it is clearly understood who has the responsibility for what permit requirements out in the field.

NDPC Response: NDPC will obtain an Individual NPDES/SDS permit for the discharges of hydrostatic test water and construction stormwater discharges from the construction of the pipeline. The permit conditions for site stabilization and restoration will mirror those in the General NPDES/SDS Permit (MNR1000001) currently in effect. As required under permit MNR1000001, NDPC and its contractor will initialize stabilization of a spread using the following timelines:

- NDPC and its contractor will stabilize all exposed soil areas (including stockpiles). Stabilization must be initiated immediately to limit soil erosion whenever any construction activity has permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed no later than 14 calendar days after the construction activity in that portion of the site has temporarily or permanently ceased.

- NDPC and its contractor will stabilize the normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water or property edge.

- Where the stormwater discharge from the project drains to a special or impaired water within one mile of the discharge point and the water will flow to that special or impaired water, NDPC and its contractor will immediately initiate stabilization of all exposed soil areas to limit soil erosion, and in no case will stabilization be completed later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.

VIII. Hydrostatic Testing

Hydrostatic testing needs to be conducted after the pipeline is moved and in place in the trench. It may be necessary to construct temporary sediment basins to reduce flows prior to discharging hydrostatic test water into wetlands or lakes. During the Alberta Clipper project, flows directed overland near steep slopes, even when the straw bale dewatering device was in use, occasionally caused serious erosion, particularly when the sites had steep slopes nearby or significant disturbed soils.

The appropriation of large amounts of water from under the ice of smaller lakes can be dangerous. Appropriation of several million gallons of water from a small lake can drop water levels below the ice by an inch or more, thus creating conditions that may be unsafe for human activity. Hydrostatic testing of pipes, when appropriating from smaller lakes, should be done in ice-out conditions if possible.

NDPC Response: NDPC will obtain an Individual NPDES permit for hydrostatic test discharges for the Project. Pressure testing is conducted in accordance with 49 CFR Part 195, Subpart E and NDPC internal standards and specifications. NDPC and its contractor(s) will implement each permit condition. Hydrostatic testing of mainline pipe will be conducted after backfilling. NDPC, its consultants, and contractor are evaluating each discharge location based on the potential to discharge at all times of the year and in all potential weather conditions. NDPC will incorporate additional protocols, as necessary, to avoid potential erosion at discharge locations based on site conditions at all times of the year.

NDPC intends to use the DNR's General Permit 1997-0005 for water appropriations over 10,000 gallons. Per guidance from Nathan Kestner (DNR) via email on June 16, 2014, NDPC will select appropriation sites that would meet DNR's criteria of "doing no harm." All appropriation sites will be reviewed by the DNR prior to issuance of a Water Appropriations Permit. The DNR General Permit further states that water withdrawals must have a minimal potential for impacts to groundwater resources and must not adversely impact trout streams, calcareous fens, or other significant

environmental resources. NDPC may request withdrawal from impaired waters if use of the water will not impact the impairment for which the waterbody is listed. In the event that NDPC must use water from a surface water source that is designated as infested, NDPC will apply for an Infested Waters Diversion or Transportation Permit and will comply with all requirements of that permit. Water appropriation from surface waters during winter conditions is a common pipeline construction practice in Minnesota.

> *Some hydrostatic test discharges associated with Enbridge's Alberta Clipper project exceeded permitted discharge rates and caused damage to the environment, MPCA will be requiring additional, concrete assurances that discharge rates are complied with, including round-the-clock inspectors to monitor the discharges and/or additional Best Management Practices (BMPs). This may be addressed in MPCA permits for the Project which will be in development during the environmental review of the Project.*

NDPC Response: NDPC will comply with all requirements of the Individual NPDES hydrostatic test discharge permit issued for the Project. NDPC has been in discussions with MPCA NPDES permitting staff since December 2013 to discuss new procedures that will be put in place to ensure that appropriate planning occurs prior to hydrostatic test discharge activities, as well as the proper recording of information during the actual discharge event (refer to the Environment Hydrotest Discharge Authorization & Documentation (Appendix D) in the EPP). In addition, new procedures are in place to measure discharge flows. The total volume of water discharged and the discharge rate will be determined with a flow meter (or equivalent), or as required by the Individual NPDES permit. The total volume of water discharged and the discharge rate will not exceed that specified in the Individual NDPES permit (refer to Section 5.2.5 of the EPP).

IX. Water Quality, Wetlands, and Watersheds

> ***WATER QUALITY, WETLANDS, AND WATERSHEDS***
> *Controlling potential environmental issues in or near wetlands and in water bodies is another important area. Additional precautions may need to be taken in these areas. The Project will need various water permits from the MPCA. Impacts authorized under a U.S. Army Corps of Engineers Section 404 permit will need a Section 401 Certification from the MPCA. An Individual NPDES Construction Stormwater (CSW) permit will also be needed. To facilitate the MPCA's review and development of these certifications and permits, the CEA will need to provide certain information as described below.*
>
> *Frac-Out Consideration, Discharges and Spill Control*
> *Areas where soils covering pipelines are largely peat or silt are much more likely to experience frac-outs during HDD activities, or allow oil discharges from leaks to reach the surface and spread. If an oil release were to occur, clean-up would be extremely challenging (if not impossible). This may result in "in situ" burning, as was conducted near Cohasset, Minnesota in 2002. Burning, of course, may entail significant environmental impacts of its own.*
>
> *The CEA should provide any available information about soil types and the history of past frac-outs along the route, as frac-outs are likely to re-occur. This information will allow the MPCA to determine if there are areas along the route that are of high concern for frac-outs, requiring the certification to restrict or eliminate the use of drilling mud additives where frac-out contamination of the water body is more likely.*

NDPC Response: An HDD is primarily designed based upon the allowed bend radius of the pipe to be used and the desired depth of installation beneath the obstacle that is being avoided. Once a preliminary design is developed, a geotechnical assessment is conducted to confirm that the HDD design is appropriate for the sub-surface geology and conditions are favorable for HDD installation. If the sub-surface conditions are marginal, the design profile is adjusted where possible to conduct the installation within a more favorable substrate or conditions; however, that still may not guarantee a successful drill or no inadvertent returns to the surface (i.e. frac-outs). The company designing the HDD completes calculations and a model that considers soil fracture mechanics to provide an estimate on the potential for frac-outs and help guide some drilling practices that can decrease the potential for frac-outs (for instance, adjustment of mud pressures). As with any model, it is based upon the best information available as part of the geotechnical assessment and may not perfectly reflect actual conditions during HDD installation.

It should be noted that the HDD drilling fluids/mud consists primarily of water mixed with inert bentonite clay. Under certain conditions an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons. NDPC will only use non-hazardous additives and will maintain an MSDS for the drilling fluid at the work site. The drilling additives are used to create mud with desired characteristics that help maintain the integrity of the drilled hole for a

successful installation. Different additives are used at different times depending on the conditions. Some additives will help stabilize the walls from collapsing, others will prevent or slow the escape of drilling mud through small cracks or porous material. Other additives help with removal of cuttings, lubrication of the drill bit, or other necessary functions. Not allowing drilling additives could likely result in an increased chance of frac-outs and a higher potential for failed crossings.

The use of drilling mud additives is also very common in the potable well drilling industry and drilling additives have been deemed allowable by the Minnesota Department of Health for this activity. NDPC will continue to consult with the MPCA on which additives it would propose to use as part of HDD activities.

Further, NDPC has processes in place to mitigate impacts from frac-outs and a thorough and timely response and cleanup plan in place for the Project. Section 11 of the EPP describes the Drilling Fluid Response, Containment, and Notification Procedures. Containment, response and clean-up equipment will be available at both sides of an HDD crossing location prior to the commencement to assure a timely response in the event of an inadvertent release of drilling fluid. Additional inadvertent release response information is included in the NDPC responses below.

> *The CEA should describe how initial containment of frac-outs will be conducted, for instance, by having containment booms on site that are easily accessible and located in close proximity to water bodies. In addition, it should describe the actions to be taken to safely navigate the water in difficult locations, such as a peat bog, where access to parts of the water body is not available.*
>
> *On past pipeline projects, workers have endangered themselves attempting to wade out into peat bogs or very silty wetlands to isolate frac-outs in the water body. Effective and safe ways of traversing the system, such as a barge, need to be in place.*

NDPC Response: Section 11 of the EPP describes the Drilling Fluid Response, Containment, and Notification Procedures. Containment, response and clean-up equipment will be available at both sides of an HDD crossing location and one side of a guided or road bore prior to the commencement to assure a timely response in the event of an inadvertent release of drilling fluid. Containment and response equipment includes but is not limited to:

- straw bales and staking;
- pre-filled sandbags;
- turbidity curtain (not necessary for guided or road bores that do not involve a waterbody);
- silt fence;
- plastic sheeting and/or geotextile fabric;
- shovels, brooms, buckets, and other appropriate hand tools;
- pumps and sufficient hose;
- fluid storage tanks (may not be necessary for guided or road bores);
- vacuum truck on 24-hour call;
- one small boat (for larger rivers and open water wetlands); and
- light plant/generator (only necessary where operations are conducted outside of daylight hours)

In addition, one of NDPC's top priorities is the safety of the public and our workers. NDPC has strict policies regarding all aspects of working in and/or near waterbodies that will be followed in the event workers are required to traverse a waterbody.

> *It should also be described in the CEA how EPND plans to minimize the potential for frac-outs discharging drilling mud into sensitive resource areas, such as water bodies crossed via the HDD construction methods, and areas immediately adjacent to wetlands and water bodies. In past projects, specific conditions to prevent these discharges have included:*
>
> - *A Drilling Mud Containment, Response and Notification Plan. EPND should describe the site- specific locations relative to the water bodies that will be crossed, where all equipment and supplies (e.g., silt/turbidity curtains, boats, etc.) will be stored and ready for immediate deployment prior to commencing any HDD activities. At a minimum, the plan must contain: 1) maps showing the specific locations with sufficient access to each water body; 2) supporting text detailing how EPND will transport equipment, supplies and adequate staff to each location prior to starting the HDD crossing; and, 3) a Flocculent Use Contingency Plan, which identifies specific products and the methodology to be used, if necessary, to contain a drilling mud release.*

- *Requirements that if containment and cleanup equipment is deployed, sediment and/or bentonite collected by the silt/turbidity curtains shall be carefully removed and disposed of in an upland disposal location in compliance with all applicable rules and regulations.*
- *Each spread team is trained in spill response, containment and clean-up, and the required response equipment will be available at the location of the HDD with the spread team on-site.*
- *Other requirements for containment and recovery measures include adjusting drill pressures, pump volume rates and drill profiles to minimize the release, and suspending drilling operations if containment measures do not effectively control the release.*

Certain specific conditions will likely need to be developed for spills that occur near or into a wetland or water body. EPND needs to provide information as to how they can ensure that wetlands and water bodies are protected in the case of spill. Example conditions include:

- *If a spill occurs during refueling operations, the operation needs to be stopped until the spill can be controlled and the situation corrected.*
- *Use of sorbent booms and pads to contain and recover released materials in standing water.*
- *If necessary, for large spills in water bodies, the use of an Emergency Response Contractor to further contain and clean up the spill will be required.*
- *Excavation of contaminated soils in wetlands may be necessary, depending on the severity of the release. Excavated soils will need to be placed temporarily on plastic sheeting in a bermed area and covered with plastic sheeting, and secured. This should be conducted a minimum distance of 100 feet away from the wetland.*

It should be explained in the CEA how EPND should meet these conditions or other effective procedures that would be used in these situations. Procedures for evaluating and consulting on options for wetland and water body spill response should be described.

NDPC Response: Section 11.3.2 of the Project EPP describes inadvertent drilling fluid release response measures within wetlands and waterbodies and areas immediately adjacent to wetlands and waterbodies, such as stream banks or steep slopes, where drilling fluid releases could quickly reach surface waters. As described in detail below, the inadvertent drilling fluid release measures described in the EPP are thorough. Prior to the commencement of drilling operations, the Contractor will inform construction personnel involved in as to the responsible party(ies) for release containment and response.

In the event of a drilling fluid release in wetlands, waterbodies, or adjacent areas:

- The EI will evaluate the release, and the Contractor will implement appropriate containment measures.
- The EI and the Contractor will evaluate the recovery measures to determine the most effective collection method.
- NDPC Engineering and the Contractor will review and adjust drill pressures, pump volume rates, and drill profile to minimize the extent of the release.
- NDPC will suspend drilling operations if containment measures do not effectively control the release (unless suspending operations would create greater risk).

If the amount of the surface release exceeds that which can be contained with hand-placed barriers, small collection sumps (less than 5 cubic yards) may be excavated to collect released drilling fluid for removal by the use of portable pumps and hoses. If the amount of the surface release is not great enough to allow the practical physical collection from the affected area without causing additional impacts, pending appropriate approvals, it may be diluted with clean water and/or the fluid will be allowed to dry and dissipate naturally.

Excess fluid will be held within the containment area and removed using pumps or other appropriate measures at a rate sufficient to maintain secure containment. Recovered fluid will be stored in a temporary holding tank or other suitable structure out of the floodplain and/or wetland for reuse or eventual disposal in an approved disposal facility. NDPC will consult with the appropriate regulatory agencies to evaluate the circumstances of the release,

discuss additional containment or cleanup requirements, and determine whether and under what conditions the HDD may proceed.

Section 10 of the EPP addresses planning, prevention and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction. Sections 10.9.1 and 10.10 of the EPP state that if a spill should occur during refueling operations, operations shall stop until the spill can be controlled and the situation corrected. This is a requirement in uplands and wetlands. Section 10.10 of the EPP also states: 1) the Contractor will use sorbent booms and pads to contain and recover released materials in standing water, 2) if necessary, for large spills in waterbodies, the Contractor will secure an Emergency Response Contractor to further contain and clean up the spill, and 3) the Contractor will excavate contaminated soils in wetlands and temporarily place them on plastic sheeting in a bermed area, a minimum of 100 feet away from the wetland.

> *Concrete wash water, grindings and slurry, must not be discharged to wetlands, water bodies, and storm sewer systems or allowed to drain onto adjacent properties. Methods should be described by which EPND will ensure that there is no discharge of these materials.*
>
> *This could include limiting disposal to a defined area of the site within a lined containment area sufficient to contain the wash water and residual cement, and ensuring that contractors hired to provide concrete products will provide equipment capable of reclaiming wash water during wash out. Concrete slurry must be contained in a lined pit, washout container or other device.*

NDPC Response: Appropriate storage and disposal of these materials is a requirement of the MPCA's Construction Stormwater NPDES permit. The Project will comply with all permit requirements therein. Also, as described in Section 10.6.3 of the EPP, NDPC requires that the storage of petroleum products, refueling, maintenance, and lubricating operations take place in upland areas that are more than 100 feet from wetlands, streams, and waterbodies (including drainage ditches), and water supply wells. In addition, the Contractor will store hazardous materials, chemicals, fuel and lubricating oils, and perform concrete coating activities outside these areas. Please note that wherever the EPP and applicable permits regulate the same activities, the Project shall abide by the most stringent requirement.

Per Section 10.6.5 of the EPP, concrete wash water, grindings and slurry, will not be discharged to wetlands, waterbodies, or storm sewer systems, or allowed to drain onto adjacent properties. Wash water disposal will be limited to a defined area of the site or to an area designated for cement washout. The area(s) will be sufficient to contain the wash water and residual cement. Contractors hired to provide concrete products will provide equipment capable of reclaiming wash water during wash out.

> *<u>Stabilization and Erosion Control</u>*
> *The CEA should also discuss the measures that will be taken to protect soil and soil erosion, including how EPND will prevent unforeseen weather events from possibly causing significant erosion and potential discharges to water bodies. This could include performing the authorized work in spreads, and limiting the amount of excavated open trench within a spread to no more than two days of anticipated welding production. EPND will also need to describe how each spread will be restored (backfilled and BMPs in place) as the leading edge of the spread is opened and the work progresses.*

NDPC Response: The Project is subject to the MPCA's Construction Stormwater NPDES permit. The Project will comply with all permit requirements therein. Please note that wherever the EPP and applicable permits regulate the same activities, the Project shall abide by the most stringent requirement.

Temporary erosion and sediment controls are described in Section 1.9 of the EPP. NDPC will work with NPDES staff to ensure the Project's SWPPP will protect soils and prevent potential discharges to waterbodies. The length of time a trench is left open will be minimized to ensure that installation of the pipe and restoration of the construction right-of-way occurs in a timely fashion. Therefore, unless otherwise specified by Project permits or NDPC, the Contractor will limit the amount of excavated open trench to a maximum of three days of anticipated welding production per spread. This timeframe may be decreased at the discretion of NDPC based on site conditions. Site-specific activities such as horizontal directional drilling, guided bores, road bores, tie-in points, and valve work may be performed independent of a spread. Per Section 1.16.3 of the EPP, the Contractor will begin cleanup and rough grading (including installation of temporary erosion and sediment control measures) within 72 hours after backfilling the trench. The Contractor will attempt to complete this rough cleanup within one week. The Contractor will initiate final grading, topsoil replacement, seeding, and installation of permanent erosion control structures within 14 days after backfilling the trench. If seasonal or other weather conditions prevent compliance

with these timeframes, temporary erosion controls will be maintained until conditions allow completion of cleanup.

As described in Section 1.3 of the EPP, NDPC will suspend certain construction activities in wet soil conditions, based on consideration of the following factors:

- extent of surface ponding;
- extent and depth of rutting and mixing of soil horizons;
- areal extent and location of potential rutting and compaction (i.e., can traffic be rerouted around wet area); and
- type of equipment and nature of the construction operations proposed for that day.

The Contractor will cease work in the applicable area until NDPC determines that site conditions are such that work may continue. The EIs, in collaboration with NDPC construction management, will ultimately decide if wet weather shutdown is necessary in a given location.

> *Other measures to protect soil and soil erosion that should be discussed in the CEA include how EPND will segregate topsoil from subsoil in a manner that will prevent mixing when:*
>
> - *constructing the Project in cropland, hay fields, pasture, residential areas and other areas as requested by the landowner where soil productivity is an important consideration;*
> - *to the extent practicable in forested areas, standing water wetlands, and non-agricultural open areas with steep slopes adjacent to wetlands and water bodies; and,*
> - *in wetland areas without standing water.*
>
> *The CEA should also address how the soil and reserved topsoil will be replaced to the trench during backfilling.*
>
> *The CEA also needs to describe how EPND will address areas of unusually steep slopes along the Project's proposed construction route that are adjacent to waters of the state, and measures that will be used to prevent topsoil erosion and loss after construction. Measures should include those taken when cutting into parent material (as defined in Figures 1 2, 3 in the Environmental Protection Plan) for trenching, construction of the level work area or any other such cutting on the hillsides, and during backfilling. Options include removing the topsoil and storing it separately from the underlying subsoil and then replacing it in the trench in the opposite order removed. Measures should also be included for areas where there is not sufficient top soil separation for vegetation to be re-established, such as supplying suitable topsoil to ensure rapid re-vegetation and slope stabilization occurs in these sensitive areas.*

NDPC Response: The EPP was developed based on Enbridge's experience implementing BMPs during construction as well as the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures (May 2013 Versions). It meets or exceeds federal, state, tribal, and local environmental protection and erosion control requirements, specifications and practices. Per Section 1.10 of the EPP, upland areas where topsoil will be stripped include cropland, hay fields, pasture, residential areas, and other areas as requested by the Landowner or as specified in the Project plans, commitments, and/or permits. In deep soils (more than 12 inches of topsoil), topsoil will be stripped to a minimum depth of 12 inches, unless otherwise specified/requested by other plans, permit conditions, or the landowner. Additional space may be needed for spoil storage if more than 12 inches of topsoil are segregated. If less than 12 inches of topsoil are present, the Contractor will attempt to segregate to the depth that is present. Backfilling follows pipe installation and consists of replacing the material excavated from the trench. In areas where topsoil has been segregated, the subsoil will be replaced first, and the topsoil will be spread uniformly over the area from which it was removed.

In addition to the EPP, NDPC is working closely with the Minnesota Department of Agriculture to finalize an Agricultural Protection Plan ("APP"). Section 5 of the draft APP addresses topsoil stripping, trenching, soil storage, and replacement in agricultural lands.

Section 1.1 of the EPP states the EI will post signs for environmental features such as wetlands, waterbodies, drainages/drain tiles, buffer zones, rare plant or ecological community sites, invasive species and noxious weed

locations, regulated wildlife habitat, cultural resources, and erosion-prone or steep slopes. Temporary ECDs will be placed across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from tile line inlets, drainage ways, wetlands, and/or waterbodies until the area is revegetated and there is no potential scouring or sediment transport to surface waters. Erosion control blankets (curlex, jute, or equivalent) will be placed on slopes over 30 percent or that are a continuous slope to a sensitive resource area (e.g., wetland or waterway) to ensure re-vegetation and slope stabilization occurs (to preconstruction conditions) in these sensitive areas. Importing topsoil for rapid re-vegetation would require additional truck traffic which may result in additional greenhouse gas, dust, compaction impacts, and the possible introduction of invasive species.

The CEA should describe how EPND will implement and ensure compliance with intended requirements in the Individual NPDES CSW permit. This would include, but not be limited to:

- *As a general rule, use of straw bales for sediment control should only be used in mucky, wetland soils. When used in upland situations, straw bales are as likely to increase soil erosion and transport, by increasing flow velocities in gaps between or outside of the bales as they are to decrease it.*
- *Remedying sediment-buried silt fences; removal of sediment from silt fences will not suffice. Once the silt fence has been plugged with excess sediment, it will no longer function properly and should be replaced with a new layer of silt fence.*
- *Stabilization procedures within 24 hours of ceasing construction in an area if the earth moving activity is expected to cease for at least 14 days. On a pipeline project, this should be easy to predict and stabilization procedures should begin almost immediately after the pipeline trench has been backfilled.*
- *On steep slopes, or slopes draining to surface waters (ditches, wetlands, streams, lakes), ditch checks should be installed over backfilled pipe trenches that were opened and closed during frozen soil conditions, as subsidence of thawing soils (frozen soils backfill in chunks) will create stormwater and snowmelt conveyances that could impact surface waters. Preparation for this phenomenon would include treating those backfilled trenches as ditches before they become ditches.*
- *Mulch or other erosion control will be required on all exposed upland soils, regardless of slope. Seeding in and of itself is not considered stabilization. Hydromulch with liquid tackifier or hydraulic soil stabilizers are preferred to standard mulch on steeper slopes or prior to snowfall, as mulch will not be effective throughout the winter in most conditions.*
- *Straw bales should not be used as slope breakers or as sediment control on upland slopes. Straw mulch should be applied at a minimum rate of two tons per acre, but ground coverage for straw mulch to be effective should be at least 90 percent, not 75 percent. Stabilized earthen berms have worked well in the past, although biologs or wattles may be effective in some areas. Gaps between spoil piles must be stabilized with blankets or other effective erosion control.*
- *Additional information is required as to the composition and manufacturer's recommendation on the foam pillows.*
- *Clean construction mats that are used by heavy equipment to enter streams are unlikely to remain clean for long. If mats or temporary bridges are used, it will be necessary to install some type of sediment control, such as triangular silt dikes, along each edge of the bridge or mat to ensure that sediment stays on the bridge or mat until the work is complete. At that time, the sediment may be removed by whatever means are necessary to keep it out of the receiving waters.*
- *Vegetation used to restore stream banks should be similar in species composition to the vegetation growing on the site prior to disturbance.*

NDPC Response: NDPC will work with MPCA staff to develop a SWPPP and implementation plan that ensures compliance with applicable requirements in the Individual NPDES construction stormwater permit, as NDPC has done on past projects. NDPC appreciates the MPCA's input on the possible methods and BMPs that may be used to comply with the Construction Stormwater NPDES for the Project. These and other, state-of-the-industry procedures and BMPs may be employed in the pursuit of permit compliance on the Project.

Environmental inspection will be conducted during and following construction. Contract specifications will incorporate environmental protection and mitigation measures required by regulation, NDPC specifications, and environmental permits. NDPC's contractors will be obligated to implement these measures in the field. NDPC also provides environmental training and Project orientation to contractors and their personnel, as applicable.

NDPC understands that sediment controls must be repaired, replaced, or supplemented when they become

nonfunctional, or sediment reaches 1/3 the height of the control.

The FERC Upland Erosion Control, Revegetation, and Maintenance Plan recommends spreading mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing. NDPC has had success with spreading mulch over the area to cover at least 75 percent on past projects and is concerned 90 percent would not be conducive to germination.

Construction timing is dependent on several factors including permit issuance. It should be noted that while NDPC intends to minimize winter construction and subsidence to the extent possible, if the backfill subsides, so too would the ditch checks. With that said, during final grading, slopes in areas other than cropland will be stabilized with erosion control structures such as permanent berms (diversion dikes or slope breakers) to minimize the potential for channelized flow and sediment transport toward the waterbodies (refer to Section 1.17 of the EPP).

As part of the Alberta Clipper/Southern Lights Project, the MPCA identified a similar concern regarding the material composition of 'foam ditch pillows'. A full study and report was submitted to the MCPA on February 22, 2010, and is attached as Appendix A3.

Section 2.4.2 of the EPP states that bridges will be designed and maintained to prevent soil from entering the waterbody. Soil that accumulates on the bridge decking will be removed as needed, or as deemed necessary by the EI (refer to Figure 19 of the EPP). The intent of EPP is to allow the contractor to utilize the best means available to prevent sediment from entering waterbodies.

Section 7.9 of the EPP states NDPC will reestablish stream bank vegetation using the Upland seed mix listed in Appendix C, Table 2, unless an alternate seed mix is requested by applicable agencies and/or private landowner. Additional vegetation requirements may also be contained within Project specific permits. Where a waterbody is located within a wetland, the Contractor will re-seed the banks with the applicable wetland seed mix. In NDPC's experience, seed mixes are selected to allow for rapid re-vegetation to minimize erosion potential and allows native species to fill in over time.

> *Subsidence of Soils Due to Winter Construction*
> *A considerable amount of the excavation work that EPND will perform will occur during frozen soil conditions. When these frozen chunks of soil are excavated and then replaced over the trench, large gaps of air are included with the soils. During spring thaw, the ice in these soils melt and "subsidence" occurs; the soils sinks over the trench area, often forming what is essentially a ditch. On slopes that drain to surface water, these ditches act as conveyances which accelerate movement of water and sediment transport toward the water bodies. To prevent this, all trenches that are excavated during frozen soil conditions, and that drain toward surface waters (wetlands, streams, lakes, ditches), must have ditch checks installed as the trenches are buried. These can be in the form of triangular silt dikes, biorolls, silt fence, rock checks, or subterranean rocks, but some type of ditch checks must be installed, with spacing dependent on the degree of slope, in anticipation of subsidence in the spring.*

NDPC Response: As detailed by the MPCA above, winter construction is associated with several considerations and potential complexities related to stormwater. NDPC is well aware of these issues, and has many proactive BMPs built in to the Project EPP. It should be noted, however, that construction timing is dependent on several factors including permit issuance. NDPC intends to minimize winter construction and subsidence to the extent possible. During final grading, slopes in areas other than cropland will be stabilized with erosion control structures such as permanent berms (diversion dikes or slope breakers) to minimize the potential for channelized flow and sediment transport toward the waterbodies (refer to Section 1.17 of the EPP).

> *Wetland Mitigation*
> *The CEA should describe the compensatory mitigation that EPND will provide for the permanent loss of waters and wetlands.*

NDPC Response: NDPC has designed the Project to avoid and minimize permanent loss of waters and wetlands to the extent practicable. This type of thorough route selection is advanced after tens of thousands of hours conducting detailed environmental survey, landowner discussions, and constructability reviews by staff experienced in pipeline construction and design. Any permanent loss of wetlands, as well as functional loss resulting from wetland type conversion will be mitigated through the purchase of wetland bank credits, as required by the ACOE.

In addition, NDPC is working with the Minnesota Board of Water and Soil Resources ("BWSR") and Wetland Conservation Act ("WCA") Local Government Units ("LGUs"). Once wetland field surveys are complete, NDPC will send the wetland survey reports to BWSR and the LGUs and request a Decision of Wetland Boundary and Type and Decision of Exemption for the entire Project. The Project is anticipated to be exempt from mitigation through the Utilities Exemption provision of the WCA.

> ***CONCLUSION***
> *The MPCA is aware that Enbridge has not fully complied with applicable water quality rules and regulations when constructing or expanding pipelines. The Alberta Clipper project brought about enforcement action to settle federal allegations that the project resulted in fifteen instances of illegal discharges into Minnesota wetlands and rivers while testing two of the newly constructed pipelines. The discharge of test water from a 36-inch pipeline at a site just north of Bemidji eroded a hillside and created a gully 50 to 60 feet long, 15 feet wide and 10 feet deep, leaving up to a foot of sediment in a wetland and sending rust-colored water into the Mississippi River. In view of this history, it will be necessary to provide additional assurances to the MPCA concerning the additional efforts and resources which will be employed to ensure this Project will not result in similar non-compliance.*
>
> *We anticipate additional comments as the development of future project-related documents, such as the Draft CEA, unfolds. Comments provided in this letter are intended to be addressed and incorporated into the Draft CEA.*
>
> *We look forward to assisting the Department of Commerce, as desired, during the preparation of the CEA for this project and its subsequent review upon its release. Through this process, the MPCA seeks to obtain further additional information to facilitate the MPCA staff review of the Project, well in advance of the time a favorable determination on the required MPCA authorizations is needed to commence construction. Ultimately, it is the responsibility of EPND to secure any required permits and to comply with any requisite permit conditions. If you have any questions, please contact me at 651-757-2465.*
>
> ***End of MPCA Letter***

NDPC Response: NDPC will secure all permits required for the Project as well as comply with the conditions of those permits during construction and restoration.

The enforcement actions referenced by MPCA have been resolved. The erosion issue noted above at the Mississippi River was fully restored to preconstruction conditions to the satisfaction of all agencies, including the MPCA, and did not result in permanent damage to the resource. In addition, several hydrotest discharges were conducted by Enbridge and approved by MPCA following the erosion event at the Mississippi River without incident.

NDPC has been in discussions with MPCA NPDES permitting staff since December 2013 to discuss new procedures that will be put in place to insure appropriate planning occurs prior to hydrostatic test discharge activities, as well as the proper recording of information during the actual discharge event (refer to the Environment Hydrotest Discharge Authorization & Documentation (Appendix D) in the EPP). In addition, new procedures are in place to measure discharge flows. The total volume of water discharged and the discharge rate will be determined with a flow meter (or equivalent), or as required by the applicable state permit. The total volume of water discharged and the discharge rate will not exceed that specified in the applicable permit (refer to Section 5.2.5 of the EPP).

Appendix A1

MPCA Correspondence Dated April 21, 2014

North Dakota Pipeline Company LLC
1409 Hammond Avenue, Second Floor
Superior, Wisconsin 54880
Tel 715 398 4500

April 21, 2014

Ms. Patrice Jensen, Principal Planner
Minnesota Pollution Control Agency – Environmental Review
520 Lafayette Road
St. Paul, MN 55155

Subject: North Dakota Pipeline Company LLC
Sandpiper Pipeline Project – Pipeline Routing Permit Application, MPUC Docket No. PL-6668/PPL-13-474

Dear Ms. Jensen:

North Dakota Pipeline Company LLC (NDPC) received the Minnesota Pollution Control Agency's (MPCA) April 4, 2014 comment letter addressed to Mr. Larry Hartman, Environmental Manager, Minnesota Department of Commerce regarding NDPC's proposed Sandpiper Pipeline Project ("Project"). NDPC wants to take this opportunity to formally respond. Our response is structured to correspond with those headings used in your April 4, 2014 letter, specifically, the items requested by MPCA in Appendix A. In addition, our responses below include feedback provided by MPCA during our phone conversation of April 16, 2014.

- **Locations of all water bodies (including wetlands) proposed to be crossed by the Project**
  - Wetlands and water bodies crossed by the Project were presented on Appendix D of the U.S. Army Corps of Engineers (ACOE) application provided to MPCA on March 20, 2014.

- **Identification of all delineated wetland types and locations at or near the Project route**
  - Delineated wetlands by type and location proposed to be crossed by the Project were presented in Appendix B and depicted on aerial maps, by County crossed in Appendix D of the ACOE application provided to the MPCA on March 20, 2014. This encompassed our 'survey area' which generally was 250 to 450 feet wide. Wetlands outside of the survey area were not field delineated as Enbridge did not seek additional survey access. During the call on April 16th, MPCA requested a list of hydraulically connected wetlands to impaired or ORVW waters within 1-mile downstream of the proposed crossing which helped quantify the 'or near' request. Status of this request is provided below.

- **Precise milepost locations of all water body crossings by the Project**
  - Mileposts were included on the aerial maps in Appendix D and crossing mileposts were included in the tables under Appendices A and B, respectively in the ACOE application provided to MPCA on March 20, 2014.

- **Department of Natural Resources public water status of water bodies crossed by the Project**
  - Public Water Inventory data was included in Appendix A of the ACOE application provided to MPCA on March 20, 2014.

- **Proposed crossing methods of all water bodies, with alternative proposed crossing methods by the Project**
  - Water body crossing methods and alternative crossing methods are included in Appendix A of the ACOE application provided to MPCA on March 20, 2014.

- **Date restrictions when construction will not be allowed**
  - Preliminary information based on known timing restrictions for resources are included in Appendix A of the ACOE application. As agency communications progress, additional updates to the timing restrictions will be provided to MPCA. At this time, we have identified likely warm and cold water fishery spawning restrictions for 'in-stream' work.

- **Depiction and identification of environmental sensitive areas crossed by the Project**
  - We are working closely with local, state and federal agencies to identify environmental sensitive areas (ESA) crossed by the Project. Once agency consultation is complete, map books presenting ESAs crossed by the project can be developed and provided to MPCA, similar to what was developed for past projects.

- **Depiction of all existing access roads and proposed to be constructed access roads by the Project**
  - At this time, NPDC has tentatively identified some access roads that may be necessary for construction of the Project, as provided in Table 1.2.2-1 of the Environmental Information Report (see below). As additional access roads are identified during Project planning and engineering, NDPC can provide regular updates to MPCA. Access roads are typically identified throughout the landowner easement acquisition process which will mostly occur in 2014 along the proposed route and in conjunction with the PUC Route Permit process to establish the final route.

Table 1.2.3-1
Access Roads Used by the Sandpiper Pipeline Project

County [a]	Milepost Range	Number of Access Roads
Polk	301.2 – 367.2	22
Clearwater	368.0 – 406.5	35
Hubbard	408.1 – 459.3	48
Cass	461.8 – 474.4, 485.3 – 508.8	37
Crow Wing	480.9 – 481.7	2
Aitkin	510.9 – 556.3	38
Carlton	563.1 – 588.5	20
	Total	**202**

[a] At this time no access roads are planned for Red Lake County.

- **Width and bank height of streams and rivers being crossed by the Project**
  - The crossing width and depth of water bodies is presented on Appendix A of the ACOE application provided to MPCA on March 20, 2014.

- **Water bodies within 1 mile downstream of the proposed stream/river/wetland crossing of the Project and the distance to these waters**
    - On March 7, 2014 NDPC received a request from MPCA for *"all receiving waters downstream of waters being crossed by the proposed pipeline"*. This information was provided in table format on March 14, 2014 and included the following:
        - Mile Post
        - Unique feature ID number
        - Water body name
        - Water body type
        - Agency designation
        - Impairment status
        - Proposed crossing method
        - Alternative crossing method
        - MPCA classification

- **Impairment status of water bodies downstream of the Project crossings**
    - Water body impairment status is included on Appendix A of the ACOE application provided to MPCA on March 20, 2014**.**

- **Special Waters (ORVW) within 1 mile downstream of the Project Crossings**
    - NDPC will provide a map of Outstanding Water Value Resources (ORVW) within 1 mile downstream of the Project crossings by April 25, 2014.

- **Soil erodibility along the Project route weighted by slope**
    - On March 7, 2014 NDPC received a request from MPCA for "*a soils map for the length of the project. In addition to this, the DNR has a layer that shows soil erodibility weighted by slope. This would be very useful for review of this project. If you cannot provide that layer, then we would request that you identify all slopes over 5% along the route".* The following response was provided to MPCA on March 14, 2014 and included a map with table indicating Soil Slope Class:

> "After review of the MNDNR's soils data available on DataDeli ("Soils and Land Surfaces of Minnesota (Cummins and Grigal)"), NDPC determined the most accurate assessment of slope class of soils crossed by the Project could be provided by using the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soil databases. These databases were used in the soils analysis presented in the Environmental Information Supplement submitted as part of the Minnesota Public Utilities Commission filing in January 2014.
>
> Detailed soil characteristics along the majority of the preferred route were identified and assessed using the SSURGO database. SSURGO data was unavailable for Crow Wing County and STATSGO2 data did not provide the required information for slope calculation. We referenced the "slopegradw" column of the soil attribute data and calculated the crossing lengths of soils in various slope classes, broken out by county as presented in the attached table ("SPP_Slope_Class_Table_2014-03-14"). "Slopegradw" represents the weighted average slope for a given soil map unit. The attached figure ("SPP_Soil_Slope_Class_Map_2014-03-14") presents this data as well."

We appreciate your detailed review of the Sandpiper Pipeline Project. NDPC is committed to working with MPCA staff towards the successful permitting and construction of this Project.

Thank you for your consideration.

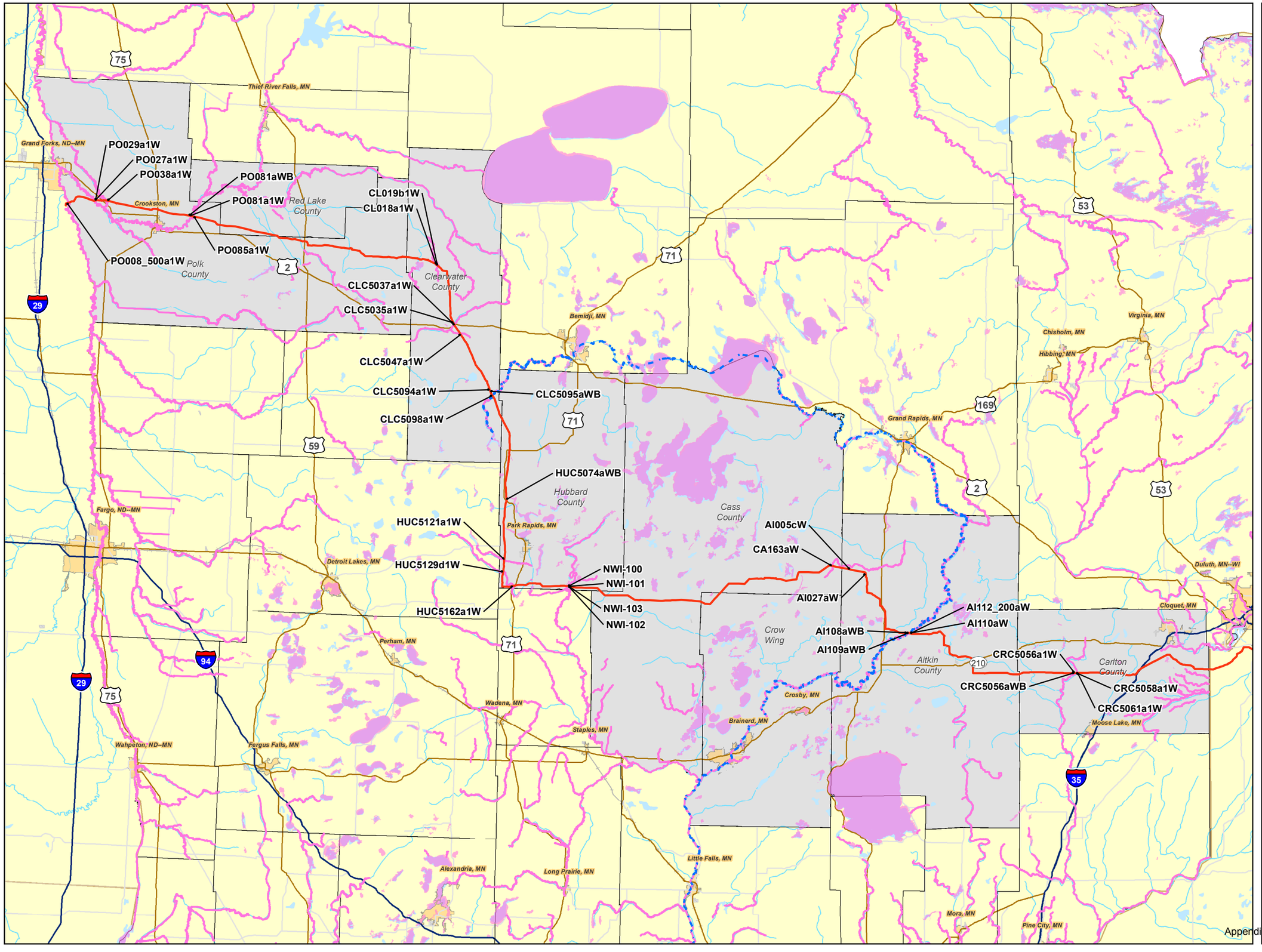
Sincerely,

Sara Ploetz
Environmental Analyst II
Enbridge

cc: Paul Meneghini, Enbridge
Angie Ronayne, Merjent
Larry Hartman, MN DOC
Scott Lucas, MPCA
Craig Affeldt, MPCA
Catherine Neuschler, MPCA
Doug Bellefeuille, MPCA
Tom Estabrooks, MPCA
Tim James, MPCA
Kevin Kain, MPCA
Greg Kvaal, MPCA
Emma Ogaard, MPCA
Jeremy Sanoski, MPCA
William Wilde, MPCA

Appendix A2

MPCA Correspondence Dated April 25, 2014



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N W E S

- Sandpiper Pipeline Project
- Outstanding Resource Value Waters
- Imparied Streams
- Impaired Lakes
- County Boundary

Sandpiper Pipeline Project

Impaired and Outstanding Resource Value Waters Within 1-Mile Downstream of Project Crossings

ENBRIDGE

Appendix K - Response to Sandpiper Comment Letters

Source: Z:\Clients\E_H\Enbridge\SandpiperArcGIS\2014\04\Impaired_Waters\Impaired_Waters_ORV_Overview.mxd

Date: (4/25/2014)

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
Polk County								
300.0	PO008_500aWB	Red River	River/Stream	Section 10, 303 Impaired Water, Canoe Route, Public Water	Mercury, PCB	HDD	Open cut	1C, 2Bd, 3C
302.7	PO011aWB	Unnamed Stream	River/Stream	Public Water		Bore	Open cut	
303.8	PO016aWB	Unnamed Stream	River/Stream	Public Water		Open Cut	Bore	
306.2	PO027aWB	Red Lake River	River/Stream	Section 10, 303 Impaired Water, Public Water, NRI, Canoe Route	Mercury, Temperature	HDD	Open cut	1C, 2Bd, 2C
308.6	PO038a1W	Grand Marais Creek	River/Stream	303 Impaired Water, Public Water	Dissolved Oxygen, pH, Temperature	Open Cut	Bore	
309.3	PO037aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
310.2	PO041aWB	County Ditch 34	Drainage ditch	None		Bore	Open cut	
312.4	PO048aWB	Judicial Ditch 60	Drainage ditch	None		Bore	Open cut	
312.4	PO049aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
313.4	PO051_100aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
316.5	PO061aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	Open cut	
321.8	PO075aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
323.7	PO079aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
324.7	PO080aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
	Drains to the Red Lake River approximately 0.7 mile downstream into a segment of the river that is designated as 2012 Impaired and propsed as Impaired in 2014.							
324.7	PO081aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
	Drains to Red Lake River approximately 0.7 mile downstream into a segment of the river that is designated as 2013 Impaired and propsoed as Impaired in 2014.							
325.6	PO085aWB	Red Lake River	River/Stream	Section 10, 303 Impaired Water, Canoe Route, Public Water	Mercury, Temperature	HDD	Open cut	1C, 2Bd, 2C
326.5	PO088aWB	Kripple Creek	River/Stream	Public Water		Open Cut	Bore	
327.8	PO091aWB	Unnamed Ditch	Drainage Ditch	None		Bore	Open cut	
329.4	PO096aWB	Unnamed Ditch	Field drainage ditch	None		Open Cut	None	
	Could drain to Kripple Creek, a MNDNR Public Water, approximately 0.6 mile away							
329.8	PO096bWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
	Could drain to Kripple Creek, a MNDNR Public Water, approximately 0.1 mile away							
329.9	PO097aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
	Could drain to Kripple Creek, a MNDNR Public Water, approximately 0.1 mile away							
Red Lake County								
331.1	RE001aWB	Judicial Ditch 66 (6b)	Drainage ditch	Public Water		Bore	Open cut	
333.1	RE004aWB	Judicial Ditch 66 (6b)	Drainage Ditch	None		Bore	Open cut	
335.6	RE007aWB	Judicial Ditch 64	Drainage ditch	Public Water		Open Cut	None	
336.5	RE008aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
338.2	RE012aWB	Judicial Ditch 64	Drainage ditch	None		Open Cut	None	
339.2	RE014aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
339.7	RE014bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
340.2	RE017aWB	Unnamed Ditch	Drainage ditch	None		Bore	Open cut	
340.5	RE017bWB	Lower Badger Creek	River/Stream	Public Water		Open Cut	None	2
340.7	RE017cWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
Polk County								
342.8	PO099_520bWB	Beau Gerlot Creek	River/Stream	None		Open Cut	None	
	Appears to be a ditch that drains into Beau Gerlot Creek, a MNDNR Public Water, less than 0.1 mile away							
343.0	PO099_520aWB	Beau Gerlot Creek	River/Stream	Public Water		Open Cut	None	
343.8	PO100aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Could drain into Beau Gerlot Creek, a MNDNR Public Water, and the unnamed MNDNR Public Water Basin through which it flows, less than 0.8 mile away							
346.9	PO109aWB	Poplar River	River/Stream	Public Water		Open Cut	None	
353.0	PO131aWB	Ditched stream	Drainage ditch	None		Open Cut	None	
	Appears to drain into a MNDNR unnamed Public Water Basin approximately 0.3 mile away							
353.9	PO134aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Appears to drain into the MNDNR unnamed Public Water Basin that contains Evenmoe Lake approximately 0.5 mile away							
357.1	PO144aWB	Hill River	River/Stream	Public Water		Open Cut	None	2C
360.8	PO155_502aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Could possibly drain into a MNDNR unnamed Public Water Basin approximately 1 mile away							
363.1	PO155_514aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Hamre Lake, a MNDNR unnamed Public Water Basin approximately 0.2 mile away							
Clearwater County								
371.2	CL009aWB	Lost River	River/Stream	Public Water		Open Cut	None	1B, 2A, 3B
374.8	CL018bWB	Silver Creek	River/Stream	Public Water, 303 Impaired Waterbody	Fecal Coliform	Open Cut	Dry Crossing	
375.1	CL019bWB	Silver Creek	River/Stream	Public Water, 303 Impaired Waterbody	Fecal Coliform	Open Cut	Dry Crossing	
375.4	CL019aWB	Silver Creek	River/Stream	Public Water, 303 Impaired Waterbody	Fecal Coliform	Open Cut	Dry Crossing	
382.8	CLC5018aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into a MNDNR unnamed Public Water Basin approximately 0.8 mile away							
387.9	CLC5037aWB	Clearwater River	River/Stream	Public Water, 303 Impaired Waterbody, NRI	Mercury, Dissolved Oxygen	HDD	Open cut	1B, 2A, 3B
389.9	CLC5048aWB	Walker Brook	River/Stream	Public Water, 303 Impaired Waterbody	Dissolved Oxygen	Open Cut	None	
391.1	CLC5051aWB	Unnamed Stream	River/Stream	Public Water		Open Cut	None	
396.7	CLC5074aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Could possibly drain into Mud Lake, a MNDNR Public Water Basin approximately 0.5 mile away							
400.6	CLC5085_210aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
402.7	CLC5095aWB	Bear Creek	River/Stream	Public Water		Open Cut	None	2C
	Drains to the Mississippi River approximately 0.8 mile downstream into a segment of the river that is designated as MNDNR Public Water, 2012 Impaired, and Canoe Route; also drains into a segment of the Mississippi River designated as an Outstanding Resource Value Water at approximately 1 mile downstream.[d]							

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
403.6	CLC5098aWB	Mississippi River	River/Stream	Public Water, 303 Impaired Waterbody, Canoe Route, Outstanding Resource Value Water [d]	Dissolved Oxygen	HDD	Open cut	2B, 3C
407.3	CLC5113aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Big LaSalle Lake, a MNDNR Public Water Basin approximately 0.3 mile away							
Hubbard County								
408.4	HUC5002aWB	La Salle Creek	River/Stream	Trout Stream, Public Water, Aquatic Management Area		Dry Crossing	Open cut	1B, 2A, 3B
	Drains into Big LaSalle Lake, a MNDNR Public Water Basin approximately 0.5 mile away							
424.5	HUC5074aWB	Unnamed Stream	Open water wetland /Beaver dam/pond	Public Water		Open Cut	None	
	Drains into Island Lake, a MNDNR Public Water Basin approximately 0.6 mile away, designated as Impaired in 2012 and proposed as Impaired in 2014.							
425.9	HUC5081aWB	Hay Creek	River/Stream	Public Water		HDD	Open cut	
436.3	HUC5122_200aWB	Straight River	River/Stream	Trout Stream, Public Water 303 Impaired Water	Dissolved Oxygen	HDD	Open cut	1B, 2A, 3B
438.7	HUC5130aWB	Shell River	River/Stream	Public Water		HDD	Open cut	
443.5	HUC5162aWB	Shell River	River/Stream	Public Water, Impaired Water		Bore	Open cut	
445.8	HUC5175aWB	Shell River	River/Stream	Public Water		HDD	Open cut	
447.4	HUC5179_240aWB	Oxbow Pond and Shell River	River/Stream	Public Water		HDD	Open cut	
	Drains into the northern portion of Twin Lakes , a MNDNR Public Water Basin, approximately 0.5 mile away, designated as Impaired and proposed as Impaired for 2014							
454.6	HUC5202aWB	Crow Wing River	River/Stream	Public Water, 303 Impaired Water Canoe Route	Mercury	Dry Crossing	Open cut	
Cass County								
461.3	CAC5001aWB	Ditch	Drainage ditch	None		Open cut	None	
461.6	CAC5004aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
462.4	CAC5007aWB	Big Swamp Creek	River/Stream	Public Water		Open Cut	None	
463.1	CAC5010aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
479.2	CA063aWB	Pine River	River/Stream	Public Water, Canoe Route		Dry Crossing	Open Cut	
Crow Wing County								
483.3	CW014aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Appears to drain into Clough Lake, a MNDNR Public Water Basin approximately 0.8 mile downstream							
484.4	CW021aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Jail Lake, a MNDNR Public Water Basin approximately 1 mile downstream							
485.5	CW027aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
Cass County								

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
488.3	CA085aWB	Blind Lake Creek	River/Stream	Public Water		Dry Crossing	Open Cut	
490.9	CA096aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Although the drainage cannot be determined, the following MNDNR Public Water Basins are located entirely or partially within 1 mile of the crossing at lower elevations: Stony, Lee, Peterson, and McGinty Lakes, and six unnamed basins.							
492.2	CA104aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Although the drainage cannot be determined, three unnamed Public Water Basins are located within 1 mile of the crossing at similar or lower elevations							
495.7	CA118_200aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
496.2	CA120_200AWB	Unnamed Stream	River/Stream	None		Open Cut	None	
497.9	CA127aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
499.2	CA133aWB	Dagget Brook	River/Stream	Public Water		Open Cut	None	2C
503.4	CA153aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Although the exact drainage path is uncertain, appears to drain into Spring Brook (MNDNR Public Water, Trout Stream, and Aquatic Management Area) and Scout Camp Pond (MNDNR Public Water Basin) within 0.2 mile							
503.5	CA153bWB	Spring Brook	River/Stream	Public Water, Trout Stream, Aquatic Management Area		Dry Crossing	Open Cut	1B, 2A, 3B
	Drains into Scout Camp Pond, a MNDNR Public Water Basin approximately 0.1 mile downstream							
508.0	CA160aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
508.6	CAC5161aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
509.4	CA162aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Although exact drainage path is uncertain, it could drain into Moose River (MNDNR Public Water and 2012 Impaired) and Reservoir and Little Reservoir Lakes (MNDNR Public Water Basins) within 1 mile.							
510.0	CA163cWB	Moose River	River/Stream	Public Water 303 Impaired Waterbody, NRI	Dissolved oxygen	Open Cut	None	
	Drains into Reservoir and Little Reservoir Lakes (Public Water Basins) approximately 0.4 miles downstream							
Aitkin County								
511.9	AI001aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Third Guide Lake, a MNDNR Public Water Basin approximately 0.1 mile away, and Moose River, a MNDNR Public Water that flows through it designated as Impaired in 2012 and proposed as Impaired in 2014							
515.4	AI020aWB	Unnamed Stream	River/Stream	Public Water		Open Cut	None	
517.2	AI027aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
521.0	AI038aWB	White Elk Creek	River/Stream	Public Water		Open Cut	None	
521.6	AI040aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
521.6	AI040bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
521.7	AI040cWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
521.7	AI040_500bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
528.7	AI083_200aWB	White Elk Creek	River/Stream	Public Water		Open Cut	None	
530.8	AI097aWB	Willow River	River/Stream	Public Water NRI		HDD	Open cut	
532.4	Not available	Unnamed Ditch	Drainage ditch	None		Open Cut	Open cut	
533.3	AI108aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into the Mississippi River, a MNDNR Public Water and Canoe Route approximately 0.2 mile away, designated as 2012 Impaired							
533.6	AI109aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into the Mississippi River, a MNDNR Public Water and Canoe Route approximately 0.2 mile away, designated as 2012 Impaired							

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
534.0	AI112_200aWB	Mississippi River	River/Stream	Section 10, Public Water 303 Impaired Waterbody, Canoe Route, Outstanding Resource Value Water [d]	Mercury, temperature	HDD	Open cut	2B, 3C
535.5	AI171_210aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
535.8	AI171_210aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
536.3	AI116_200aWB	Unnamed Ditch	Ditch	None		Open Cut	None	
536.5	AI116_200cWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
537.5	AI120aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
538.5	AI121_200bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
539.1	AI121_200_515cWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
539.3	AI121_200_515bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
539.6	AI121_200_525aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
540.0	AI121_200_530aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
541.0	AI125aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	Open cut	
	Appears to drain into Portage Lake, a MNDNR Public Water Basin approximately 0.9 mile downstream							
541.9	AI126_200aWB	Unnamed Ditch	Ditch adj. to rd.	None		Open Cut	Open cut	
	Appears to drain into Portage Lake, a MNDNR Public Water Basin approximately 0.9 mile downstream							
543.3	AI130aWB	Sandy River	River/Stream	Section 10 Public Water		HDD	None	
544.1	AI136aWB	Unnamed Ditch	Ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.6 mile downstream							
544.4	AI136aWB	Unnamed Ditch	Ditch	None		TBD	TBD	
545.1	AI138aWB	Unnamed Stream	Ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.3 mile downstream							
545.3	AI138_340cWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.1 mile downstream							
545.6	AI138_340aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.2 mile downstream							
546.9	AI2C5147aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.7 mile downstream							
547.5	AI2C5148aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.7 mile downstream							
547.5	AI2C5148bWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.7 mile downstream							
548.0	AI2C5150_200aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.9 mile downstream							
549.8	AI2C5155aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water approximately 0.4 mile downstream							
550.1	AI2C5156aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Sandy River, a MNDNR Public Water less than 0.1 mile downstream							
550.2	AI2C5157aWB	Sandy River	River/Stream	Public Water		Bore	Open cut	
550.4	AI2C5159_300aWB	Ditch	Ditch adj. to rd.	NA		Open Cut	Open cut	

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification
	Drains into Sandy River, a MNDNR Public Water approximately 0.2 mile downstream							
556.9	AIC5304aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Possibly drains into Sandy River, a MNDNR Public Water approximately 0.2 mile away							
557.0	AIC5306aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Possibly drains into Sandy River, a MNDNR Public Water approximately 0.1 mile away							
558.2	AIC5311aWB	Unnamed Ditch	Drainage ditch	None		Open Cut	None	
	Drains into Rice Lake, a MNDNR Public Water Basin, and Sandy River, a MNDNR Public Water, approximately 0.4 mile downstream							
Carlton County								
564.6	CRC5014aWB	West Branch Kettle River	River/Stream	Public Water		Open Cut	None	2C
564.8	CRC5016aWB	West Branch Kettle River	River/Stream	Public Water		Open Cut	None	
569.3	CRC5040aWB	Heikkila Creek	River/Stream	Public Water		Open Cut	None	
572.5	CRC5056aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Kettle River, a MNDNR Public Water designated as 2012 Impaired approximately 0.3 mile downstream							
572.9	CRC5059aWB	Kettle River	River/Stream	Section 10, Impaired Water, Public Water	Mercury	Dry Crossing	Open cut	2C
575.8	CRC5074aWB	West Fork Moose Horn River Tributary	River/Stream	None		Open Cut	None	
	Drains into West Fork Moose Horn River, a MNDNR Public Water approximately 0.9 mile downstream							
577.4	CRC5083aWB	West Fork Moose Horn River	River/Stream	Section 10, Public Water		Open Cut	None	
578.2	CRC5088aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
578.9	CRC5091aWB	King Creek	River/Stream	Public Water, Trout stream		Dry Crossing	Open cut	
579.5	CRC5093aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into the east tributary to King Creek, a MNDNR Public Water and Trout Stream less than 0.1 mile downstream							
581.4	CRC5107aWB	Park Lake Creek	River/Stream	Public Water		Dry Crossing	Open cut	
581.9	CRC5110aWB	Unnamed Stream	River/Stream	None		Open Cut	None	
	Drains into Park Lake Creek, a MNDNR Public Water approximately 0.4 mile downstream							
582.4	CRR51001aWB	Moose Horn River (Moose River)	River/Stream	Section 10 Public Water		Open Cut	Open cut	
586.7	Not Available	Unnamed Stream	River/Stream	Trout stream, Public Water		Open Cut	None	1B, 2A, 3B
586.7	Not Available	Blackhoof River	River/Stream	Trout stream, Public Water		Open Cut	Open cut	1B, 2A, 3B
588.2	Not Available	Unnamed Stream	River/Stream	None		Open Cut	None	
	Intermittent tributary to Blackhoof River that becomes a MNDNR Public Water and Trout Stream 0.4 mile downstream of the crossing							
597.7	CR144aWB	Unnamed Stream	River/Stream	Public Water		Open Cut	None	
599.6	Not Available	Unnamed Stream	River/Stream	None		Open Cut	None	

Designates a segment of the pipeline route that was realigned after the field season ended in the fall 2013; therefore, waterbodies were identified using the National Hydrography Dataset. Crossing widths and depths are estimated. Field surveys will be conducted in the spring 2014 to verify and characterize waterbodies crossed.

[a] Information regarding Impaired Waters was obatined from the Minnesota Pollution Control Agency's December 2, 2013 Impaired Streams, Minnesota, 2014 (Draft) dataset.

Sandpiper Pipeline Project
Waterbodies in Minnesota Within One Mile Downstream of Crossings

Milepost	Feature Unique ID Number	Waterbody	Waterbody Type	Agency Designation	Impairment [a]	Proposed Crossing Method [b]	Alternative Crossing Method [c]	MPCA Classification

[b] Proposed waterbody crossing methods are based on engineering investigations, constructability, and environmental constraints. No special method indicates an ephemeral channel identified during field surveys that lacks a defined bed and bank in the construction work area; therefore, wetland and waterbody construction requirements do not apply.

[c] It is possible that an HDD or guided bore may encounter subsurface objects that prevents the drill from being successfully completed. If this occurs, Enbridge will attempt a slightly adjusted drill path to avoid the object. If boulders or hard bedrock interferes with the adjusted drill path, NDPL will abandoned the drill after two attempts and cross the waterbody using the alternative method.

[d] Outstanding Resource Value Waters determined from Minnesota Rules 7050.0180 (https://www.revisor.mn.gov/rules/?id=7050.0180).

Sandpiper Pipeline Project
Impaired and Outstanding Resource Value Waters in Minnesota Within One Mile Downstream of Wetland Crossings

Beginning Milepost	Ending Milepost	Unique ID Number	Type of Wetland Crossed	Proposed Crossing Method	Waterbody	State Designation [a]	MPCA Classification
Polk County							
300.03	300.10	PO008_500a1W	Seasonally Flooded Basin	Open Cut Trench	Adjacent to Red River of the North	Impaired: Mercury and PCBs	1C, 2Bd, 3C
306.19	306.20	PO027a1W	Seasonally Flooded Basin	Open Cut Trench	Adjacent to Red Lake River	Impaired: Mercury and Temperature	1C, 2Bd, 3C
306.23	306.27	PO029a1W	Floodplain Forest	Open Cut Trench	Adjacent to Red Lake River	Impaired: Mercury, Temperature, and Chlorpyrifos (proposed for 2014)	1C, 2Bd, 3C
308.53	308.58	PO038a1W	Shallow, Open Water	Open Cut Trench	Adjacent to Grand Marais Creek	Impaired: Chorpyrifos, Dissolved Oxygen, Temperature, and pH	2B, 3C
324.94	324.96	PO081a1W	Shallow Marsh	Open Cut Trench	Upstream of Red Lake River	Impaired: Mercury and Temperature	1C, 2Bd, 3C
325.68	325.69	PO085a1W	Seasonally Flooded Basin	Open Cut Trench	Adjacent to Red Lake River	Impaired: Mercury and Temperature	1C, 2Bd, 3C
Clearwater County							
374.74	374.76	CL018a1W	Fresh (Wet) Meadow	Open Cut Trench	Adjacent to Silver Creek	Impaired: Fecal Coliform	2B, 3C
375.09	375.10	CL019b1W	Seasonally Flooded Basin	Open Cut Trench	Adjacent to Silver Creek	Impaired: Fecal Coliform	2B, 3C
387.10	387.59	CLC5035a1W	Hardwood Swamp	Open Cut Trench	Upstream of Clearwater River	Impaired: Dissolved Oxygen and Mercury	2B, 3C
387.63	388.02	CLC5037a1W	Fresh (Wet) Meadow	Open Cut Trench	Adjacent to Clearwater River	Impaired: Dissolved Oxygen and Mercury	2B, 3C
389.76	390.20	CLC5047a1W	Sedge Meadow	Open Cut Trench	Adjacent to Walker Brook	Impaired: Dissolved Oxygen	2B, 3C
402.36	402.69	CLC5094a1W	Fresh (Wet) Meadow	Open Cut Trench	Upstream of Mississippi River	Impaired: Dissolved Oxygen; Outstanding Resource Value Water [b]	2B, 3C
403.46	403.90	CLC5098a1W	Fresh (Wet) Meadow	Open Cut Trench	Adjacent to Mississippi River	Impaired: Dissolved Oxygen; Outstanding Resource Value Water [b]	2B, 3C
Hubbard County							
436.07	436.27	HUC5121a1W	Sedge Meadow	Open Cut Trench	Adjacent to Straight River	Impaired: Dissolved Oxygen	1B, 2A, 3B
438.50	438.74	HUC5129d1W	Fresh (Wet) Meadow	Open Cut Trench	Adjacent to Shell River	Impaired: Index of Biological Integrity--Fishes	2B, 3C
443.45	443.52	HUC5162a1W	Shrub-Carr	Open Cut Trench	Adjacent to Shell River	Impaired: Index of Biological Integrity--Fishes	2B, 3C
454.40	454.52	NWI-100		Open Cut Trench	Adjacent to Crow Wing River	Impaired: Mercury	2B, 3C
454.52	454.56	NWI-101		Open Cut Trench	Adjacent to Crow Wing River	Impaired: Mercury and Chlorpyrifos (proposed for 2014)	2B, 3C
454.56	454.59	NWI-102		Open Cut Trench	Adjacent to Crow Wing River	Impaired: Mercury and Chlorpyrifos (proposed for 2014)	2B, 3C
454.59	454.60	NWI-103		Open Cut Trench	Adjacent to Crow Wing River	Impaired: Mercury	2B, 3C
Cass County							
509.95	510.02	CA163aW	Hardwood Swamp	Open Cut Trench	Adjacent to Moose River	Impaired: Dissolved Oxygen	2B, 3C
Aitkin County							
513.17	513.56	AI005cW	Shallow, Open Water	Open Cut Trench	Upstream of Moose River	Impaired: Dissolved Oxygen	2B, 3C
516.71	516.99	AI027aW	Shrub-Carr	Open Cut Trench	Upstream of Moose River	Impaired: Dissolved Oxygen	2B, 3C
533.87	533.95	AI110aW	Fresh (Wet) Meadow	Open Cut Trench	Adjacent to Mississippi River	Impaired: Mercury; Outstanding Resource Value Water [b]	2B, 3C

Beginning Milepost	Ending Milepost	Unique ID Number	Type of Wetland Crossed	Proposed Crossing Method	Waterbody	State Designation [a]	MPCA Classification
534.00	534.03	AI112_200aW	Floodplain Forest	Open Cut Trench	Adjacent to Mississippi River	Impaired: Mercury; Outstanding Resource Value Water [b]	2B, 3C
Carlton County							
572.39	572.71	CRC5056a1W	Shrub-Carr	Open Cut Trench	Upstream of Kettle River	Impaired: Mercury	2B, 3C
572.74	572.93	CRC5058a1W	Shrub-Carr	Open Cut Trench	Adjacent to Kettle River	Impaired: Mercury	2B, 3C
572.93	573.35	CRC5061a1W	Hardwood Swamp	Open Cut Trench	Adjacent to Kettle River	Impaired: Mercury	2B, 3C

[a] Information regarding Impaired Waters was obatined from the Minnesota Pollution Control Agency's December 2, 2013 Impaired Streams, Minnesota, 2014 (Draft) dataset.

[b] Outstanding Resource Value Waters determined from Minnesota Rules 7050.0180 (https://www.revisor.mn.gov/rules/?id=7050.0180).

Appendix A3

Polyurethane Foam Ditch Pillows Report Dated February 2010

Enbridge Energy, Limited Partnership
Enbridge Pipelines (Southern Lights) L.L.C.

Polyurethane Foam Ditch Pillows

Alberta Clipper
and
Southern Lights Diluent
Pipeline Projects

February 2010

Polyurethane Foam Ditch Pillows
Alberta Clipper and Southern Lights Diluent Pipeline Projects

TABLE OF CONTENTS

1.0 INTRODUCTION

Enbridge Energy, Limited Partnership and Enbridge Pipelines (Southern Lights), collectively referred to as Enbridge, are currently in the construction phase of the Alberta Clipper and Southern Lights Diluent Pipeline Project (Project). The Project consists of approximately 331 miles of new 36-inch-diameter pipeline from Neche, North Dakota to Superior Wisconsin and approximately 183 miles of new 20-inch-diameter pipeline from Clearbrook, Minnesota to Superior, Wisconsin.

Construction of the Project is proceeding according to plan, yet some slight alterations are recommended based on site specific conditions that are encountered subsurface. In a few select areas and in areas likely not yet identified, crews are encountering rocky conditions during trenching. In an effort to protect the pipeline from rocks, Enbridge is proposing the use of foam ditch pillows to pad the bottom of the Alberta Clipper and Southern Lights Diluent Pipelines. The pillows would be used in both upland and wetland areas where rocks are present.

1.1 Proposed Project Use

Polyurethane foam ditch pillows are used to support and protect the pipe and prevent it from laying on rock or rough surfaces so the protective coating or ovality of the pipeline is not damaged. Once the protective coating is damaged, it becomes more susceptible to corrosion and may require repair or replacement at a later date. The foam pillows are fabricated off-site and are then placed within the bottom of the trench where rocky soils or bedrock is present. Pillows are only installed under the pipe, therefore not impacting the hydrology.

1.2 Agency Review and Consultation

In order to maintain compliance with the Corps 404 Permit and associated 401 Water Quality Certifications in Minnesota, Enbridge originally proposed the use of foam ditch pillows to Leo Grabowski (Army Corps of Engineers – St. Paul District (ACOE)) and Richard Gitar (Office of Water Protection, Fond du Lac Reservation (FDL)) in early December of 2009. The ACOE responded that "from a direct wetlands impact perspective, the use of foam pillows, instead of standard sand bags, would not require a formal permit modification." The FDL also approved the use of the foam pillows within the Reservation boundaries. In addition to this response, the ACOE prompted a response from the Minnesota Pollution Control Agency (MPCA).

The MPCA was unable to authorize the use of foam pillows, sighting the EIS process and the lack of information regarding the final product's toxicity and stability in water. Enbridge proceeded to work with the MPCA to evaluate specific lab analyses that would address their concerns. The Minnesota Office of Pipeline Safety (MN OPS) was also informed of Enbridge's request to use foam pillows by the MPCA, and at this time Enbridge is unaware of any response.

2.0 PRODUCT DESCRIPTION

The foam pillows are produced by mixing two components together; a polymeric methylene diphenyl diisocyanate and a polyurethane resin blend with an amine catalyst. According to the manufacturer, the final polyurethane product is inert, not water soluble, and will not leech harmful chemicals into the surrounding environment. In order to minimize the environmental risks that are possible during the manufacturing of this product, Enbridge proposes to mix the

components off-site and will bring the solid foam product to the area of installation, in its final inert state, before being placed within the bottom of the trench.

This product is not new to pipeline construction and has proven to be very beneficial in protecting the pipeline in rocky areas, thus assisting in protecting water quality in the vicinity of the pipeline. The foam pillows have been used in pipeline projects all over the country for many years, such as Gulf South in Mississippi, Rockies Express from Colorado to Ohio, and Enbridge's Southern Access Project in Wisconsin and Illinois. Enbridge has also obtained 401 WQC approval to use these foam pillows in wetlands in Wisconsin and within the Fond du Lac Reservation as part of the Alberta Clipper Project. In addition, the Corps of Engineers St. Paul District has also authorized the use of these foam pillows as part of their 404 Permit.

3.0 ALTERNATIVES

Alternatives to using foam pillows in wetlands, as pipe support, were analyzed to determine whether they would be reasonable and environmentally preferable. The following alternatives analysis describes several types of alternatives that were considered and assesses whether they would meet the stated purpose of the proposed action.

3.1 No Padding Alternative

Under the No Padding Alternative, Enbridge would install their pipelines without a buffer between the pipe and the rocky substrate. Pipe installation without padding may cause damage to the protective coating surrounding the pipe, which can lead to corrosion. In addition, rocks have the ability to dent the pipeline during installation, which may result in subsequent pipe repair or replacement. Pipe sections requiring repair or replacement are typically exposed by removing the subsoil and topsoil layers, which may lead to additional environmental impacts.

3.2 Removal of Rocks Prior to Backfill

Rocks can be removed from the trench spoil prior to backfilling in rocky areas to prevent damage to the pipeline. This method works better during the warmer, summer months, but becomes more difficult in the winter. As the spoil freezes, it becomes increasingly difficult to separate soil from rock. As a result, this is not a viable option for Enbridge.

3.3 Sand Bags and Clean Fill

Sand bags are typically constructed out of a plastic bag which is filled with sand or soil, and have traditionally been used to pad the pipe in rocky areas. Installation in the winter is difficult since the soil within the bags will freeze and a much larger excavation is needed in order to make the excavation safe for human occupancy to place the sandbags, thus increasing the overall footprint. Installing clean sand fill within the trench is also a common method, but the importation of non-native sand fill into a wetland is not in compliance with Enbridge's Corps 404 permit.

4.0 ENVIRONMENTAL ANALYSES

4.1 Geology

Impacts associated with the use of the foam materials for pipeline support on geologic resources would be negligible given the size, use and chemical properties of the foam. Based

on the lab results, the use of foam pillows in wetlands as pipe support will not have any impact on the surrounding geology.

4.2 Soils

Soil resources could be affected by chemical interaction with materials in contact with soils. The polyurethane material comprising the foam pads is chemically inert after properly cured. Based on the non detect chemistry results, as discussed in the following Section 4.3, the use of foam pillows in wetlands as pipe support will not have any impacts on the surrounding soil chemistry.

4.3 Water Resources

Potential surface and groundwater impacts of foam pillows are not currently documented, which has prompted questions and concerns from the MPCA. As a result, Enbridge obtained a sample of the final foam product from UTC, the manufacturer, to evaluate its potential toxicity and leaching potential. Enbridge consulted with Pace Analytical Services Inc. (Pace) to assess sampling and analytical methodologies. Pace conducted analytical tests to evaluate the potential for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to leach from the foam. Photographs of the bulk material (Photo 1) and shredded material (Photo 2), which was submitted for analysis, are provided below.

Photo 1

Photo 2

Enbridge reviewed the Material Safety Data Sheets (MSDS) previously attached as Appendix A to the proposed testing procedure document, submitted to the MPCA on January 15th, and no metals were listed in the ingredients/composition section of the MSDS. No metals analysis was completed for the leachate testing. The MPCA approved the January 15th proposed testing procedures with minor modifications as documented in an email to Mr. Dann White with the MPCA dated January 21, 2010. Pace completed EPA Method 1311, toxicity characteristics leaching procedure (TCLP) to produce a leachate for analytical testing. The purpose of this test was to simulate actual conditions of a wetland or bog along the project route. Based on the Soil Survey Geographic Database, the pH of wetlands in the project area is not expected to be lower than 5.0, and most pH's will be circumneutral. The pH may be lower in deep acidic peat soils, but rocks will not be present, and foam pillows will not be used. The extraction fluid used during this procedure had a pH of 4.93, and given that this is close to the pH of the estimated wetland

environment, no modification to the leaching procedure was required. Volatile organic compound (VOC) and semivolatile organic compound (SVOC) analysis were completed on the 4.93 pH extraction fluid leachate.

The leachate was analyzed for VOCs and SVOCs using EPA methods 8260 and 8270 respectively. The TCLP leach procedure references a VOC and semivolatile (SVOC) compound list previously attached as Appendix B to the proposed testing procedure document dated January 15, 2010. The TCLP 8260 and 8270 are specific to the TCLP analysis and are a subset of the non-TCLP 8260 and 8270 lists. In order to analyze for the full 8260 and 8270 VOC and SVOC list of compounds, Pace utilized a "tentatively identified compounds (TIC)" methodology. .

Due to method interference, Pace was unable to use the selective ion methodology (SIM) to produce a lower reporting limit for the VOC and SVOC analysis. However, Pace obtained the lowest practical method detection limits achievable for the VOC and SVOC analysis.

All of the compounds from the TCLP lists 8260 and 8270 were non-detect at the method reporting limits. In addition, Pace did not identify detected analytes as TIC from the full 8260 and 8270 lists. As all analytes were non-detect, no toxicity testing is recommended. A copy of the analytical report is included as Attachment 2.

4.4 Wetlands

The wetland impacts from the use of foam ditch pillows will be the same as or no more than the impacts previously analyzed in the FEIS prepared by the U.S. Department of State. Installation time will be very quick as Enbridge would be eliminating the length of the work period within the wetlands. In addition, the size of the excavation can be minimized by utilizing the foam pillows instead of other materials as human occupancy will not be necessary to install the pillows.

4.5 Terrestrial Vegetation

Pipe supports are needed at the bottom of the excavated trench, well below the root zone of nearby vegetation. For the Alberta Clipper project, this depth is typically 12 inches. Vegetation management of the restored right-of-way would limit the proximity of deep root plants such as trees from the pipeline. Based on the lab results, the use of foam pillows in wetlands as pipe support will not have any impacts on the surrounding terrestrial vegetation.

4.6 Wildlife

As with vegetation, the depth of the pipeline support materials would limit the potential for contact with subterranean fauna. Based on the lab results, the use of foam pillows in wetlands as pipe support will not have any impacts on the surrounding wildlife.

4.7 Fisheries

The potential for leachates to migrate from pipe support materials is dependent on subsurface water flow. If support materials are inert and do not contribute chemicals to the groundwater, no impacts to surface waters would be expected and fisheries resources would not be affected. Based on the lab results, the use of foam pillows in wetlands as pipe support will not have any impacts on the surrounding fish populations.

4.8 Threatened, Endangered, and Sensitive Animals and Plants

Based on the test results, the installation of foam pillows within environmentally sensitive areas will not have any impacts on the threatened, endangered, or sensitive plants and animals. Enbridge will continue to follow its Protected Species Plan which implements general conservation measures for state and federally listed species and Chippewa National Forest Regional Forester's Sensitive Species identified along the project route during biological surveys.

4.9 Land Use

The land use impacts from the use of foam ditch pillows will be the same as or no more than the impacts previously analyzed in the FEIS. Based on the lab results, the use of foam pillows in wetlands as pipe support will not have any impacts on land use.

4.10 Socioeconomics

The use of foam pillows in wetlands as pipe support will not have any impacts on socioeconomics. Costs associated with using any of the support methods discussed in this analysis are not significantly different.

4.11 Cultural Resources

The cultural resource impacts from the use of foam ditch pillows will be the same as or no more than the impacts previously analyzed in the FEIS. Known cultural resources would be avoided. Procedures for unanticipated finds would be followed as stipulated in the FEIS.

4.12 Air Quality and Noise

The use of this product has been GREENGUARD certified (Certification Number 9012111-01) for air quality, which means that it is safe to use in indoor residential and commercial applications, including hospitals and schools. Additional information is contained within the GREENGUARD certificates (See Attachment 1).

The use of foam pillows as pipe support in wetlands would not have an effect on noise levels.

4.13 Reliability and Safety

Foam pillows have been used for this application in numerous other geographic locations and are a standard practice within the pipeline construction industry. Based on past standard use, Enbridge is unaware of any reliability or safety concerns regarding the use of the foam pillows for this application.

4.14 Cumulative Impacts

The use of foam pillows in rocky subsoil wetlands as pipe support will not have any additional cumulative impacts on the surrounding environment or no more than the cumulative impacts previously analyzed in the FEIS.

5.0 CONCLUSIONS AND MITIGATION

The use of foam pillows to pad pipes in wetlands is a common practice across the United States. Foam pillows are the preferred method of choice because the risk of damaging the pipe, as it is lowered into the trench, or operated is low. To address the MPCA's concerns regarding groundwater quality, Enbridge collected samples of the foam and contracted with Pace Analytical to conduct analytical tests to evaluate the leaching characteristics of the foam material. Based on the non detect chemistry results, the use of foam pillows to pad the pipe in wetlands will not have an adverse impact on environmental resources.

ATTACHMENT 1

GREENGUARD CERTIFICATIONS

Urethane Technology Company, Inc.

UTC-5070 Spray Foam Systems

This product has been GREENGUARD Indoor Air Quality Certified[Â®] by the GREENGUARD Environmental Institute under the GREENGUARD Standard for Low Emitting Products.

Certification Details:	
Certification No:	9012111-01
Certification Status:	Provisional
Certification Period(s):	12/2008- 12/2009
Certification Restrictions:	
NONE	

GREENGUARD Indoor Air Quality Standard for Low Emitting Products

GREENGUARD Indoor Air Quality Certified Products meet the following minimum emission requirements:

Category: Insulation

Emission Types	Standard	OEM
Individual VOCs	< 0.1 TLV	< 0.1 TLV
Formaldehyde	< 0.05 ppm	< 0.025 ppm
Total VOCs	< 0.5 mg/mÂ³	< 0.25 mg/mÂ³
Total aldehydes	< 0.1 ppm	< 0.05 ppm
Respirable particles (for HVAC ductwork)	< 0.05 mg/mÂ³	< 0.05 mg/mÂ³

Listing of measured carcinogens and reproductive toxins as identified by California Proposition 65, the U.S. National Toxicology Program (NTP), and the International Agency on Research on Cancer (IARC) must be provided.

Any pollutant not listed must produce an air concentration level no greater than 1/10 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438.

Any pollutant regulated as a primary or secondary outdoor air pollutant must meet a concentration that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard (U.S. EPA, code of Federal Regulations, Title 40, Part 50).

For further product details, visit the product listing at www.greenguard.org. If you have any questions, contact the GREENGUARD Environmental Institute at 1.800.427.9681.

Urethane Technology Company, Inc.

UTC-5070 Spray Foam Systems

This product has been GREENGUARD Indoor Air Quality Certified® by the GREENGUARD Environmental Institute under the GREENGUARD for Children & Schools[SM] Products certification program.

Certification Details:	
Certification No:	9012111-01
Certification Status:	Certified
Certification Period(s):	12/2008- 12/2009
Certification Restrictions:	
NONE	

GREENGUARD Products Emission Standard for Children & Schools

GREENGUARD Indoor Air Quality Certified Products meet the following minimum emission requirements:

Category: Insulation	**SubCategory:Â** Building Insulation
Individual VOCs[1]	< 1/100 TLV and < Â½ CA chronic REL
Formaldehyde[2]	< 0.0135 ppm/13.5 ppb
Total VOCs[3]	< 0.22 mg/mÂ³
Total Aldehydes[4]	< 0.043 ppm/43 ppb
Total Phthalates[5]	< 0.01 mg/mÂ³
Total Particles (< 10Âµm)[6]	< 0.02 mg/mÂ³

[1]Any VOC not listed must produce an air concentration level no greater than 1/100 the Threshold Limit Value (TLV) industrial work place standard (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438) and no greater than 1/2 the CA Chronic Reference Exposure Level (CREL) http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html - (CRELs)Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA), February 2005).

[2]Formaldehyde criteria established so that emission levels reach 0.014ppm (13.5 ppb) within 14 days of installation (meeting CA 1350 requirements).

[3]Defined to be the total response of measured VOCs falling within the C_6 â€“ C_{16} range, with responses calibrated to a toluene surrogate.

[4]Defined to be the total response of a specific target list of aldehydes (2-butenal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

[5]Total phthalates include dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl (BBP), di-octyl (DOP), and dimethyl (DMP) phthalates.

[6]Particles applicable to fibrous, particle releasing products with exposed surface area.
Complies with California Department of Health Services'Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers 2004 (CA section 01350)

GREENGUARD Certification affirms that a productâ€™s emissions fall within the limits selected by GREENGUARD from reputable third-party risk based criteria, as identified above. GREENGUARD program testing is conducted consistent with a defined protocol and does not measure emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical emissions.

For further product details, visit the product listing at www.greenguard.org. If you have any questions, contact the GREENGUARD Environmental Institute at 1.800.427.9681.

ATTACHMENT 2

Pace Lab Report

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

February 11, 2010

Mark Mason
Natural Resource Group
1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

RE: Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Dear Mark Mason:
Enclosed are the analytical results for sample(s) received by the laboratory on January 12, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

In addition to the compounds quantified in this report, these samples were evaluated for the complete compound lists for 8260 and 8270 by comparison to the libraries for tentatively identified compounds and none of these were noted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carol Davy

carol.davy@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Minnesota Certification IDs

1700 Elm Street SE, Suite 200 Minneapolis, MN 55414
Alaska Certification #: UST-078
Washington Certification #: C754
Tennessee Certification #: 02818
Pennsylvania Certification #: 68-00563
Oregon Certification #: MN200001
North Dakota Certification #: R-036
North Carolina Certification #: 530
New York Certification #: 11647
New Jersey Certification #: MN-002
Montana Certification #: MT CERT0092
Minnesota Certification #: 027-053-137
Michigan DEQ Certification #: 9909
Maine Certification #: 2007029
Louisiana Certification #: LA080009
Louisiana Certification #: 03086
Kansas Certification #: E-10167
Iowa Certification #: 368
Illinois Certification #: 200011
Florida/NELAP Certification #: E87605
California Certification #: 01155CA
Arizona Certification #: AZ-0014
Wisconsin Certification #: 999407970

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10120215001	**Foam Sample 1**	Solid	01/06/10 03:30	01/12/10 07:38

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10120215001	**Foam Sample 1**	EPA 8270	JLR	18
		EPA 8260	DRE	15

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Sample: Foam Sample 1 **Lab ID: 10120215001** Collected: 01/06/10 03:30 Received: 01/12/10 07:38 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV TCLP	Analytical Method: EPA 8270 Preparation Method: EPA 3520							
	Leachate Method/Date: EPA 1311; 01/21/10 14:43							
1,4-Dichlorobenzene	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	106-46-7	
2,4-Dinitrotoluene	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	121-14-2	
Hexachloro-1,3-butadiene	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	87-68-3	
Hexachlorobenzene	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	118-74-1	
Hexachloroethane	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	67-72-1	
2-Methylphenol(o-Cresol)	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	95-48-7	
3&4-Methylphenol	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26		
Nitrobenzene	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	98-95-3	
Pentachlorophenol	ND	ug/L	35.7	1	01/21/10 08:12	01/22/10 11:26	87-86-5	
Pyridine	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	110-86-1	
2,4,5-Trichlorophenol	ND	ug/L	51.0	1	01/21/10 08:12	01/22/10 11:26	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.2	1	01/21/10 08:12	01/22/10 11:26	88-06-2	
Nitrobenzene-d5 (S)	92	%	43-132	1	01/21/10 08:12	01/22/10 11:26	4165-60-0	
2-Fluorobiphenyl (S)	83	%	49-129	1	01/21/10 08:12	01/22/10 11:26	321-60-8	
Terphenyl-d14 (S)	91	%	46-149	1	01/21/10 08:12	01/22/10 11:26	1718-51-0	
Phenol-d6 (S)	85	%	46-125	1	01/21/10 08:12	01/22/10 11:26	13127-88-3	
2-Fluorophenol (S)	82	%	42-130	1	01/21/10 08:12	01/22/10 11:26	367-12-4	
2,4,6-Tribromophenol (S)	96	%	44-150	1	01/21/10 08:12	01/22/10 11:26	118-79-6	
8260 MSV TCLP	Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 01/15/10 11:26							
Benzene	ND	ug/L	50.0	1		01/15/10 21:08	71-43-2	
2-Butanone (MEK)	ND	ug/L	200	1		01/15/10 21:08	78-93-3	
Carbon tetrachloride	ND	ug/L	50.0	1		01/15/10 21:08	56-23-5	
Chlorobenzene	ND	ug/L	50.0	1		01/15/10 21:08	108-90-7	
Chloroform	ND	ug/L	50.0	1		01/15/10 21:08	67-66-3	
1,4-Dichlorobenzene	ND	ug/L	50.0	1		01/15/10 21:08	106-46-7	
1,2-Dichloroethane	ND	ug/L	50.0	1		01/15/10 21:08	107-06-2	
1,1-Dichloroethene	ND	ug/L	50.0	1		01/15/10 21:08	75-35-4	
Tetrachloroethene	ND	ug/L	50.0	1		01/15/10 21:08	127-18-4	
Trichloroethene	ND	ug/L	50.0	1		01/15/10 21:08	79-01-6	
Vinyl chloride	ND	ug/L	20.0	1		01/15/10 21:08	75-01-4	
1,2-Dichloroethane-d4 (S)	107	%	63-137	1		01/15/10 21:08	17060-07-0	
Dibromofluoromethane (S)	104	%	66-134	1		01/15/10 21:08	1868-53-7	
4-Bromofluorobenzene (S)	105	%	67-133	1		01/15/10 21:08	460-00-4	
Toluene-d8 (S)	96	%	67-133	1		01/15/10 21:08	2037-26-5	

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

QC Batch: OEXT/12264 Analysis Method: EPA 8270
QC Batch Method: EPA 3520 Analysis Description: 8270 TCLP MSSV
Associated Lab Samples: 10120215001

METHOD BLANK: 739107 Matrix: Water
Associated Lab Samples: 10120215001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	ND	100	01/22/10 09:38	
2,4,5-Trichlorophenol	ug/L	ND	500	01/22/10 09:38	
2,4,6-Trichlorophenol	ug/L	ND	100	01/22/10 09:38	
2,4-Dinitrotoluene	ug/L	ND	100	01/22/10 09:38	
2-Methylphenol(o-Cresol)	ug/L	ND	100	01/22/10 09:38	
3&4-Methylphenol	ug/L	ND	100	01/22/10 09:38	
Hexachloro-1,3-butadiene	ug/L	ND	100	01/22/10 09:38	
Hexachlorobenzene	ug/L	ND	100	01/22/10 09:38	
Hexachloroethane	ug/L	ND	100	01/22/10 09:38	
Nitrobenzene	ug/L	ND	100	01/22/10 09:38	
Pentachlorophenol	ug/L	ND	350	01/22/10 09:38	
Pyridine	ug/L	ND	100	01/22/10 09:38	
2,4,6-Tribromophenol (S)	%	89	44-150	01/22/10 09:38	
2-Fluorobiphenyl (S)	%	86	49-129	01/22/10 09:38	
2-Fluorophenol (S)	%	85	42-130	01/22/10 09:38	
Nitrobenzene-d5 (S)	%	91	43-132	01/22/10 09:38	
Phenol-d6 (S)	%	90	46-125	01/22/10 09:38	
Terphenyl-d14 (S)	%	94	46-149	01/22/10 09:38	

METHOD BLANK: 739432 Matrix: Water
Associated Lab Samples: 10120215001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	ND	100	01/22/10 10:05	
2,4,5-Trichlorophenol	ug/L	ND	500	01/22/10 10:05	
2,4,6-Trichlorophenol	ug/L	ND	100	01/22/10 10:05	
2,4-Dinitrotoluene	ug/L	ND	100	01/22/10 10:05	
2-Methylphenol(o-Cresol)	ug/L	ND	100	01/22/10 10:05	
3&4-Methylphenol	ug/L	ND	100	01/22/10 10:05	
Hexachloro-1,3-butadiene	ug/L	ND	100	01/22/10 10:05	
Hexachlorobenzene	ug/L	ND	100	01/22/10 10:05	
Hexachloroethane	ug/L	ND	100	01/22/10 10:05	
Nitrobenzene	ug/L	ND	100	01/22/10 10:05	
Pentachlorophenol	ug/L	ND	350	01/22/10 10:05	
Pyridine	ug/L	ND	100	01/22/10 10:05	
2,4,6-Tribromophenol (S)	%	81	44-150	01/22/10 10:05	
2-Fluorobiphenyl (S)	%	82	49-129	01/22/10 10:05	
2-Fluorophenol (S)	%	82	42-130	01/22/10 10:05	
Nitrobenzene-d5 (S)	%	87	43-132	01/22/10 10:05	
Phenol-d6 (S)	%	84	46-125	01/22/10 10:05	
Terphenyl-d14 (S)	%	90	46-149	01/22/10 10:05	

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QUALITY CONTROL DATA

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

LABORATORY CONTROL SAMPLE: 739108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	500	469	94	50-125	
2,4,5-Trichlorophenol	ug/L	500	503	101	61-125	
2,4,6-Trichlorophenol	ug/L	500	508	102	60-125	
2,4-Dinitrotoluene	ug/L	500	541	108	60-126	
2-Methylphenol(o-Cresol)	ug/L	500	499	100	51-125	
3&4-Methylphenol	ug/L	500	509	102	55-125	
Hexachloro-1,3-butadiene	ug/L	500	480	96	45-125	
Hexachlorobenzene	ug/L	500	483	97	56-125	
Hexachloroethane	ug/L	500	475	95	43-125	
Nitrobenzene	ug/L	500	523	105	50-125	
Pentachlorophenol	ug/L	500	521	104	45-125	
Pyridine	ug/L	500	425	85	33-125	
2,4,6-Tribromophenol (S)	%			95	44-150	
2-Fluorobiphenyl (S)	%			91	49-129	
2-Fluorophenol (S)	%			86	42-130	
Nitrobenzene-d5 (S)	%			96	43-132	
Phenol-d6 (S)	%			92	46-125	
Terphenyl-d14 (S)	%			100	46-149	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 739109 739110

Parameter	Units	10120685001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/L	ND	500	500	ND	ND	95	92	50-125		30	
2,4,5-Trichlorophenol	ug/L	ND	500	500	ND	ND	86	90	58-128		30	
2,4,6-Trichlorophenol	ug/L	ND	500	500	ND	ND	87	88	55-130		30	
2,4-Dinitrotoluene	ug/L	ND	500	500	ND	ND	73	80	54-131		30	
2-Methylphenol(o-Cresol)	ug/L	ND	500	500	ND	ND	93	95	30-148		30	
3&4-Methylphenol	ug/L	ND	500	500	ND	ND	90	95	45-131		30	
Hexachloro-1,3-butadiene	ug/L	ND	500	500	ND	ND	93	91	43-125		30	
Hexachlorobenzene	ug/L	ND	500	500	ND	ND	91	97	56-125		30	
Hexachloroethane	ug/L	ND	500	500	ND	ND	88	86	42-125		30	
Nitrobenzene	ug/L	ND	500	500	ND	ND	98	96	52-125		30	
Pentachlorophenol	ug/L	ND	500	500	ND	ND	129	130	30-150		30	
Pyridine	ug/L	ND	500	500	599J	582J	120	116	30-127		30	
2,4,6-Tribromophenol (S)	%						74	81	44-150			
2-Fluorobiphenyl (S)	%						89	91	49-129			
2-Fluorophenol (S)	%						80	81	42-130			
Nitrobenzene-d5 (S)	%						90	94	43-132			1M,D3
Phenol-d6 (S)	%						86	87	46-125			
Terphenyl-d14 (S)	%						86	89	46-149			

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QUALITY CONTROL DATA

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

QC Batch: MSV/13756 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP
Associated Lab Samples: 10120215001

METHOD BLANK: 737439 Matrix: Water
Associated Lab Samples: 10120215001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	ND	50.0	01/15/10 19:46	
1,2-Dichloroethane	ug/L	ND	50.0	01/15/10 19:46	
1,4-Dichlorobenzene	ug/L	ND	50.0	01/15/10 19:46	
2-Butanone (MEK)	ug/L	ND	200	01/15/10 19:46	
Benzene	ug/L	ND	50.0	01/15/10 19:46	
Carbon tetrachloride	ug/L	ND	50.0	01/15/10 19:46	
Chlorobenzene	ug/L	ND	50.0	01/15/10 19:46	
Chloroform	ug/L	ND	50.0	01/15/10 19:46	
Tetrachloroethene	ug/L	ND	50.0	01/15/10 19:46	
Trichloroethene	ug/L	ND	50.0	01/15/10 19:46	
Vinyl chloride	ug/L	ND	20.0	01/15/10 19:46	
1,2-Dichloroethane-d4 (S)	%	105	63-137	01/15/10 19:46	
4-Bromofluorobenzene (S)	%	101	67-133	01/15/10 19:46	
Dibromofluoromethane (S)	%	103	66-134	01/15/10 19:46	
Toluene-d8 (S)	%	96	67-133	01/15/10 19:46	

LABORATORY CONTROL SAMPLE: 737440

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	2500	2510	100	75-125	
1,2-Dichloroethane	ug/L	2500	2450	98	75-125	
1,4-Dichlorobenzene	ug/L	2500	2480	99	75-125	
2-Butanone (MEK)	ug/L	2500	2170	87	74-126	
Benzene	ug/L	2500	2500	100	75-125	
Carbon tetrachloride	ug/L	2500	2350	94	75-125	
Chlorobenzene	ug/L	2500	2490	100	75-125	
Chloroform	ug/L	2500	2530	101	75-125	
Tetrachloroethene	ug/L	2500	2480	99	75-125	
Trichloroethene	ug/L	2500	2540	102	75-125	
Vinyl chloride	ug/L	2500	2360	95	75-125	
1,2-Dichloroethane-d4 (S)	%			101	63-137	
4-Bromofluorobenzene (S)	%			101	67-133	
Dibromofluoromethane (S)	%			98	66-134	
Toluene-d8 (S)	%			102	67-133	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 737982 737983

Parameter	Units	10120491001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethene	ug/L	ND	2500	2500	2500	2680	100	107	66-125	7	30	

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QUALITY CONTROL DATA

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 737982 737983

Parameter	Units	10120491001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane	ug/L	ND	2500	2500	2470	2470	99	99	73-125	0	30	
1,4-Dichlorobenzene	ug/L	ND	2500	2500	2460	2560	99	102	75-125	4	30	
2-Butanone (MEK)	ug/L	ND	2500	2500	2370	2310	95	92	66-130	2	30	
Benzene	ug/L	128	2500	2500	2580	2710	98	103	50-150	5	30	
Carbon tetrachloride	ug/L	ND	2500	2500	2420	2650	97	106	68-128	9	30	
Chlorobenzene	ug/L	ND	2500	2500	2480	2550	99	102	75-125	3	30	
Chloroform	ug/L	ND	2500	2500	2490	2600	100	104	75-125	4	30	
Tetrachloroethene	ug/L	ND	2500	2500	2460	2580	99	103	50-150	5	30	
Trichloroethene	ug/L	ND	2500	2500	2460	2610	98	104	69-125	6	30	
Vinyl chloride	ug/L	ND	2500	2500	2310	2480	92	99	62-150	7	30	
1,2-Dichloroethane-d4 (S)	%						101	100	63-137			
4-Bromofluorobenzene (S)	%						102	103	67-133			
Dibromofluoromethane (S)	%						101	97	66-134			
Toluene-d8 (S)	%						102	102	67-133			

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QUALIFIERS

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

ANALYTE QUALIFIERS

1M	Ran dilution for ms/msd because of large acid peak in parent sample.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: EEL 2006-135 Task 840 Enbridge
Pace Project No.: 10120215

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10120215001	**Foam Sample 1**	EPA 3520	OEXT/12264	EPA 8270	MSSV/5284
10120215001	**Foam Sample 1**	EPA 8260	MSV/13756		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: / of /

Section A — **Required** Client Information:

Company:	Natural Resource Group
Address:	1000 IDS Center
	80 South 8th Street
Email To:	msmason@nrg-llc.com
Phone: 612-215-6082	Fax: 612-347-6780
Requested Due Date/TAT:	

Section B — **Required** Project Information:

Report To:	Mark Mason
Copy To:	Mandy Bohnenblust
Purchase Order No.:	
Project Name:	Enbridge's Alberta Clipper
Project Number:	EEL 2006-135 Task 840

Section C — Invoice Information:

Attention:	Mark Mason
Company Name:	Same as client info
Address:	Same as client info
Pace Quote Reference:	
Pace Project Manager:	Carol Davy
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D — **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP	8 RCRA Metals (EPA6010)	Cyanide (EPA 335.3)	Acid test (See Carol Davy)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Foam Sample 1	P	C	1/6/10	3:00	01/06/10	3:30	N/A	1	1												x		
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Polyurethan Foam Sample	[signature] / NRG	1-12-10	0738	[signature] Pace	1-12-10	07:38	0.0	N	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Mark S. Mason					
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY): 1-11-10				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Appendix K, Response Sandpiper Comment Letters

Sample Condition Upon Receipt

Pace Analytical

Client Name: NATURAL RESOURCE GRP **Project #** _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Optional
Proj. Due Date:
Proj. Name:

Custody Seal on Cooler/Box Present: ☐ yes ☒ no **Seals intact:** ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other FOIL **Temp Blank:** Yes ____ No X

Thermometer Used ~~86344042 or~~ 179425 **Type of Ice:** Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature 0.0 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C **Comments:**

Date and initials of person examining contents: 1-12-10 JL

Chain of Custody Present:	☒Yes	☐No	☐N/A
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A
Sufficient Volume:	☒Yes	☐No	☐N/A
Correct Containers Used:	☐Yes	☒No	☐N/A
-Pace Containers Used:	☐Yes	☒No	☐N/A
Containers Intact:	☒Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A
Sample Labels match COC:	☐Yes	☒No	☐N/A
-Includes date/time/ID/Analysis Matrix: SL			
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes	☐No	☒N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes	☐No	
Samples checked for dechlorination:	☐Yes	☐No	☒N/A
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A
Trip Blank Present:	☐Yes	☐No	☒N/A
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A
Pace Trip Blank Lot # (if purchased):			

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12. NO I.D. ONSAMPLE
13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
Samp #

Initial when completed	Lot # of added preservative

14.
15.
16.

Client Notification/ Resolution: **Field Data Required?** Y / N

Person Contacted: Mark Mason **Date/Time:** 1-14-10 1626A email

Comments/ Resolution:

Run TCLP 8260 + TCLP 8270 using extraction fluid #1 for both tests

Mark Mason 1-2010 - run TCLP 8270 and TCLP 8260 with TIC reports and lowest PQL's

Project Manager Review: CAD **Date:** 1-14-10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

Pace Analytical Services, Inc.
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Appendix B

NDPC Response to MPCA Letter Dated May 30, 2014

Appendix B
NDPC Response to MPCA Letter Dated May 30, 2014

NDPC has incorporated the text of MPCA's letter below (in italics), with NDPC's response inserted below the text to which it is responding.

I. Inspection and Monitoring

MPCA Letter:

On April 14, 2014, the Minnesota Public Utilities Commission (PUC) extended the comment period in the matter of the Application of North Dakota Pipeline Company LLC for a Pipeline Routing Permit for the Sandpiper Pipeline Project (Sandpiper) in Minnesota. This letter appends the Minnesota Pollution Control Agency (MPCA) letter on this subject, which was submitted to you on April 4, 2014.

We understand the topics open for comment include alternate routes, human and environmental impacts to be studied in the Comparative Environmental Analysis (CEA), and whether any specific methods or mitigation exist to address these impacts that should be studied in the CEA. MPCA's additional comments on these topics include:

- *Inspection and monitoring;*
- *Additional items for evaluation in the CEA;*
- *Watershed Restoration and Protection Strategy;*
- *Carbon footprint;*
- *Environmental justice;*
- *Alternate route analysis; and*
- *Cumulative impacts.*

Inspection and Monitoring

On April 16, 2014, Enbridge, doing business as North Dakota Pipeline Company LLC, submitted a proposal to the MPCA regarding independent/third-party environmental monitors for the proposed Sandpiper project. MPCA does not agree that Enbridge should be hiring and directing these inspectors/monitors, but rather that they report directly to a state agency with jurisdiction over the project. The MPCA requests that the PUC require that another agency directly hire independent inspection and monitoring contractors and/or temporary staff to conduct this work under MPCA oversight to be funded by Enbridge.

The structure, workplan and cost of a monitoring and inspection plan should be determined while the CEA is being prepared. The MPCA and Minnesota Department of Natural Resources (DNR) staff, who have been working collaboratively on the Sandpiper project, are willing to participate with Enbridge and participating agencies to develop the appropriate information and mechanism. The mechanisms for this would be worked out among the parties. The payment of the state's reasonable costs should be a provision of the PUC's route permit issued to Enbridge.

NDPC Response: As discussed further in Appendix A to this response, NDPC's proposal to MPCA, DNR and the ACOE regarding independent/third-party monitors was intended to confirm NDPC's commitment to the State agencies regarding collaboration on independent/third-party monitors, and be a starting point for further discussions. NDPC looks forward to collaborating with participating agencies in order to establish a third-party monitoring program. NDPC recognizes that the success of an inspection program is directly tied to ensuring that the duties of the monitors and their authority is clearly identified and understood by all parties. NDPC would appreciate MPCA's assistance in coordinating or facilitating a joint agency meeting so that a comprehensive monitoring program can be developed as soon as possible. NDPC agrees that costs for the monitoring program should be borne by NDPC, which was the practice for monitoring programs on past pipeline projects.

II. Requests for Additional Evaluations

Additional Items for Evaluation in the CEA

The MPCA requests that Enbridge complete a Phase I Environmental Assessment (Phase I) of the selected pipeline construction corridor in accordance with the All Appropriate Inquiry (AAI) standard as per the National Environmental Policy Act (NEPA), Title 40, Code of Federal Regulations Part 312. The Phase I is conducted to research and review potential locations of existing/historic dumps, hazardous waste sites and other environmental concerns. If areas of environmental concern are identified in association with construction of the pipeline, Enbridge should be required to prepare work plans to describe how solid/hazardous waste/contaminated soil and groundwater will be investigated prior to construction and how impacted areas will be dealt with in accordance with state and local regulations.

MPCA requests that the CEA include a detailed risk assessment regarding the potential for leaks to occur, how much oil might be released, and how this could affect groundwater, surface water, aquatic life, and others. The hydrogeology of the pipeline corridor area should be studied to determine potential fate and transport of a release, and potential vapor intrusion issues if a release occurs in close proximity to human habitation.

NDPC Response: NDPC is in the process of conducting an assessment to address the potential for encountering contaminated soils, waters, or sites along the Preferred Route. The first phase of the corridor assessment will be conducted prior to construction. It will consist of a desktop review of environmental data to identify sites with potential contamination and/or historical environmental issues along the proposed construction footprint. Data will be collected from the following sources:

- Enbridge/NDPC's historical release database;
- Publically available environmental database information sourced from Historical Information Gatherers, which provides environmental risk information services and assists in environmental due diligence reviews; and
- Freedom of Information Act requests.

The second phase of the corridor assessment includes conducting site reconnaissance based on information gathered during the first phase. Site locations selected for field reconnaissance are determined by the distance from the Preferred Route and type of potential environmental concern.

The third phase of the corridor assessment involves construction-related tasks in which Barr Engineering Company, a firm that is fully qualified to conduct this assessment and coordinate this work, will organize efforts between NDPC, Project contractors, and Project consultants to oversee required activities associated with the management of contaminated soil, groundwater, and/or debris that may be encountered during construction with any existing utilities or landowners.

This three-phase assessment will be used to develop a Contaminated Sites Management Plan ("CSMP") similar to other CSMPs that Enbridge has developed and submitted to MPCA for past projects, such as Alberta Clipper, Southern Lights and LSr. The purpose of the CSMP is to provide guidance on the management of contaminated soil, groundwater, and potential debris from historical sources that may be encountered during construction. NDPC will submit the CSMP to MPCA in order to facilitate MPCA's participation on the development of this plan. NDPC shall ensure that its contractors and consultants are properly trained in the notification steps and procedures as outlined in the CSMP at the onset of construction.

As previously stated, NDPC has prepared an EPP that addresses construction-related spills as a separate document from the CSMP.

NDPC undertook a risk assessment in developing its Preferred Route and made adjustments to minimize the possible adverse impact of the Project on the environment and the public. The risk assessment also forms the basis for the IVP study discussed above, which determines the optimal placement of valves to minimize impacts to the environment and the public. Further, the ERPs are developed using a risk-based approach to ensure the availability of appropriate resources and personnel in the region to minimize impacts to the environment and the public. Finally, throughout the design, procurement, installation, and

operation of the Project, the company assesses the risks posed at each stage and implements plans to minimize these risks.

Enbridge developed ICPs for each region in which it has pipeline operations. The ICP will serve as the ERP for NDPC's pipelines in North Dakota, Minnesota and Wisconsin. The primary purpose of the ICP is to ensure an effective, safe, and comprehensive response to all types of incidents, regardless of what the incident is where the incident occurs, or what type of resource may be impacted. The "Core Plan" serves as the primary response tool within the ICP and is supported by additional Annexes, known as ERAPs, which are region-specific, condensed versions of the ICP tailored to the unique features of the region. The ERAPs are publicly-available documents.
NDPC believes that the assessment being conducted to prepare the CSMP, EPP, and ERAP sufficiently meet MPCA's request for a Phase I and addresses concerns regarding managing areas of known contamination prior to construction, preventing contamination during construction, and ensuring appropriate operation of the pipeline and response to incidents, should they occur. Through the development of these three documents NDPC has conducted a robust and thoughtful review of the Project in all of its phases, and appropriately protects the environment and addresses MPCA's concerns.

III. Watershed Restoration and Protection Strategy

Watershed Restoration and Protection Strategy

In 2006, the Minnesota Legislature passed the Clean Water Legacy Act, which required the MPCA to develop an approach to comprehensively monitor and assess the waters of the state every 10 years and provided one-time funding for that effort. In order to provide long term, consistent funding for Minnesota's clean water efforts, on November 4, 2008, Minnesota's voters passed the Clean Water, Land and Legacy Amendment (Legacy Amendment) to the Minnesota Constitution to, in part, protect and restore lakes, rivers, streams and groundwater. The Amendment imposed three-eighths of one percent sales tax to fund the effort for 25 years. Subsequently, in 2013, the Clean Water Accountability Act was passed by the Minnesota Legislature. This new law requires the MPCA to develop watershed restoration and protection strategies (WRAPS) for each of the state's 81 major watershed units, which correspond to the 8-digit hydrologic unit codes (HUCs). WRAPS include the monitoring and assessment information, as well as land use-based models that demonstrate the source of the highest contributors of pollutants in each watershed. This information is then used to develop strategies to either protect waters that meet water quality standards or restore waters that do not meet standards.

The WRAPS is a collaborative effort that involves the MPCA, the DNR, the Board of Water and Soil Resources, the Department of Health, the Department of Agriculture, local soil and water conservation districts, watershed districts, the University of Minnesota, industry and business organizations, and the private citizens of Minnesota. WRAPS components are: monitoring and assessment of hydrology and the chemical and biological constituents of water quality, a stressor identification process, TMDLs and restoration plans for impaired waters, protection strategies for waters that currently meet standards, and a civic engagement process to assist stakeholders with implementing protection and restoration strategies.

While not yet completed, WRAPS are in process in the following major watersheds that the Sandpiper proposal will cross, also identified by the corresponding eight-digit HUCs:

- *Grand Marais Creek* *HUC 09020306*
- *Red Lake River* *HUC 09020303*
- *Clearwater River* *HUC 09020305*
- *Mississippi – Headwaters* *HUC 07010101*
- *Crow Wing River* *HUC 07010106*
- *Pine River* *HUC 07010105*
- *Mississippi – Grand Rapids* *HUC 07010103*
- *Kettle River* *HUC 07030003*
- *St. Louis River* *HUC 04010201*
- *Nemadji River* *HUC 04010301*

One of the first tenets of any protection strategy is to avoid impacts where possible. The Sandpiper proposal is not consistent with the protection strategies that are currently in development for these WRAPS, due to the large number of high quality surface waters that lie along the path of the proposed route. Enbridge should participate in stakeholder groups for these WRAPS. Stakeholder groups provide a forum for engaged citizens and interested groups to develop implementation strategies to restore and protect each watershed. The CEA should review and consider how to integrate the strategies into the proposal, or find alternate routes that have less potential for impacting surface and groundwater.

NDPC Response: NDPC appreciates the MPCA providing notice of the upcoming WRAPS along the Preferred Route. NDPC understand that the intent of the WRAPS process is to integrate watershed protection, preservation, and restoration needs following a cycle of monitoring and data collection.

NDPC respectfully disagrees with MPCA's implicit assertion that the Project will harm surface waters along the Preferred Route, and the statement that the Project "is not consistent with the protection strategies that are currently in development for" the WRAPS for these watersheds. The Project will have robust, industry-leading, proactive, and thorough protections in place to minimize construction impacts to all resources along the Preferred Route, including surface waters. In fact, many of those strategies and protections will be developed and implemented in coordination with MPCA, DNR, and ACOE.

Further, with respect to protection of surface waters, NDPC will have pipeline monitoring and leak detection tools in place that meet or exceed PHMSA regulations and industry standards. For example, in accordance with 49 CFR 195.402, NDPC will monitor the pipeline twenty-four (24) hours a day, seven (7) days per week using four primary methods, each having a different focus and featuring different technology, resources, and timing. Used together, those methods provide an overlapping and comprehensive leak detection capability. PHMSA inspects each of the methods for compliance with Integrity Management Rules for Pipelines in HCAs, as per regulatory requirements set forth at 49 CFR 195. These methods were described in detail in Appendix A to this response.

NDPC shares the MPCA's goal of ensuring that the Project minimizes impact to valuable natural resources and will be constructed to comply with all applicable environmental rules and regulations. NDPC implemented an extensive routing process during route planning to meet our Project objective while minimizing impacts on natural, cultural, and social resources potentially affected by the pipeline.

IV. Greenhouse Gas Emissions

Carbon Footprint – Greenhouse Gas Emissions

The MPCA is concerned about the carbon footprint of a project. The Minnesota Legislature established greenhouse gas (GHG) reduction goals in the Next Generation Energy Act (Minn. Stat. 216H.02). The goals of the Next Generation Energy Act are to reduce greenhouse gas emissions by 15 percent below 2005 levels by 2015, and 80 percent by 2050. Greenhouse gases, upon release to the atmosphere, warm the atmosphere and surface of the planet, and lead to alterations in the earth's climate. The GHG emissions measured and reported in Minnesota include carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride (SF_6), and two classes of compounds known collectively as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). These GHG emissions result from fuel combustion, the calcination of limestone, the degradation of organic (peats) and mineral soils, permanent land clearing and forest harvesting, and a variety of other sources. Pertaining to this project, source types include stationary and mobile source combustion from construction equipment, emissions from venting, and wetland and forest disruptions.

To track progress with the Next Generation Energy Act reduction goals, the CEA should evaluate the GHG emissions from the project and the impact these emissions may have on the attainment of the State's GHG reduction goals. Alternatives and options to reduce GHG emissions or to offset/mitigate GHG emissions should also be identified in the CEA. In addition, the CEA should evaluate the GHG impacts if this project is not built – specifically, if oil is transported by rail or truck instead of by pipeline.

NDPC Response: NDPC shares MPCA's commitment to reducing greenhouse gas ("GHG") emissions. Enbridge works to efficiently design its projects to ensure energy is efficiently utilized throughout the life of the Project. As a result of these and other continuing commitments, Enbridge again earned a spot as one of only three energy companies worldwide to earn a spot on 2014 Dow Jones Sustainability World Index.

As it relates to the Next Generation Energy Act, NDPC will note that it is a consumer, not generator, of electricity within the state.

Construction of the Project is not expected to generate significant GHG emissions. Construction of the pipeline and associated facilities could result in intermittent and short-term fugitive emissions due to combustion emissions from the construction equipment. The contractors will operate construction equipment on an as-needed basis, primarily during daylight hours. The engines meet the standards for mobile sources established by the USEPA mobile source emission regulations (40 CFR 85), which will minimize emissions from the gasoline and diesel combustion.

MPCA expressed concern regarding the release of carbon from wetland and forest disruptions. Undisturbed peat land areas contain large, thick deposits of organic materials that have accumulated over long periods of time in saturated conditions where decomposition is minimal. Drainage and disturbance of these wetland areas introduces the accumulated organic material to oxygen resulting in comparatively rapid decomposition and a rapid release of carbon dioxide ("CO_2") to the atmosphere. Wetland restoration, on the other hand, has the potential to sequester carbon from the atmosphere. This sequestration process occurs much more slowly than the carbon release associated with wetland disturbance but may ultimately result in total carbon accumulation that is comparable to an undisturbed wetland of a similar type. Because carbon accumulation in wetlands occurs gradually and over long periods of time, a restored wetland requires preservation over very long timescales to offset carbon released due to disturbance. Restoring wetlands re-establishes the original hydrologic conditions and can lead to decreased rates of organic matter oxidation and potential increases in carbon sequestration. However, it would be very difficult to predict with any certainty what the release or re-sequestering values will be.

Criteria pollutant emissions from operation of pipeline systems are predominantly limited to Volatile Organic Compounds ("VOCs") from adding and removing crude oil to/from tanks and fugitive VOC emissions from piping, pumps, and fittings. Indirect GHG emissions are generated as a result of using purchased electricity to run the pumps. NDPC estimates that operations of the pumps required to move product along the Project will result in emissions of 396 tons per year of carbon dioxide equivalent ("CO_2e"). By the time crude oil enters the pipeline system, it is not expected to contain methane. However, using a conservative assumption that some residual methane may still be found in crude, approximately 1,162 tons per year of CO_2e may also occur from increased tank throughput.

MPCA also requested that the CEA address the potential impacts of not constructing the Project – or, the impacts of the oil if transported by rail or truck. NDPC provided GHG emissions information regarding various system alternatives being considered with DOC-EERA's environmental review. To the extent DOC-EERA considers GHG emissions its review, NDPC agrees that the GHG emissions of rail and truck transportation options should also be analyzed.

The product the Project will transport is currently being shipped to markets via truck and/or rail. It would take 2,000 trucks per day to transport the same volume of oil that would be transported via the Project. These trucks would be responsible for emitting over 1 million tons per year of CO_2e. Overall, the burning of fossil fuels through the trucks' combustion engines would impact air quality in the region much more significantly that the GHGs that would result from construction or operation of the Project. Specifically, the trucking alternative would release 700 times more CO_2 per year than operation of the pipeline.

Airborne emissions from an equivalent rail operation would come from two sources, the loading and unloading facilities as well as from additional storage tanks to achieve this transportation process. It would take approximately 1,710 rail cars per day to transport the capacity of oil that could be shipped using the Sandpiper pipeline. This activity would be responsible for emitting over 437,000 tons per year of CO_2. Transporting the crude oil via pipeline would result in significantly less GHGs emitted per year than if transported by rail. The rail alternative would release approximately 280 times more CO_2 per year than operation of the pipeline.

Finally, while the MPCA's comment was specific to airborne emissions, additional environmental concerns would arise from the need to use other transportation modes such as the associated permanent impacts resulting from constructing these facilities, such as the permanent loss of wetlands, forest lands, removal of

agricultural lands from permanent production, and other types of habitat loss.

V. Environmental Justice

Environmental Justice

The MPCA works to incorporate environmental justice principles into its projects. Environmental Justice (EJ) involves assuring the fair treatment and meaningful involvement of all persons, regardless of race or income when making environmental decisions. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means: people have an opportunity to participate in decisions about activities that may affect their health and the environment in which they live; the public's contribution can influence the regulatory agency's decision; their concerns will be considered in the decision making process; and, decision makers seek out and facilitate the involvement of those potentially affected.

The proposed route of the Sandpiper Pipeline and other alternate routes may directly affect low income and minority populations. If a pipeline leak or break occurs, adverse impacts could occur in both surface and subsurface drinking water supplies, areas with stands of wild rice important to local Tribes and tribal members, cropland areas, impaired waters, and wildlife management areas among other types of environmental, social and economic impacts. If the Northern route or other alternate routes are chosen, the Sandpiper Pipeline may affect tribal lands.

The CEA should include consideration of EJ issues. The CEA should look at how pipeline construction and operation, and potential problems during each of these phases, may cause disproportionate impacts on low-income or minority populations. In addition, local, state and federal agencies should engage residents to assure that they are aware of opportunities to participate in the process and understand how their comments and concerns are incorporated into the final draft CEA.

NDPC Response: NDPC shares MPCA's interest in promoting environmental justice principles within the routing permit process. NDPC believes that the MPUC's current process allows for and encourages the fair treatment of all persons and analyzes the need and route to ensure no one group of people bears a disproportionate share of any perceived negative environmental consequence. The individuals and groups potentially affected by the Project have had and will continue to have multiple opportunities to be involved in Project development and the MPUC process, as evidenced by the numerous open houses NDPC held to hear and address concerns, the Public Information Meetings conducted by DOC-EERA, and the upcoming MPUC public hearings. Moreover, the MPUC has endeavored to ensure full and fair participation by extending the routing alternatives public comment period and providing an additional comment period to address System Alternatives. In addition, NDPC has been working diligently with the Minnesota Department of Health, Minnesota Department of Agriculture, MPCA, and DNR to address natural resource concerns and possible mitigative measures.

NDPC is not aware of Environmental Justice concerns along the Project's Preferred Route. Furthermore, the Preferred Route avoids disproportionately high and adverse human health or environmental effects to low-income, minority, and tribal populations. The route avoids population centers in general and avoids all tribal land. In contrast, the Northern Route Alternative would cross the Reservation for the Fond du Lac Band of Lake Superior Chippewa and the Leech Lake Reservation.

VI. Alternate Route Analysis

Alternate Route Analysis

The MPCA staff's analysis of the proposed Sandpiper route shows many water body crossings for which there would be very difficult or no access downstream of the crossing to clean up spills in the event of a crude oil release. The lack of possible access to these areas by people and equipment necessary to clean up spills increases the likelihood that

an incident could result in significant long-term environmental damage. A failure to account for these possibilities is considered to be a substantial flaw with the currently proposed Sandpiper route.

There are many variables that could be examined when considering the potential for environmental damage in the event of a release. These include: soil types, wetland types, sensitive or endangered species, proximity to aquifers, hydrology, forest types, state park boundaries, proximity to human populations, proximity to wild rice waters, connectivity of surface waters, and others. However, for purposes of providing a simpler and effective comparison between alternative route proposals that is both visual and quantifiable (within certain limitations that will be discussed in this letter), MPCA staff has elected to compare the routes based on access to potential leak sites for purposes of containment of spills and possible clean up.

To minimize variables and subjectivity for this analysis, MPCA staff opted to identify, using ArcGIS technology, water body crossings that had neither road or traversable upland features within 250 feet of flowages of water (heavily forested areas are not considered for this purpose to be traversable, as trees would have to be removed before equipment could be brought in), or portions of larger wetland complexes that fell within a 2000 foot buffer of the point where the proposed pipeline route was to cross a stream, lake, or wetland. The 250-foot distance from access point to flowage is somewhat arbitrary. MPCA staff conferred with contractors and engineers who specialize in road construction, and most felt that in a best-case scenario, with aggregate and equipment available, a 250-foot road into a bog or wetland would be constructed within 24 hours. Thus, for purposes of this analysis MPCA staff assumed that it is possible to build an access road to reach areas where containment of a spill might be accomplished before the spilled product covers an area large enough that cleanup would be highly destructive to a sensitive environment, or impossible. Similarly, there is no regulatory basis for choosing the 2000 foot buffer distance, other than it is a significant distance for oil impacts to occur over any surface water and easy to apply consistently statewide. It is a distance that for most people would be easy to visualize, yet small enough to create a fair comparison between routes. These numbers provide a basis for comparisons between routes and have little significance beyond that. However, if these criteria are used consistently for all proposed routes, it does provide a basis to compare the potential for each route to cause considerable environmental damage in the event of a release.

NDPC Response: As noted by MPCA above, there are many variables that could be examined when considering the potential for environmental damage in the unlikely event of a release. While NDPC appreciates MPCA's attempt to provide a method to compare routes, the above approach is insufficient to address all factors that must be accounted for when routing a major project. In reality, NDPC cannot simplify this important process and must focus on all factors in order to ensure we are adequately protecting the environment, human health, and socioeconomic conditions, all while creating an efficient means of providing reliable transportation service to markets and thereby the public consumers. Indeed, a failure to account for all of these factors when routing any pipeline would be considered to be a flawed analysis. In order to avoid these kinds of pitfalls, NDPC has assembled a knowledgeable and competent team of engineering and environmental professionals that has collectively dedicated tens of thousands of hours to collaboratively engineer, survey, and ultimately select a responsibly designed pipeline route.

Enbridge has operated pipelines for approximately 65 years in Minnesota through numerous segments of large expanses of bog or open water wetland that may appear on the face of a map, to have limited or difficult accessibility during seasonal conditions. Enbridge has also operated thousands of miles of pipelines in northern Alberta in areas considered much more rural than Minnesota. In fact, under no circumstance has NDPC not been able to access the right-of-way, across the same types of environments and ecosystems of concern to MPCA, to perform regular maintenance work and activities, or respond to an emergency situation. NDPC is able to do this because of its careful consideration of issues such as access and potential impediments during the routing process. This type of thorough route selection is advanced after tens of thousands of hours conducting detailed environmental survey, landowner discussions, and constructability reviews by staff experienced in pipeline construction and design.

The MPCA's 250-foot analysis and its assertion that a gravel road would need to be built for access in an emergency is not supported by Enbridge's experience with emergency response. As described in more detail in

Appendix A, NDPC has access to numerous types of equipment that enable NDPC to traverse the environments and ecosystems of concern to the MPCA in any conditions, enabling timely response to emergencies.

NDPC has engaged in discussions with MPCA staff regarding methodology for identification of the access points of concern. Of the 30 access locations of concern provided by MPCA on NDPC's Preferred Route, seven of the locations are where NDPC is co-located with the Minnesota Pipe Lie Company right-of-way (also referred to as 'Koch Pipelines ("KPL") system)'. An additional 14 locations are where NDPC is co-located with another utility (e.g., powerline). NDPC is confident that just as these existing utilities can access their rights-of-way, NDPC will also be able to do so. Accordingly, of the 30 access points identified as areas of concern, access is already available to 21 sites. NDPC is thoroughly studying the remaining 8 sites; NDPC will ensure that access will be possible.

Enbridge's ICP, which serves as the ERP for NDPC's pipelines in North Dakota, Minnesota and Wisconsin will also ensure that the Project meets federal emergency response planning requirements. As described above and in detail in Appendix A, NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has procedures for handling abnormal operating conditions and emergencies.

> *There are some factors to consider that fall beyond the scope of this comparison. For example, the water crossings proposed for the Sandpiper route are frequently streams or flowages with connectivity to other water bodies downstream. By contrast, water body crossings on the Northern route, including the Alberta Clipper pipeline, frequently involve very large wetland complexes rather than smaller, faster moving flowages. The area needed to access might be much greater, but the oil may move more slowly in such areas. Counting becomes a bit more difficult here as well, because it is difficult to establish criteria for counting "crossings" that is comparable to the different features observed in the Sandpiper route. In most cases, DNR catchment flow lines were used to distinguish one crossing point from another.*
>
> *In any case, the method used as a basis for comparison by MPCA staff does provide quantifiable data to analyze the proposed routes from a meaningful perspective: Which route proposals pose the greatest risk to create destructive and expensive containment and cleanup operations in the event of a spill?*

NDPC Response: NDPC analyzes the possible route options when it initiates a project, taking into account the need to minimize potential impacts to the public and the environment during construction and operation. NDPC's Preferred Route avoids significant waterbodies and ensures that the Project ERP can be fully implemented with the appropriate resources (personnel and equipment) available. Further detail regarding these issues will be provided as part of NDPC's direct testimony in the routing docket. NDPC notes that the costs of containment and cleanup operations in the event of a spill are borne in full by NDPC and, therefore, should not be taken into consideration by MPCA.

> *MPCA staff compared four proposed routes in their entirety (Figure A). The four proposed routes that were compared were 1) The currently proposed Sandpiper route; 2) The "Northern" route, which includes the Alberta Clipper pipeline, which has been suggested as an alternative by other entities; 3) The Viking/Magellan/Sandpiper gas line route which was identified as a possible alternative by MPCA staff; and (4) The southern "Alliance/Kinder Morgan" route which exits the state at the Iowa border and would be required to tie into the Enbridge infrastructure either in another state, or to circle around outside of Minnesota to end at the Superior Terminal. The fourth route was suggested as an alternative by the citizen group "Friends of the Headwaters."*
>
> *Any water body crossing, especially streams, rivers, or flowages of any kind that can carry oil downstream, pose the risk of creating large scale environmental damage in the event of a release. If possible, it is best to avoid crossing surface waters altogether with oil pipelines in order to minimize this risk. However, if a water body, bog or otherwise sensitive area is to be crossed, then serious consideration should be given to whether the site can be accessed quickly in the event of a release to contain the product, minimize migration of product into surface waters, soils and groundwater, and perform clean-up operations. In situations where roads have to be constructed to access a spill, the act of constructing the*

road, excavating and clearing vegetation can all exacerbate the damage that the spill itself created. Additionally, placement of flow control valves in strategic locations along/near sensitive areas may help to minimize backflow of product out of a fractured line into those areas. MPCA is providing separately an interactive map on the ArcGIS Online site for the Sandpiper project that identifies areas along the four examined routes where no practical access was observed within 2000 linear feet downstream, or in some cases, within 2000 feet diameter, of the water body crossing point and potential leak site. For purposes of this letter, hard copy photos showing examples of no-access sites and an overall view of the alternative route proposals are included.

A difficulty with aerial photograph analysis as opposed to field surveying of water crossings is that it is difficult to determine whether a stream or wetland is permanently, seasonally, or intermittently flooded. MPCA staff relied on National Wetland Inventory maps to identify wetland types, which will to some extent help to determine the likelihood of the wetland having open water at the time of a leak, which would allow transport of released oil to occur more quickly, or merely be in a state of saturated soil, which would result in easier and faster containment and cleanup of a spill.

The results of the MPCA staff analysis are as follows:

Sandpiper Route

The proposed Sandpiper route crosses 28 water bodies for which there is no access for possible containment within 2000 linear feet downstream of the proposed pipe crossing. Of these 28 water body crossings, one is a stream to lake system, 12 are wetland complexes, 10 are streams that flow to wetland systems, and five are streams that flow to wild rice areas. (Example Figures B and C)

Hill Route

The "Hill route alternative," suggested by the DNR as a way to avoid features of concern, would not differ from the proposed Sandpiper route based on the criteria discussed here.

Northern Route

The Northern route, which follows the path of the Alberta Clipper project crosses 22 water bodies for which there is no access within 2000 feet downstream of the location where crossings would occur if the route were followed. Along the Northern route, water bodies without access to potential leak sites within 2000 feet include one stream that flows to a lake, 14 wetland complexes, five stream/wetland systems, and two streams or wetlands that flow to wild rice production areas or wetlands (see example of the Northern Route crossing in Figures D & E below).

Viking/Magellan Route

The "Viking/Magellan" route corridor, which was referenced earlier in the letter, begins at the same western point that both the Sandpiper and Northern routes do; however, roughly 20 miles west of the North Dakota border it veers south and follows the Viking Gas Transmission Co. pipeline south and then southwest to roughly five miles west of North Branch, Minnesota, where it then follows the Magellan Pipeline Company, LP line north, where it eventually intersects with the proposed Sandpiper route just west of Superior, Wisconsin. This route has seven water body crossings with no access within 2000 feet downstream of the pipe crossing; however, these water bodies are often smaller wetland complexes than are seen on either the Sandpiper route or the Northern route. These crossings without access within 2000 feet include two wetland complexes, four stream/wetland systems, and one wild rice production area (see Figures F and G for crossing examples for this route proposal).

Kinder Morgan Cochin LLC and Alliance Pipeline LTD Route

The Kinder Morgan Cochin LLC and Alliance Pipeline LTD (Kinder Morgan/Alliance) line corridor enters the state in Traverse County just west of Wheaton, Minnesota, and runs to a southeast bearing until it exits the state south of Austin, MN. A pipeline along this route would cross no water bodies lacking access within 2000 feet of a potential leak site in surface water. There are very few water bodies crossed by this route in general over the proposed route.

National Hydrography Dataset

Even if access issues are taken out of the equation, the proposed Sandpiper route does not fare well in comparisons with alternative proposals based on examination of the National Hydrography Dataset (NHD) layer. Using the NHD layer, the proposed Sandpiper route would cross 20 water bodies, the Northern route would cross 10, the Viking/Magellan alternative would cross 12, and the Kinder Morgan/Alliance route would cross one water body within the state of Minnesota. The NHD layer obviously does not identify all water bodies that are being crossed; however, it does identify water bodies that are part of a connected network of surface waters which may also be a good gauge of potential environmental impact if an incident were to occur.

Notably, the two routes in this analysis that crossed the fewest water bodies and put water resources at the lowest risk for environmental damage both aligned away from the Clearbrook terminal. Perhaps the most problematic aspect of the design of this proposed route is the continued expansion of terminal capacity at the Clearbrook location. Any pipelines that are built to transport material out of the Clearbrook terminal are forced to enter the largest concentration of lakes, streams, and open-water wetlands in the state. Any route proposed out of Clearbrook, either south or east will cross dense expanses of open waters. A northern to eastern route from Clearbrook would cross massive wetland complexes and wild rice areas. If future, new terminals, were to be constructed in western Polk (could collect from Canada or North Dakota), Kittson (could collect from Canada or North Dakota) or even Clay counties (North Dakota) the creation a route proposal that avoids the greatest concentration of surface waters becomes feasible.

Summary of Route Analysis

There are numerous pipeline corridors that currently exist in Minnesota. Of those, there are several that cross far fewer water bodies and have better potential for access in the event of a release than the current Sandpiper proposal. MPCA staff examined three existing corridors in addition to the proposed Sandpiper route. While performing risk assessment, the current use of the corridors in question should also be considered, as much of the proposed Sandpiper route follows a corridor in which three other oil pipelines currently exist. Thus, not just one pipeline would be crossing sensitive water bodies with limited access, but four. The likelihood of an incident in which crude oil product is released is thus greater than what a single pipeline would entail. This is also true of the Northern route, in which numerous pipelines carrying crude oil exist. What has happened in the past with regard to location of pipeline routes is from this perspective unfortunate; MPCA staff believes that past routes have crossed too many water bodies in inaccessible areas, and the risk of large-scale impact as a result of a release incident is significant and ongoing. As this analysis shows, options posing a lesser risk to surface waters may be available.

Of the four possible routes that MPCA staff has examined, the proposed Sandpiper route and the previously followed Northern route show a significantly higher potential for environmental damage than either the Viking/Magellan corridor or the Kinder Morgan/Alliance route. It is also possible that an as-yet unexplored route could also score well relative to the Sandpiper proposal. The analysis of the Kinder Morgan route is incomplete in that possible impacts outside of the Minnesota State boundaries were not looked at, so the surface waters avoided or protected by this route are only located in Minnesota per this analysis. It is also acknowledged that the MPCA staff analysis focused on the potential water quality and natural resource aspects of the project and not on other types of resources or land uses.

Nevertheless, the criteria adopted for this analysis show a clear difference in potential risk

to surface waters between the Sandpiper proposal and other possible routes, and that in the event of a significant oil release, the Sandpiper route proposal has a significantly greater potential for large-scale environmental damage than other route proposals.

It is important to note that the construction of accesses through sensitive "no access" areas as a preventative measure can also create environmental hazards and damages and cannot be assumed to be an acceptable remedy. Rather, route proposals put forth now and in the future should take these factors into consideration and avoid continuing to cross surface waters at these locations. The minimization of surface water crossings in any location should become a priority for consideration when planning a route to construct a pipeline.

NDPC Response: MPCA's analysis here focuses exclusively on potential water quality and natural resource aspects of the Project and not on other types of resources or land uses. NDPC appreciates MPCA's focus on these resources, but notes that such an approach fails to take all possible resource and socioeconomic factors into account when routing a pipeline, and results in an incomplete analysis.

In order for NDPC, as the applicant, to responsibly analyze a pipeline route it must consider impacts to all resources that MPUC's siting criteria require be considered, including socioeconomics, cultural resources, public lands and recreation, human impacts (residences, structures), and safety, among others. This type of thorough route review is only possible after conducting the tens of thousands of hours completing and analyzing detailed environmental survey, conducting landowner discussions, and completing constructability reviews by staff experienced in pipeline construction, design and operation. A thorough record regarding these issues will be developed through the contested case proceeding once the routing permit docket restarts.

With regard to routing for the Project, NDPC used the National Hydrography Dataset ("NHD") and detailed topographic analyses to identify waterbodies and drainages crossed by the Preferred Route. These waterbodies and drainages were hydraulically traced downstream to identify which lakes and rivers, if any, would be potentially affected by a pipeline release and which waterbody along each drainage would be the first to be affected. Many of the topographic drainages that do not contain water are landlocked, without an outlet to a surface waterbody. Only a small percentage of lakes and rivers in any of the watersheds were found to hydraulically connect to the pipeline corridor and a much smaller subset were found to be potentially the first affected lake. If oil were to ever reach the first affected lake, oil migration would cease because of minimal currents in non-riverine lakes and booms could be employed to confine the affected surface area of the lake to a smallest area possible.

Oil that seeps into the ground moves very slowly (feet per year) and quickly reaches an equilibrium condition that results in no further movement. Oil that reaches a surface waterbody moves at the velocity of the current. For wetlands, this velocity is nearly zero. In lakes, the driving force is not current but wind, which moves floating oil at rates that confine the oil to a small area until response teams can deploy booms to prevent further movement and begin removal actions.

NDPC is interested in details from the agency about the methodology and sources used by MPCA to quantify the following statement, "The likelihood of an incident in which crude oil product is released is thus greater than what a single pipeline would entail."

MPCA addresses route and system alternatives in its comments. The Northern Route was presented as route alternative RA-07 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014. Per the MPUC's September 11, 2014 decision, six system alternatives will be further evaluated as part of the environmental review document prepared to support the Certificate of Need proceeding. NDPC will respond to each system and route alternative as appropriate as part of its direct and rebuttal testimony.

VII. Cumulative Impacts

Cumulative Impacts

The NEPA, Title 40, C.F.R. 1508.7, defines cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can

result from individually minor but collectively significant actions taking place over a period of time."

The cumulative impacts review in the CEA should include current and proposed transmission line corridors, highway construction, water delivery systems, landfills, railroads, power generations plants, feedlots, and mine and mineral extraction sites which have the potential to interact with the proposed project. The CEA should also review the potential for significant cumulative effects related to past, present and future projects in the Duluth/Superior area involving increased transmission, storage, processing or refining activities, including the expansion of the Calumet Superior Refining facility in Superior, Wisconsin, or transportation of oil, fuels or products refined or manufactured from oil. Areas in which such impacts could occur include air quality in Duluth and the surrounding area in Minnesota, water quality as related to new or increased discharges or shipping activities, and transportation whether by truck, rail or ships.

NDPC Response: NDPC offers the following information related to "past, present and future projects in the Duluth/Superior area…"

Table 1 (below) includes current, proposed, or reasonably foreseeable future projects or activities in the Duluth/Superior area that may potentially result in cumulative impacts to resources in the vicinity of the Project. NDPC recently provided the same information to the Wisconsin Department of Natural Resources to assist with the identification and description of cumulative impacts that would potentially result from implementation of the Project in the Duluth/Superior area. The results indicated that three types of projects (past, present, and reasonably foreseeable projects) could contribute to a cumulative impact when considered with the Project.

However, since the Project area has been significantly impacted by past human actions, including agricultural activities and urban and road development, NDPC determined that the impacts of the Project, when considered in conjunction with past, present, and reasonably foreseeable actions, would not be significant.

TABLE 1

Current, Proposed, and Future Projects in the General Duluth/Superior Area

Project Name	Project Proponent	Project Description	Type	Project Timeline
Line 67 Upgrade Project	Enbridge Energy	Increasing capacity on Line 67 from 450,000 barrels per day to 570,000 barrels per day into Enbridge's Superior, Wis. terminal	Oil Pipeline	In service by mid-2014
Superior Terminal Upgrade Projects	Enbridge Energy	Various upgrades due to expansion of the mainline pipeline system	Oil Storage Facility	Construction beginning 2014
US 2/ US 53 Interchange Project	Wisconsin Department of Transportation	Reconstruction of 5 miles of US Highway 2 in Douglas County, WI	Road Construction	Construction beginning 1st quarter 2014 and completed in 4th quarter 2014
West Central Freeway Projects	Wisconsin Department of Transportation	Projects planned for the reconstruction of 117 miles of roadway in Northwest Wisconsin	Road Construction	Not Available
US 2 Belknap Street Project	Wisconsin Department of Transportation	1.4 miles of Roadway and storm drain replacement	Road Construction	Preliminary Planning in 2nd quarter 2012 to construction complete in 2nd quarter 2018
61 Southern Access Project	Enbridge Energy	Increase capacity of existing pipeline (Line 61) as well as the addition of 9 new pump stations and upgrading of three existing stations	Oil Pipeline	2006 - 2008
Badger Coulee 345kV Transmission Line Project	American Transmission Company and Xcel Energy	Construction of approximately 160-180 miles of 345 kV Transmission line in Northwestern Wisconsin	Transmission	Applications completed 4th quarter 2013 to Project in-service in 1st quarter 2018
Natural Gas to Monroe County Wisconsin	Wisconsin Power and Light	Natural gas pipeline construction in Monroe County, WI	Natural Gas Pipeline	Construction beginning 2nd quarter 2013

TABLE 1

Current, Proposed, and Future Projects in the General Duluth/Superior Area

Project Name	Project Proponent	Project Description	Type	Project Timeline
Forester Electrical Engineering Evansville Project	Forester Electrical Engineering Company	2.7 miles of 12.45 kV with new transformer installation	Transmission	Preliminary Planning 3rd quarter 2013 construction complete 4th quarter 2014
Natural Gas Extension for Town of Salem and Town and Village of Maiden Rock Pierce County	Xcel Energy	Installation of 11 miles of 6-inch of natural gas pipe. All project segments are to be installed within electrical right-of-way or public property.	Natural Gas Pipeline	4th quarter 2011 construction
Dyckesville-Sawyer Rebuild Project	American Transmission Company	Replacement of 24.7 miles of 69 kV transmission lines in Door County, WI	Transmission	Application completed 1st quarter 2014 to in-service in 2nd quarter 2016
Paris-Albers Rebuild Project	American Transmission Company	Replacement of 12.5 miles of 138 kV transmission line in Kenosha County, WI	Transmission	Application completed 1st quarter 2014 to in-service in 2nd quarter 2015
K115-138kV Conversion Project	American Transmission Company	Convert existing 69 kV transmission line to 138 kV in Winnebago, Oconto, Outagamie, Calumet, Shawano, Brown, Kewaunee and Manitowoc Counties	Transmission	Project in-service in 1st quarter 2016

The CEA should identify the impacts of past incidents associated with pipeline construction and operation, past incidents involving two or more associated utility lines, accidents or emergencies which may arise due to an unforeseen chain of events during the operational life of the pipeline, and effects within the project limits, and local and regional effects. Cumulative impacts may occur to:

- *Human activities, such as recreation, agriculture and loss of prime farmland;*
- *Wildlife including migratory birds and aquatic species;*
- *Habitat and alterations to terrestrial vegetation;*
- *Endangered species;*
- *Air quality, including dust (particulate matter) and visual impacts;*
- *Land values;*
- *Watersheds; and*
- *Local and state socioeconomics.*

According to data provided by the Pipeline and Hazardous Materials Safety Administration (PHMSA), to date, there are 2,408 miles of crude oil pipeline in the State of Minnesota. More are planned within the next few years. Much of this infrastructure exists in corridors shared by several other pipelines carrying liquefied petroleum gas, natural gas, diluent for tar sands oil, refined petroleum product and other hazardous materials. In total, there are 10,475 miles of pipeline through the state. According to PHMSA, over the last 20 years, there has been an average of 14 spills from pipelines per year in Minnesota, an average of 1,812 barrels of hazardous liquids spilled per year in Minnesota, an average of 1,093 net barrels lost per year in Minnesota, and an average of $3,135,572 of property damage annually in Minnesota. Five lives have been lost as a result of pipeline incidents.

NDPC Response: According to PHMSA, pipelines are the safest and most cost-effective means to transport the volumes of natural gas and hazardous liquid products that fuel our economy. Relative to the volumes of products transported, pipelines are extremely safe when compared to other modes of energy transportation. Oil pipeline releases amount to about 1 gallon per million barrel-miles (Association of Oil Pipelines). One barrel, transported one mile, equals one barrel-mile, and there are 42 gallons in a barrel. In household terms, this is less than one teaspoon of oil spilled per thousand barrel-miles.

There have been more truck and rail related fatalities in 2013 and 2014 in Minnesota than pipeline-related fatalities from the past 20 years combined. According to the Federal Railroad Administration Office of Safety and Analysis, in Minnesota alone there have been 8 train-related fatalities in 2014 (from January 1 through June 30, 2014). In addition, 387 people died on Minnesota highways in 2013, a 2 percent increase from 2012; 13 of the deaths involved large trucks (Minnesotans for Safe Driving).

There have also been a number of recent oil spills from rail accidents in Minnesota. In 2013, a one-mile-long train hauling oil from Canada derailed and leaked 20,000 to 30,000 gallons of crude oil in western Minnesota. In 2014, 12,000 gallons of crude oil leaked from a moving train while it continued 68 miles down the track.

Notwithstanding these other safety and spill considerations not mentioned by MPCA, Enbridge understands the importance of mitigating for potential releases and has developed ICPs for each region in which it has pipeline operations. Appendix A contains further details regarding the ICP.

Enbridge's Superior Region currently has response equipment located in 11 different areas including Bemidji, Minnesota and at the Superior, Wisconsin Terminal. Enbridge is planning to increase the number of storage locations with the addition of Sandpiper. Also, NDPC contracts with a full-service environmental and emergency response company and a classified Oil Spill Response Organization to supplement NDPC's own resources located at designated terminals, pumping stations, and pipeline maintenance facilities along the existing pipeline system. Those companies are located in many areas throughout the United States and maintain response teams equipped to quickly respond to emergencies upon notification. In addition, NDPC can utilize a helicopter to bring in containment booms, staff, and other supplies to ensure a rapid response to any emergency situation in any location. As described above, NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has procedures for handling abnormal operating conditions and emergencies.

> *The MPCA has numerous concerns about the number of pipelines planned to use the same corridors. With each water body crossed by a pipeline carrying crude oil, the risk of a major incident increases. A cursory review of the PHMSA web site identifies apparent causes of pipeline failure to include: incorrect operation, equipment failure, internal and external corrosion, third party damage (excavation), construction damage, material failure (pipe, fitting, weld), weld leak, and other unknown causes. For example, at the site of the Enbridge pipeline release in Marshall, Michigan, the National Transportation Safety Board found "that deficiencies in Enbridge's integrity management (IM) program contributed to the release of hazardous liquid…" (Federal Register, Volume 79, No. 87, Tuesday, May 6, 2014 (25990 – 25994). See also Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release, Marshall, Michigan, July 25, 2010 (NTSB/PAR-12/01, PB2012-916501). Ultimately, the perspective should not be if a pipeline fails, but how will a release be mitigated when a failure occurs and at any given location (and the environmental susceptibility of that area to a release).*
>
> *As explained above, MPCA examination of the proposed Sandpiper route and the previously used Northern route (Alberta Clipper) shows that significantly more open water bodies are crossed by the pipelines in these corridors than alternative routes. Far more of these crossings have no available access within a 2,000 foot buffer, meaning that release incidents are more likely to impact surface waters within that 2,000 buffer. Both the Sandpiper and Alberta Clipper routes are corridors for numerous crude oil pipelines; consequently, these routes are more vulnerable and less able to properly mitigate damage to aquatic environments. Whereas oil does travel through soils and overland, it travels significantly farther in aquatic environments.*

NDPC Response: NDPC would like to continue to engage in discussions with MPCA on shared pipeline corridors. NDPC endeavors to utilize existing rights-of-way as recommended by Minnesota law. And in contradiction to the above statements, MPCA's own route alternative recommendations to the DOC-EERA staff included the use of common corridors, specifically the existing Viking natural gas pipeline, Magellan petroleum projects pipeline and/or the Northern Natural Gas pipeline.

As part of our continued dialogue on shared corridors, NDPC is also interested in the methodology used by MPCA to quantify the risk of a major incident with each waterbody crossed by a pipeline carrying crude oil as

well as the scientific evidence that oil travels significantly farther in aquatic environments. Without these supporting details from the MPCA, it is challenging for NDPC to respond to these statements.

NDPC proposes that MPCA consider a shift in perspective; instead of approaching the Project from the perspective of *when* a failure will occur, consider approaching the Project from a perspective of *if* one will occur. As previously stated, in the event of an incident, NDPC is committed and able to respond appropriately and in a timely manner. NDPC continues discussion with MPCA staff regarding methodology for identification of access points of concern.

As stated above, oil that seeps into the ground moves very slowly (feet per year) and quickly reaches an equilibrium condition that results in no further movement. Oil that reaches surface water moves at the velocity of the current. For wetlands, this velocity is nearly zero. In lakes, the driving force is not current but wind, which moves floating oil at rates that confine the oil to a small area until response teams can deploy booms to prevent further movement and begin removal actions. As described above, NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has procedures for handling abnormal operating conditions and emergencies.

NDPC is committed to building a pipeline that meets all applicable regulations and to keeping the public informed. The planning and execution of the Project will be founded in the appropriate design and construction measures, which would include, but not be limited to: a) thoughtful routing; b) pipe coating; c) intelligent valve placement; d) strong operational plans and procedures; and e) an industry leading integrity management program.

> *Pipeline construction will involve soil excavation, vegetation removal, the crossing of water bodies, and the alteration or loss of wildlife habitat. These activities and the creation of new corridors can result in forest fragmentation affecting numerous species of wildlife that require expanses of undisturbed forest. Wetland perches may be broken causing alteration of natural hydrology in wetland areas, and stream geomorphology can be altered by damaging banks or stirring up stream bottoms. Herbicides used to control vegetation in pipeline corridors may adversely affect pollinators, particularly honeybees, resulting in hidden impacts that are difficult to trace, but nonetheless exist.*

NDPC Response: NDPC has worked extensively to reduce the potential for forest fragmentation along the Project's Preferred Route by co-locating with existing rights-of-way on over 75 percent of the route. At the request of DNR, and as described in the EIR, NDPC analyzed the potential for fragmentation of large contiguous blocks of wetland, grassland, and forest habitat of 40 or more acres. NDPC determined that approximately 75 percent of the route that crosses these contiguous areas is collocated with existing third-party rights-of-way, thereby avoiding new fragmentation of large areas of habitat across much of the Project. On the remaining 25 percent of the route that crosses contiguous areas, approximately 74 percent of the large areas of habitat overlap with the route for less than 0.1 mile, 21 percent of the habitats overlap with the route for less than 0.2 mile, and the remaining 5 percent overlap with the route for greater than 0.2 mile.

NDPC also worked with DNR to reduce fragmentation of a particular mature hardwood forest stand in the Hill River State Forest by developing an alternative route.

NDPC will install trench breakers as deemed necessary in sloped areas after the pipe has been lowered into the trench. Trench breakers protect against subsurface water flow along the pipe after the trench is backfilled. Trench breakers will be constructed with bags filled with rock-free subsoil or sand. Use of foam trench breakers will be approved by NDPC in advance and installed in accordance with applicable Project permits, local/state/federal regulations, and manufacturer's recommendations. Trench breakers will be placed from the bottom of the trench to near the top of the trench, completely surrounding the pipe and will be properly keyed into the undisturbed trench walls (refer to Figures 12 and 13 in the EPP). The location for trench breakers will be based on field conditions including the degree and length of slope, presence of down slope sensitive resource areas such as wetland and waterbodies, and proximity to other features such as roads and/or railroads. The following conditions apply to the placement and installation of trench breakers unless otherwise directed by NDPC:

- Trench breakers will be installed on slopes greater than 5 percent adjacent to streams, wetlands, or other waterbodies.

- Where the pipeline exits a wetland towards areas of lower relief, trench breakers will be installed (within the upland) where there is a potential for underground drainage along the pipe in order to prevent wetland or waterbody drainage.

- Trench breakers will be installed at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep accumulated trench water out of the waterbody.

NDPC is committed to restoring stream banks and bottoms to preconstruction conditions. Section 2.6 of the EPP states that where the stream banks have been disturbed, the Contractor will restore the slopes as near as practicable to pre-construction conditions unless that slope is determined by NDPC to be unstable. Where the slope of the banks is determined to be unstable or has the potential to erode or fail, the banks will be reshaped to transition the disturbed areas into the natural stream bank with the intent to stabilize the bank and create a blended, natural appearance. Unstable soils and/or site-specific factors such as stream velocity and flow direction may require additional restoration efforts, such as installation of rock rip-rap, to stabilize disturbed stream banks. Rock rip-rap will be used only where site-specific conditions require and where applicable permits or approvals have been acquired. Geotextile fabric and rock riprap will be placed according to site and permit conditions (refer to Figure 23 of the EPP). Disturbed soils upslope and on either side of the riprap will be prepared for seeding according to Section 7.0 of the EPP and other stream bank protection requirements. Bioengineering techniques may also be implemented as determined by NDPC (refer to Figures 26 through 28 of the EPP). NDPC will also be working closely with the DNR to identify waterbodies where bioengineering practices could be used as a method of bank stabilization.

In addition, NDPC received a letter from DNR on June 12, 2014 outlining the DNR's request for site-specific plans for sensitive stream crossings. These site-specific plans were to incorporate stream survey information on channel longitudinal profile, cross channel sections, bankfull elevations, and geotechnical evaluations, among others. NDPC will be conducting detailed stream surveys in 2014 to document the stability of sensitive waterbodies crossed by the Project. In addition, NDPC will continue to conduct geotechnical survey at waterbodies where HDDs are planned, and will conduct a desktop geotechnical study for most other Public Waters Inventory ("PWI") watercourses. This information will be used to inform the site-specific plans requested by the DNR for sensitive PWI waterbody crossings, including the proposed and alternate crossing methods.

All proposed herbicides will be reviewed and approved by NDPC prior to use. The Contractor(s) will obtain necessary permits and/or certifications for the use of the applicable herbicides, is responsible to limit off-right-of-way overspray, and will comply with state laws regarding the use of those herbicides. Contractor(s) will keep proper documentation of the locations where the herbicides have been used and provide such documentation to NDPC within 3 days of completing the work (refer to Section1.6.1 of the EPP).

> *The construction, operation, maintenance, incidents and repairs associated with crude oil pipelines have been accompanied by significant environmental impacts. With more proposals in the works, more cumulative impacts can be expected to occur. Therefore, concerted effort is needed to take a close look at and carefully analyze the creation of common routes and corridors for pipeline projects where the risks of impacts to the environmental and human health can be minimized. The routes that have been used in the past pose substantial risks as noted above. Continuing to open more corridors will increase these risks and impacts. The MPCA would support and participate in a joint effort by state agencies to begin examining the feasibility of such a corridor, both for the purpose of expediting approval of future proposals and minimizing the potential for environmental impacts. A fresh look at the routing of energy transportation projects from a larger and more comprehensive perspective has the potential to make a significant contribution to streamlining the review and permitting processes as well as preventing and minimizing cumulative impacts.*
>
> ***End of MPCA Letter***

NDPC Response: In regard to the MPCA's statement that, "[t]he construction, operation, maintenance, incidents and repairs associated with crude oil pipelines have been accompanied by significant environmental impacts," NDPC respectfully requests additional details regarding how that conclusion was reached and is interested in the methodology of reaching such a conclusion.

In the event a joint discussion is held by state agencies, NDPC would respectfully request that invitations

be extended to industry representatives and other stakeholders of high voltage transmission lines, railroads and road authorities, as well as pipelines, as those projects also generate construction, operation, maintenance, incidents and repairs accompanied by environmental impacts. This would allow experienced staff from all linear industries potentially affected by a common corridor to speak to safety, operational, and integrity concerns.

ENBRIDGE

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Sandpiper Pipeline Project

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North Dakota Pipeline Company LLC
1409 Hammond Avenue, Second Floor
Superior, Wisconsin
54880

October 14, 2014

Jamie Schrenzel
Planner Principal
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul MN 55155

Subject: North Dakota Pipeline Company LLC
Sandpiper Pipeline Project
Response to Comments - Pipeline Routing Permit Application for the Sandpiper Pipeline Project (MPUC Docket No. PL-6668/PPL-13-474)

Dear Ms. Schrenzel:

As part of the Minnesota Department of Natural Resources ("DNR") participation in the Minnesota Public Utilities Commission ("MPUC") proceeding for North Dakota Pipeline Company LLC ("NDPC")[1] Sandpiper Pipeline Project ("Project") Pipeline Routing Permit Application ("Application"), DNR submitted letters to Mr. Larry Hartman, dated April 4, 2014, and May 30, 2014, commenting on various technical and policy aspects of the Application and the Project. While the MPUC recently suspended the routing permit proceeding, we wanted to take this opportunity to formally respond to the DNR letters to further the dialogue between DNR and NDPC on these important technical and policy matters.

Many of DNR's comments recommended specific data or topics be included within the scope of the Comparative Environmental Analysis ("CEA") to be prepared by Minnesota Department of Commerce Energy Environmental Review and Analysis ("DOC-EERA") staff as part of the routing permit proceeding. NDPC understands that the MPUC and DOC-EERA determine the scope of the CEA. As such, this letter is not intended to address whether any particular topic should or should not be included within the CEA. Rather, this letter is intended to provide useful information to address DNR's stated concerns and help to inform the continued coordination between DNR and NDPC that is critical to the permitting process.

Similarly, a number of DNR's comments recommended that specific data or topics be addressed in NDPC's Environmental Protection Plan ("EPP"). The EPP outlines construction-related environmental policies, procedures, and protection measures developed by NDPC as a baseline for construction of the Project. The EPP is designed to address typical circumstances that may be encountered along the Project and to details NDPC's best management practices and how to implement them with the contractor. Including state specific requirements on this multi-state Project changes the overall intent of this document. Therefore, in most cases NDPC does not plan to revise the EPP language and instead as addressed the technical issues raised by DNR.

There are two attachments to this letter. Appendix A addresses major issues raised in DNR's April 4, 2014 letter and Appendix B addresses major issues raised in its May 30, 2014 letter. In each appendix, we have duplicated relevant provisions of the comment letters and provided our responses and explanations immediately following DNR's original comments.

Major topics addressed in Appendix A include but are not limited to:

- DNR's General Comments on the Project;
- Alternative Routes;
- Environmental Impacts of the Proposed Project;
- NDPC's Application for a Routing Permit;
- NDPC's Environmental Information Report ("EIR"); and
- NDPC's EPP.

[1] The Applicant is North Dakota Pipeline Company LLC, a Delaware limited liability company qualified to do business in Minnesota. NDPC is a joint venture between Enbridge Energy Partners, L.P. ("EEP"), NDPC's former sole parent entity, and Williston Basin Pipeline LLC, a wholly owned indirect subsidiary of Marathon Petroleum Corporation (collectively referred to as "MPC"). NDPC owns and operates a crude oil interstate pipeline transportation system that gathers crude oil from points near producing wells in North Dakota and Montana and transports shipper's crude petroleum to both the Enbridge Mainline System and Minnesota Pipe Line Company at Clearbrook, Minnesota. This pipeline system is commonly referred to as the North Dakota Pipeline System or NDPC System. The NDPC System is operated by Enbridge Operating Services, L.L.C, and Enbridge Operating Services, L.L.C. will construct and operate the Project on behalf of NDPC. In this response, Enbridge Inc. and its affiliates are referred to collectively as "Enbridge" with the exception of North Dakota Pipeline Company LLC which is referred to as "NDPC".

Major topics addressed in Appendix B include but are not limited to:

- State Lands and Public Resources;
- Proposed and Alternative Routes;
- Third-party Monitoring;
- Federally Funded Lands; and
- Cumulative Impacts.

When reviewing the information contained in this response, we ask that you keep the following background information in mind:

The purpose of the Project is to transport crude oil from NDPC's Beaver Lodge station near Tioga, North Dakota, to Clearbrook, Minnesota, and then on to the Superior terminal in northwestern Wisconsin. The region's pipeline system is highly integrated, and the Project design utilizes important features of the existing system while addresses capacity shortfalls within the existing system. Connections at Clearbrook and Superior are essential to optimize the performance of the overall pipeline system and to enhance the reliability of deliveries to Midwest refineries, including those located in Minnesota. By tying to existing pipeline infrastructure, the Project reduces the overall need to construct new pipeline facilities.

NDPC undertook an extensive process during route planning to develop a route that meets our Project objective while minimizing potential impacts on natural, cultural, and social resources. NDPC minimized the creation of new rights-of-way (greenfield routes) by siting the pipeline within or adjacent to existing rights-of-way where practical. Approximately 75 percent of NDPC's Preferred Route follows existing rights-of-way. Installation of a new pipeline along an existing cleared right-of-way (such as another pipeline, electric transmission line, road, or railroad) is usually environmentally preferable to the construction of a new right-of-way, and construction effects and cumulative impacts can normally be reduced by routing adjacent to a previously cleared, disturbed corridor.

We also conducted field surveys and other resource inventories along the Preferred Route to identify natural resources that may potentially be adversely impacted by construction, including waterbodies; wetlands; rare plant and animal species; archaeological and cultural features; tribal land; national forest property; and soil, hydrologic, and geologic features. We made numerous route adjustments, both major and minor, to minimize impacts on these sensitive resources. Much of the detail regarding NDPC's efforts to reduce impacts through these route adjustments will be available once NDPC files its direct testimony in the routing permit docket.

Where resources could not be avoided, we committed to implementing Project-specific minimization and mitigation measures as outlined in our comprehensive EPP. NDPC's EPP outlines the construction-related environmental policies, procedures, and protection measures that will be utilized during construction of the Project. The EPP is based on Enbridge's experience implementing best management practices ("BMPs") during construction, as well as the Federal Energy Regulatory Commission's ("FERC's") Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures (May 2013 Versions). NDPC's EPP contains mitigation measures that meet or exceed federal, state, tribal, and local environmental protection and erosion control requirements, specifications and practices.

NDPC will design, construct, test, operate, and maintain our pipeline in accordance with criteria that have been established by the U.S. Department of Transportation's ("DOT") Pipeline and Hazardous Materials Safety Administration ("PHMSA"). PHMSA administers the national regulatory program to ensure the safe transportation of crude oil and other hazardous materials by pipeline. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents, and requires operators like NDPC to develop written plans to identify areas where a pipeline release could cause considerable harm to people or the environment. NDPC will be preparing these plans as part of this Project.

Thank you for your comments, and again, we look forward to a continued dialogue with the DNR as the Project moves forward. Collaboration with your agency is a key component of the Project development. If you have any questions, please contact me by telephone, (715)-398-4730, or email Sara.Ploetz@enbridge.com.

Sincerely,

Sara Ploetz

Sara Ploetz

Senior Environmental Analyst
North Dakota Pipeline Company LLC

Enclosures: Appendix A – NDPC Response to DNR Letter Dated April 4, 2014
Appendix B – NDPC Response to DNR Letter Dated May 30, 2014

cc: Tom Landwehr, DNR Commissioner
Nathan Kestner, DNR Regional Environmental Assessment Ecologist – Northwest Region
Rian Reed, DNR Regional Environmental Assessment Ecologist – Northeast Region
Cindy Buttleman, DNR Regional Operations Supervisor – Northwest Region
Joe Rokola, DNR Regional Operations Supervisor – Northeast Region
Deborah Pile, DOC-EERA
Larry Hartman, DOC-EERA
Patrice Jensen, MPCA
Ralph Augustin, ACOE

Appendix A

NDPC Response to DNR Letter Dated April 4, 2014

Appendix A
NDPC Response to DNR Letter Dated April 4, 2014

NDPC has incorporated the text of DNR's letter below (in italics), with NDPC's response inserted below the text to which it is responding.

DNR Letter

The Minnesota Department of Natural Resources (DNR) is in receipt of a Pipeline Routing Permit Application (Application), an Environmental Information Report (EIR), and EIR Appendices dated January 31, 2014, for the Sandpiper Pipeline Project proposed by North Dakota Pipeline Company, LLC (NDPC).

We understand that the documents currently available for review will be used in part as data to be utilized in completing the Comparative Environmental Analysis (CEA). For this reason our comments not only respond to specifics topics open for public comment, but also respond to the Application, EIR, and Environmental Protection Plan (EPP). Please consider all comments for corresponding documents and for consideration in the production of the CEA. Our comments are broken down into the following sections:*

I. General Comments
*II. Alternative Routes that should be carried forward for review as Part of a CEA**
*III. Environmental Impacts that should be studied in the CEA **
IV. Application for Routing Permit
V. Environmental Information Report (EIR)
VI. Appendix A Environmental Protection Plan (EPP)
VII. Appendix G.5- Aerial and Topo Route Maps

I. GENERAL COMMENTS

The North Dakota Pipeline Company (NDPC) and the DNR have discussed the proposed route, alternative routes, rare species, and construction techniques. The DNR appreciates this coordination. Also, the DNR sent the enclosed early coordination letters to the Applicant regarding the Sandpiper Project. However, from review of the Environmental Information Report (EIR) and from reviewing documents available at recent public meetings; it is clear that much of the information requested in DNR early coordination reviews has not been provided in the materials submitted in NDPC's Application. For example, maps available at the Park Rapids public meeting included the North Country Trail and other trails, but did not include other important resources such as large rivers (e.g. Mississippi), streams and wetlands. Many of the same resources were missing from maps provided as part of the Application and EIR.

NDPC Response: NDPC appreciates the ongoing communication and coordination with the DNR. NDPC met with DNR staff in-person on September 5, 2013 to discuss DNR's early coordination concerns outlined in its August 14, 2013 letter. On October 10, 2013 NDPC formally responded to DNR's early coordination letter addressing each of the concerns identified with information that was available to NDPC at the time. Since that response, NDPC has provided additional project maps to the DNR, including detailed maps of all state land and public water crossings as part of its February 2014 Applications for Licenses to Cross Public Lands and Waters. NDPC remains committed to providing DNR with the information required to complete their review and approval of the Project's applications for Licenses to Cross Public Lands and Waters.

The development of the applications and supporting materials requires significant time to collect and process field survey data to meet DNR's detailed information requests. NDPC provided maps at the public meetings in order to assist the public in understanding the route being proposed and to minimize any confusion that would have resulted if the maps also reflected all of the data points that DNR requested. The maps were not provided to respond to DNR's request for additional information. As stated at the time NDPC filed its application, NDPC was still in midst of conducting field surveys and identification of detailed features along its proposed route. NDPC did submit a full set of route sheets with the MPUC Application (submitted November 2013) as Appendix G.5 of the EIR which does show the important resources noted by DNR.

The DNR has completed the following comments based on a combination of coordination with NDPC, information in the Application and the EIR, attendance of the Park Rapids and Carlton public meetings, DNR resources such as the DNR "Data Deli" and other databases, and resource specialists on DNR staff. Though the DNR has adequate resource

information available to provide input at this time in the process, mapping provided in the EIR and Application was depicted at a level of detail that, without DNR in-house resources, would make understanding the environmental context difficult for the purpose of proposing routes and recommending topics for analysis in the CEA. Providing maps showing layers of resources is needed for public review and for the most effective coordination among state agencies. This information also helps meet the purpose and objectives of the review process under MN Rules Chapter 7852.

NDPC Response: The maps provided in NDPC's EIR and Pipeline Routing Permit application met the MPUC's requirements for a complete application. In addition to the maps submitted to MPUC, NDPC has provided DNR with detailed maps of the project route across state lands and public waters as part of its applications for Licenses to Cross Public Waters, first submitted in September 2013 and then revised in February 2014, and have also provided DNR with digital shapefiles of the route when requested. NDPC provided additional project maps to the DNR, including updated route and alternative digital data on June 9, 2014. Most recently, NDPC provided shapefiles of the Preferred Route to the MPUC as part of the Pipeline Routing Permit process on August 22, 2014. These shapefiles were also provided to the DNR via CD on August 27, 2014.

II. ALTERNATIVE ROUTES FOR ANALYSIS IN THE CEA

Until reviewing the CEA, the DNR does not advocate or support one route over another. After reviewing the CEA, the DNR may identify routing with less natural resource impacts to assist with the natural resource element of the routing criteria the PUC considers for a routing decision. The DNR carefully considered the proposed route and routing possibilities in the project vicinity and seeks additional information regarding the following alternatives. We encourage comparison of environmental impacts and other routing criteria between these alternatives and the Applicant Preferred Route. With an emphasis on natural resource concerns and topics of DNR jurisdiction, the following comments will focus on natural resource criteria included in Minnesota Rules, part 7852.1900. The DNR understands that minor adjustments or route width changes to address developing information as this process continues, or to address constructability issues, may be necessary.

Red River Crossing Co-Location Alternative

The DNR requests further analysis in the CEA of an existing NDPC Line 82 crossing of the Red River in Polk County.

The proposed Red River crossing is on an outside bend of the Red River (see below) south of an existing NDPC Line 82 crossing. The outside bends of rivers and streams are areas at which most bank erosion typically occurs. Existing woody vegetation in these areas provide critical bank protection and habitat. The application describes the need to remove woody vegetation for installation, maintenance, and monitoring purposes. Removal of stream bank vegetation tends to increase erosion potential, decrease water quality, and result in habitat loss and fragmentation. If there were co-location with other utilities in the future at this location, cumulative impacts would exacerbate these effects. As seen below, crossing at this location also would result in an additional crossing on a public watercourse immediately to the east which is a tributary to the Red Lake River.

In the interests of minimizing environmental impacts, we recommend that an option to co-locate with the existing NDPC Line 81 to the north (shown on the map above) be analyzed as an alternate crossing location in the CEA. An analysis of the effect of changing the Minnesota location of the border crossing on the North Dakota portion of the project is encouraged to the extent possible in the Minnesota review process.

NDPC Response: The route alternative as described by the DNR above was presented as RA-01 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014 and accepted into the CEA for further study on August 7, 2014.

The location of the proposed Red River crossing is a result of coordination with the city of Grand Forks, North Dakota. Since Line 81 was installed in 1962, Grand Forks, North Dakota, has grown and encroached around the Line 81 route. The city expressed concern with NDPC's original co-located alignment with Line 81, stating that a new pipeline in the

existing corridor would be located too close to the areas of new development. NDPC worked with the city to determine an acceptable location south of the existing corridor, therefore necessitating crossing the Red River at this location. The North Dakota Public Service Commission approved the Project route alignment in North Dakota on June 25, 2014.

Co-location with the existing Line 81 would increase the impacts to private landowners along the construction corridor in both North Dakota and Minnesota. There are multiple neighborhoods and a golf course on the west side of the Red River in North Dakota where the existing Line 81 crosses into Minnesota. Construction through these areas would be extremely constricted with existing Enbridge pipelines to the north and either the golf course or homes to the south. NDPC would be required to clear a significant number of trees along the golf course that currently provide privacy and protection. When compared to the Preferred Route alignment, the route alternative would result in far more impacts to residents of North Dakota prior to crossing into Minnesota.

NDPC has proposed to the U.S. Army Corps of Engineers ("ACOE"), DNR, and the North Dakota State Water Commission, the regulatory authorities at this location of the Red River, that the river crossing be conducted via a horizontal directional drill ("HDD"). Use of an HDD crossing technique would eliminate all but extremely limited hand clearing of trees to lay guide wires for use during the drilling operation. NDPC believes that use of the HDD technique mitigates DNR concerns regarding removal of streambank vegetation, erosion potential, water quality concerns, and habitat loss and fragmentation. In addition, NDPC has committed to developing a site-specific crossing plan for the Red River as a part of the DNR's License to Cross Public Waters application.

> *Northern Route Alternative (as depicted on Figure 2.3.2-1 in the EIR - see enclosure)*
> *The DNR requests further analysis of the Northern Route Alternative in the CEA. This route would appear to involve less length of wetlands crossed and less greenfield routes (approximately 93%). However, this route would also appear increase cumulative impacts to an existing corridor, include crossings of sensitive areas such as trout streams, and increase risk to the St. Louis River estuary in the case of an accidental oil release. Still, the significant reduction in greenfield impacts warrants a thorough comparative environmental analysis of this option and rational included in the EIR for removing this route from consideration is not sufficient. Additional justification for further analyzing this route is also provided under specific comments on the EIR.*
>
> *The assessment of this route should include all impacts and resources identified as part of DNR Early Coordination (see enclosures). Additionally, site specific resource data for the Northern Route should also be used where available (i.e. Alberta Clipper/LSR Pipeline info and possibly Minnesota Power CAPX data). This data may include but is not limited to wetland delineations, rare species, and soils information.*

NDPC Response: The route alternative as described by the DNR above was presented as RA-07 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and accepted into the CEA for further study on August 7, 2014.

NDPC concluded that use of Alberta Clipper/Southern Lights environmental survey data (obtained in 2007/2008) would not provide an appropriate comparison between the Preferred Route and any of its route alternatives, specifically the Northern Alternative. The Alberta Clipper/Southern Lights wetland delineation is outdated and is 6 years old, or more in some cases. Since wetland boundaries shift over time, it is not an accurate representation of what is currently present along the Alberta Clipper pipeline corridor. In fact, the ACOE will not accept wetland delineation data older than 5 years for permitting purposes and their jurisdictional determinations are also typically not valid after 5 years. Furthermore, the ACOE's Regional Supplement to the 1987 ACOE Wetland Delineation Manual for this area was still in draft form at the time of survey on Alberta Clipper, and was therefore not used. All regional supplements are now finalized and those region-specific methodologies were followed during Project surveys. While NDPC understands that using previous project field data can be appropriate in some instances, in this case it is our position that for the above-listed reasons, it would not provide an accurate representation of existing conditions and would not meet the objective of a comparative analysis.

> *Allete Powerline Route to Floodwood Alternative*
> *The DNR requests analysis of the following route in the CEA. This route would begin on the Applicant Preferred Route just south of the Moose Willow WMA and proceed easterly to existing pipeline corridor ("Northern Route") south of Floodwood, then follow the existing pipeline corridor south (see red line on map below). This route would avoid critical habitat in*

the Big Sandy Lake Watershed (Big Sandy Lake is listed as impaired for nutrients) as well as Grayling Marsh WMA, McGregor WMA, Lawler WMA, and Salo Marsh WMA (see depiction below).

The Enbridge preferred pipeline route (see pink line above) also intersects several named streams with known fisheries resources in Aitkin County, including the Sandy River, Moose River, White Elk Creek and the Willow River. The alternative route suggested would avoid all of the greenfield area proposed through Aitkin County, as well as state owned metallic mineral resources in Carlton County. These habitats and resources are discussed further in the Specific Areas of Concern Section.

NDPC Response: The route alternative as described by the DNR above was presented as RA-22 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014 and accepted into the CEA for further study on August 7, 2014.

The DNR's description of RA-22 notes that the route would avoid critical habitat within the Big Sandy Lake Watershed. However, when NDPC digitized the boundaries of the Big Sandy Lake Watershed Management Project[1] it found that RA-22 would still cross this watershed. In addition, NDPC has reviewed critical habitat information, and the Preferred Route currently does not cross any designated critical habitat associated with the Big Sandy Lake Watershed. None of the routes filed with the MPUC have crossed the McGregor Wildlife Management Area ("WMA"). NDPC has filed an application with the DNR for a License to Cross Public Waters; the Sandy, Moose, and Willow Rivers and White Elk Creek are included in this application. NDPC will work with the DNR to plan appropriate crossing techniques and mitigate DNR's concerns for the sensitive fisheries resources within these waterbodies.

Aitkin County Power Line Route
This route was analyzed by Enbridge in the EIR on pages 2-14 through 2-16 (see enclosure EIR Figure 2.3.3-2). This route would eliminate concerns regarding Sandy River fisheries and wild rice habitat as well as trout stream habitat along the Northern Route. This route would also avoid 3.1 miles of Wildlife Management Areas (WMA's). The route is still within the Sandy River Watershed and has some significant water body crossings and noteworthy concerns based on initial evaluation however it does follow an existing corridor and eliminates impacts to some resources as mentioned above. It would be beneficial to bring this route forward for analysis to understand the overall potential impacts on natural resources and to compare them to other routes.

NDPC Response: The route alternative as described by the DNR above was presented as RA-21 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and accepted into the CEA for further study on August 7, 2014.

While the route alternative does result in increased co-location with existing infrastructure and avoids WMAs, it increases the crossings of NWI-mapped wetlands, perennial waterbodies, and crossings of state forest land. Due to the extensive saturated wetland conditions along the alternative, winter construction would most likely be required to construct this route alternative.

Construction during summer months is unfavorable in saturated wetlands due to the unstable nature of the soil. Construction through saturated wetlands needs to be done in winter months when weather is conducive to freezing down the right of way to make winter roads that can be used for construction travel. Though portions of the alternative do cross upland areas, the entire route alternative would need to be constructed in winter months to maintain efficiencies and access. Additionally, even assuming winter construction, greater wetland impacts would be likely due to the need for increased travel down the construction workspace.

Hill River Alternative Route
The DNR requests that the following alternative be assessed in the CEA to minimize forest fragmentation and avoid old growth forest resources in the Hill River State Forest. The NDPC coordinated with the DNR to identify a route alternative with the goal of reducing environmental impact in the vicinity of the Hill River State Forest.

[1] http://aitkincountyswcd.org/PDF-Docs/BSL-Area-Watershed-Mgmt-Project-Map.pdf

Both the current route and the route alternative are 17 miles long. The route alternative is col- located with an existing road right-of-way for 0.2 mile; the current route is located entirely on greenfield. Both routes impact 1.7 mile of state land within the Hill River State Forest. The route alternative reduces impacts in this area and addresses DNR concerns identified during an October 3, 2013 early coordination letter. The Hill River Alternative offers a reduced amount of fragmentation to the Hill River State Forest. The enclosed map further identifies the location of this route.

NDPC Response: The route alternative as described by the DNR above was presented as RA-24 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and accepted into the CEA for further study on August 7, 2014. NDPC sponsored this route alternative as a result of coordination with the DNR and has included this route alternative in its Preferred Route filed August 22, 2014.

Aitkin County Soo Line Alternative and SNA Avoidance Route
The DNR recommends the Soo Line be evaluated with the route adjustments depicted in the enclosed map. The Soo Line Route would connect at the Enbridge near mile marker 534, east of the Mississippi River and follow the Soo Line corridor southeast on original Aitkin County Soo Line Route Alternative, then deviate from the Soo Line to avoid the McGregor SNA. This deviation would begin approximately at the NW of the NW Section 33 and run easterly across the northern boundary 10 mile and extend another 0.5 miles in to section 34 and connecting at the Enbridge preferred route. This 15 mile east/west route is shown in yellow. The preferred route is shown in pink. Following this route is another option to avoid many of the Sandy River Watershed fisheries and wild rice concerns discussed in above route recommendations. Also, the DNR anticipates public interest in the Soo Line route and wishes to provide an option for analysis that avoids impacts to the SNA bisected by the existing Soo Line corridor. Note that the route analysis area may need to be widened or there may need to be minor changes to account for adjustments and construction constraints during project analysis.

NDPC Response: The route alternative as described by the DNR above was presented as RA-23 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and accepted into the CEA for further study on August 7, 2014.

As described above, the public has shown significant interest in the Soo Line route, which strictly from an aerial perspective, appears to limit new greenfield construction. However, this alternative impacts more miles of NWI-mapped wetlands and crosses an additional perennial waterbody that has the likelihood to contain sensitive species.

Additionally, the idea of installing the pipe directly underneath the trail and not impacting the land outside of the trail easement is not realistic due to the process of pipeline construction. In the event NDPC were required to accomplish this, the trail would be closed to the public, be completely cleared, graded down and leveled off, which would significantly increase the amount of dredging and filling activities in wetlands which may not be approved by the ACOE. To mitigate this constraint, the pipe would be placed alongside the trail and the permanent and temporary workspaces would impact private and state properties adjacent to the Soo Line Trail right-of-way. Installing pipelines safely requires space for spoil, the ditch, the pipe, and a travel lane for equipment, all adjacent to each other during the construction process. These safety requirements are what drive a typical construction workspace width of 120 feet. Construction of the Project along the trail right-of-way would require trail closure for approximately one year as the trail would be the primary method of ingress/egress for construction.

Finally, there is the potential for the North Soo Line Railroad to be eligible for historic designation. The Soo Line may be historically significant and eligible for listing on the National Register of Historic Places under Criteria A, that is, as a property that is associated with events, activities, or patterns in history. The Soo Line would meet this criteria because of the role it played in transporting resources from northern extraction sites (e.g., North Dakota wheat, lumber, mined ores) to larger markets, stimulating the Minnesota economy of the early twentieth century, and significantly contributing to the historic growth and development of the state.

III. ENVIRONMENTAL IMPACTS THAT SHOULD BE STUDIED IN THE CEA
CUMULATIVE IMPACTS
Reasonably foreseeable projects that may affect the same environmental resources as the Sandpiper Project should be analyzed during an environmental review process as cumulative impacts. The High Prairie Pipeline and Koch Pipeline projects are

specifically mentioned in Section 2.2.1 of the EIR. Also, use of the Sandpiper corridor to accommodate new Line 3 expansion plans was also recently discussed by Enbridge staff in a news publication (John Meyers Forum News Service Article dated March 5th, 2014).

The CEA should include a cumulative impacts assessment for all routes carried forward. The CEA should use existing developed pipeline corridors as reference for the type of impacts (e.g. total width, # of pipelines, etc.) that several pipeline together can have on a route corridor. If other projects impacting the same resource area are anticipated, such as transmission lines, those should also be included.

NDPC Response: On May 30, 2014, NDPC provide supplemental information to address cumulative impacts of the Line 3 Replacement project. The supplemental information provided updates to the tables in the EIR filed with NDPC's Application showing the potential additive impacts of the Line 3 Replacement project.

In addition, as part of the ACOE permitting process, NDPC anticipates that the ACOE will prepare a cumulative impacts analysis to aquatic resources that considers the proposed Project's Preferred Route when added to past, present, and reasonably foreseeable future projects.

Table 1 (below) includes current, proposed, or reasonably foreseeable future projects or activities in the Duluth/Superior area that may potentially result in cumulative impacts to resources in the vicinity of the Project. NDPC recently provided the same information to the Wisconsin Department of Natural Resources to assist with the identification and description of cumulative impacts that would potentially result from implementation of the Project in the Duluth/Superior area. The results indicated that three types of projects (past, present, and reasonably foreseeable projects) could contribute to a cumulative impact when considered with the Project.

However, since the Project area has been significantly impacted by past human actions, including agricultural activities and urban and road development, NDPC determined that the impacts of the Project, when considered in conjunction with past, present, and reasonably foreseeable actions, would not be significant.

TABLE 1

Current, Proposed, and Future Projects in the General Duluth/Superior Area

Project Name	Project Proponent	Project Description	Type	Project Timeline
Line 67 Upgrade Project	Enbridge Energy	Increasing capacity on Line 67 from 450,000 barrels per day to 570,000 barrels per day into Enbridge's Superior, Wis. terminal	Oil Pipeline	In service by mid-2014
Superior Terminal Upgrade Projects	Enbridge Energy	Various upgrades due to expansion of the mainline pipeline system	Oil Storage Facility	Construction beginning 2014
US 2/ US 53 Interchange Project	Wisconsin Department of Transportation	Reconstruction of 5 miles of US Highway 2 in Douglas County, WI	Road Construction	Construction beginning 1st quarter 2014 and completed in 4th quarter 2014
West Central Freeway Projects	Wisconsin Department of Transportation	Projects planned for the reconstruction of 117 miles of roadway in Northwest Wisconsin	Road Construction	Not Available
US 2 Belknap Street Project	Wisconsin Department of Transportation	1.4 miles of Roadway and storm drain replacement	Road Construction	Preliminary Planning in 2nd quarter 2012 to construction complete in 2nd quarter 2018
61 Southern Access Project	Enbridge Energy	Increase capacity of existing pipeline (Line 61) as well as the addition of 9 new pump stations and upgrading of three existing stations	Oil Pipeline	2006 - 2008
Badger Coulee 345kV Transmission Line Project	American Transmission Company and Xcel Energy	Construction of approximately 160-180 miles of 345 kV Transmission line in Northwestern Wisconsin	Transmission	Applications completed 4th quarter 2013 to Project in-service in 1st quarter 2018

TABLE 1

Current, Proposed, and Future Projects in the General Duluth/Superior Area

Project Name	Project Proponent	Project Description	Type	Project Timeline
Natural Gas to Monroe County Wisconsin	Wisconsin Power and Light	Natural gas pipeline construction in Monroe County, WI	Natural Gas Pipeline	Construction beginning 2nd quarter 2013
Forester Electrical Engineering Evansville Project	Forester Electrical Engineering Company	2.7 miles of 12.45 kV with new transformer installation	Transmission	Preliminary Planning 3rd quarter 2013 construction complete 4th quarter 2014
Natural Gas Extension for Town of Salem and Town and Village of Maiden Rock Pierce County	Xcel Energy	Installation of 11 miles of 6-inch of natural gas pipe. All project segments are to be installed within electrical right-of-way or public property.	Natural Gas Pipeline	4th quarter 2011 construction
Dyckesville-Sawyer Rebuild Project	American Transmission Company	Replacement of 24.7 miles of 69 kV transmission lines in Door County, WI	Transmission	Application completed 1st quarter 2014 to in-service in 2nd quarter 2016
Paris-Albers Rebuild Project	American Transmission Company	Replacement of 12.5 miles of 138 kV transmission line in Kenosha County, WI	Transmission	Application completed 1st quarter 2014 to in-service in 2nd quarter 2015
K115-138kV Conversion Project	American Transmission Company	Convert existing 69 kV transmission line to 138 kV in Winnebago, Oconto, Outagamie, Calumet, Shawano, Brown, Kewaunee and Manitowoc Counties	Transmission	Project in-service in 1st quarter 2016

WETLAND IMPACTS

Use of Site Specific Wetland Data Where Available

Large discrepancies many times exist between actual and existing wetland coverage when comparing field wetland delineation data to more general National Wetlands Inventory (NWI) data. This is apparent by comparing Table 2.3.3-1 in the EIR (which uses NWI data and indicates a total of 41.4 miles of wetlands crossed with the preferred route and 5.6 more miles of wetland crossed than the northern route) to Section 9.3.1 of the EIR which provides a more accurate estimate of 79.9 miles of total wetland distance crossed by the preferred route (based on 93% of wetland delineations completed with remaining planned for 2014).

It is our understanding that field data exists for much of the northern route as this work was completed as part of recent past Enbridge and Minnesota Power projects. In the interest of having a more accurate comparison of wetland lengths crossed (and overall potential for impacts to wetlands), the DNR recommends that field data be used in the CEA to compare more accurate estimates of wetland lengths crossed for both the Preferred and Northern Alternative routes, and wherever possible for other alternatives. For the northern alternative route, wetland edges identified as part of recent past projects should be extended along similar elevations to cover right- of-ways that would be used for a northern alternative route.

NDPC Response: NDPC acknowledges that discrepancies do exist between National Wetlands Inventory ("NWI") wetland data and data obtained specifically for the Project from field survey. NDPC uses field survey information to calculate Project impacts whenever possible. Wetland surveys were conducted along the Project Preferred Route only. NDPC did not survey the Northern Route Alternative, or any other alternative, during the 2013/2014 field seasons. Because of the discrepancy between NWI data and field survey data, NDPC used NWI data entirely in its comparative analyses for alternatives to ensure a 'like with like' comparison. Use of field survey data for wetland impacts related to the SPP route and use of NWI data for other route alternatives would not yield a true comparative analysis.

The Alberta Clipper/Southern Lights wetland delineation is outdated and is 6 years old or more in some cases. Since wetland boundaries shift over time it is not an accurate representation of what is currently present along the Alberta Clipper pipeline corridor. In fact, ACOE will not accept wetland delineation data older than 5 years for permitting purposes and their jurisdictional determinations are also typically not valid after 5 years. Furthermore, the ACOE's Regional Supplement to the 1987 ACOE Wetland Delineation Manual for this area was still in draft form at the time of survey on Alberta Clipper, and was therefore not used. All regional supplements are now finalized and those region-specific methodologies were followed during Project surveys. Due to the above stated reasons, NDPC finds that use of Alberta Clipper/Southern Lights environmental survey data (obtained in 2007/2008) would not provide an appropriate comparison between the Project and the Northern Alternative.

> *Wetland Sensitivity*
> *Certain wetlands are more sensitive to the types of impacts associated with pipeline construction and maintenance. In some cases, wetland vegetation and wetland characteristics return to pre- construction conditions relatively quickly after large-diameter pipeline construction. In other cases, the impacts can be long-term.*
>
> *The types of wetlands that appear to be most affected by large-diameter pipeline construction (including the Enbridge corridor proposed for expansion) in northern Minnesota include: (1) Ecologically complex wetlands, such as spring-fed wetlands where there is groundwater discharge in channels through the wetland, as well as laterally under the wetland surface and to adjacent streams; (2) Wetlands with high species diversity of native plants and/or deep organic soils; (3) Wetlands that are sloped where it is difficult to return to pre-construction contours (often these are spring-fed wetlands); (4) Wetland complexes that have a stream as an integral part of the ecological feature, such as trout streams through groundwater discharge zones; and (5) Wetlands containing significant saturation and floating bog mats.*
>
> *It is recommended that a wetland sensitivity analysis be included as part of the CEA for all routes carried forward. We believe this type of assessment would better compare the wetland impact potential for routes carried forward. In order to conduct this assessment it will be necessary to assign a sensitivity ranking to the predominant wetland types (using an agency agreed upon classification method) and then estimate total wetland lengths crossed for each predominant wetland type and sensitivity ranking.*

NDPC Response: NDPC is currently working with the ACOE to develop criteria to identify sensitive wetland and waterbodies for which a Least Environmentally Damaging and Practicable Alternative ("LEDPA") analysis will be performed. On July 15, 2014, NDPC provided the ACOE with a list of proposed criteria recommendations for selection of aquatic resources to be considered in the LEDPA analysis. This criteria included waterbodies with sensitive designations (e.g., state-listed sensitive resources, such as calcareous fens), aquatic resources in locations that may pose engineering/constructability concerns (e.g., extensively saturated wetlands), and areas identified by agencies such as the DNR and Minnesota Pollution Control Agency ("MPCA") as sensitive. Communication with the ACOE regarding the criteria is ongoing.

> *Wetland Impacts Associated with Maintaining Access*
> *In certain situations pipeline construction and long-term operation may limit access to both public and private lands. In order to maintain access to these lands it may be necessary to provide alternate access. The EIR has preliminarily identified about 200 such access roads.*
>
> *The CEA should describe all wetland impacts associated with providing alternate access.*

NDPC Response: NDPC works diligently with our private landowners to determine any alternate access points that may be required during the construction and operation of the Project. These requirements are captured in the construction line list that is communicated to the contractor to ensure that NDPC and its contractors comply with landowner requests.

NDPC has committed to DNR in the License to Cross Public Lands and Waters applications filed in February 2014 that alternate access will be provided to public lands, canoe routes, etc. Section 4.4.of the Lands Application states that, "NDPC will maintain public access to DNR-administered lands crossed by the proposed pipeline route to the extent safe and practicable during construction. Access to the immediate construction areas, however, may be limited or restricted at times such as during excavation and pipeline installation activities…After construction, NDPC will allow permanent

access across the pipeline to allow for crossing by DNR vehicles and logging equipment so long as any such crossings do not pose a risk to the safe operation of the pipeline." Section 4.1.4 of the Waters application states that, "public use of waterbodies [crossed using the open cut method] will be interrupted for a short time to allow installation of the pipeline. NDPC will plan to conduct work within the banks of the rivers in accordance with the EPP…to limit impacts. NDPC plans to post signs upstream and downstream of the crossings to notify the public of pipeline construction activities and will work with DNR to arrange for other appropriate user notifications. After the pipeline is installed, NDPC will allow flow to resume and allow river users to cross the construction area."

The 202 access roads presented in Table 1.2.3-1 of the January 2014 EIR represent a preliminary list of roads that NDPC plans to use to gain access to the construction right-of-way. Not all of these roads are new access roads. In areas where public roads are limited, existing privately-owned roads may be used to access the construction right-of-way. If public or privately-owned roads are not available, NDPC may need to construct new access roads.

NDPC conducts the same level of environmental survey for access roads that require improvement for use as it does for the construction right-of-way to facilitate avoidance and minimization to sensitive resources. This includes wetland/waterbody delineation and cultural resources. NDPC will seek appropriate authorizations for any access roads that may impact a delineated wetland or waterbody.

> *Winter Construction as a means to minimize wetland impacts*
> *Constructing pipelines during frozen-ground conditions has clear environmental advantages, especially in areas where work in wetlands and forested upland clearing is necessary. Construction on frozen ground also causes less disruption of vegetative root mass and less rutting and mixing of soils. Many times restoration and re-vegetation of temporary construction areas can occur more rapidly under frozen conditions.*
>
> *Despite the above mentioned benefits and recent usage on past projects, the EIR and associated Environmental Protection Plan (EPP) do little to acknowledge the use of winter construction as a way to minimize wetland impacts. While Section 8 of the EPP does acknowledge that constructing across wetlands in the winter can result in fewer impacts; neither the EIR nor the EPP list winter construction as an actual planned method to limit impacts to wetlands and other resources.*
>
> *The CEA should be explicit in the types of wetland impact and avoidance measures that have or will be incorporated into route planning process and proposed construction methods. The use of winter construction as a means to avoid impacts should also be regarded as an overall mitigation measure in the CEA. Proposed construction scheduling in wetlands would explain how this mitigation measure is planned in the context of project scheduling.*

NDPC Response: The EPP outlines construction-related environmental policies, procedures, and protection measures developed by NDPC as a baseline for construction of the Project. The EPP is designed to address typical circumstances that may be encountered along the Project. The winter construction procedures and protection measures outlined in Section 8 of NDPC's EPP are in place to guide winter construction activities wherever they might occur across the Project.

Section 1.3 of the EIR presents a preliminary winter construction schedule for approximately 11 miles of expansive wetlands generally located south and east of Clearbrook. Use of winter construction in these areas is dependent on the timing of regulatory approvals as receipt of those approvals will impact NDPC's construction schedule. NDPC will update its list of areas where winter construction may be used to limit impacts on wetlands once the Project route has been finalized.

> *Wetland monitoring*
> *In some cases as a result of many variables (wetland sensitivity, crossing methods, level of disturbance, etc.) diminished wetlands functions and values persists for many years on pipeline right-of-ways through wetlands.*
>
> *The exemptions provided for pipeline projects by existing wetland regulations have minimization of impacts and maintenance of wetland function and value over time as a central requirement. In the interests of minimizing net loss of wetland functions and values and meeting regulatory requirements, the CEA should include a long-term monitoring plan with specific performance criteria. If after the monitoring period restoration of wetland*

functions and values have not been achieved, prepared plans for compensatory mitigation should then be implemented.

NDPC Response: NDPC understands, based on past project experience, that the ACOE will outline a long-term monitoring plan for wetlands impacted by the project. NDPC will comply with long-term monitoring plans required by the ACOE permit for the Project.

CONVERSION OF FOREST AND SHRUB HABITAT TO GRASSLAND

As pipelines expand in forested areas, these habitats are converted to open land dominated by grasses. In addition, the larger the contiguous area of the opening, it is more likely that open country wildlife species will become established within the forest area. Some wildlife species benefit from these changes, but it is likely that the others, such as native songbirds dependent on mature forest habitat, suffer some losses.

The focus of the CEA, for this aspect of habitat loss, should assess conversion impacts on specific sites with identifiable forest values (such as certain old growth forest stands already specifically identified as having value).

Long-term conversion of Minnesota forest land to open areas likely also means merchantable timber can no longer be produced. Likewise, the CEA should also compare losses of merchantable timber associated with all route alternatives carried forward.

NDPC Response: NDPC has worked with the DNR to identify sensitive forest resources on public land along its Preferred Route since August 2013. NDPC has reviewed the sensitive forest resources information provided by DNR and, for the most part, NDPC's Preferred Route avoids such resources. Where resources on public land will be impacted, NDPC worked with the DNR to develop a route that reduces these impacts. Specifically, NDPC worked with the DNR to develop a route that avoids sensitive forest resources within the Hill River State Forest (see RA-24 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014).

NDPC has worked extensively to reduce the potential for forest fragmentation along the proposed Project route by co-locating with existing rights of way on over 75 percent of the route. At the request of DNR, and as described in the EIR, NDPC analyzed the potential for fragmentation of large contiguous blocks of wetland, grassland, and forest habitat of 40 or more acres. NDPC determined that approximately 75 percent of the route that crosses these contiguous areas is co-located with existing third-party rights-of-way, thereby avoiding new fragmentation of large areas of habitat across much of the Project. On the remaining 25 percent of the route that crosses contiguous areas, approximately 74 percent of the large areas of habitat overlap with the route for less than 0.1 mile, 21 percent of the habitats overlap with the route for less than 0.2 mile, and the remaining 5 percent overlap with the route for greater than 0.2 mile. NDPC believes that it has greatly limited greenfield construction across Minnesota (and therefore limited habitat fragmentation) by following existing utility corridors where possible.

Per Section 1.8 of the EPP, all merchantable timber will be managed in accordance with NDPC contract specifications. NDPC will compensate the DNR for any merchantable timber loss on state-managed lands if that is the State's request. Compensation for merchantable timber on private lands is agreed upon between NDPC and the landowner during easement acquisition. The construction and operation of the pipeline will prevent future use of the operational right-of-way to produce merchantable timber; however, landowners (including the State) will be compensated for the value of the land within the permanent easement.

IMPACTS ASSOCIATED WITH CROSSING STREAMS AND RIVERS

The EIR and the EPP provide detailed descriptions of the various crossing methods for streams and rivers. Missing from these documents are comparisons of the types and severity of impacts that can occur as a result of using various crossing methods.

The CEA should describe types of general impacts that can occur in association with each crossing method. A hierarchy or decision matrix including recommended crossing techniques should be provided for various stream types, flow regimes, soils, groundwater, and riparian conditions. In reviewing this information, it should be clear that the chosen method represents the least environmentally damaging practical alternative. Providing the material in this manner will also facilitate subsequent approval processes.

For sensitive stream crossings such as trout streams or impaired waters, the CEA should include a proposed crossing method by the Applicant and an alternative crossing method should there be unforeseen construction challenges. Impacts associated with these methods should be described for the specific sensitive crossings.

NDPC Response: NDPC conducts a detailed environmental and engineering review of the advantages and disadvantages of each possible crossing method before selecting the most environmentally appropriate and constructible method to use to cross a waterbody. Part of this review includes usage of industry best practices published by the Canadian Association of Petroleum Producers.[2] In addition, NDPC has sponsored detailed civil and environmental stream surveys at each waterbody crossing that inform the selection of the crossing method. NDPC initiated detailed geomorphic stream surveys in 2014 at the request of the DNR to document the stability of a subset of sensitive Public Water Inventory ("PWI") waterbodies crossed by the Project. NDPC provided DNR with a list of these waterbodies on September 17, 2014.

The EIR provides a discussion of the impacts that can occur while conducting stream crossings (see Section 9.2.5): "Pipeline construction across rivers and streams [using the open-cut, dam and pump, or flume method] can result in temporary and long-term adverse environmental impacts if not mitigated. Temporary impacts from in-stream trenching could include an increase in the sediment load downstream of the crossing location. Sustained periods of exposure to high levels of suspended solids have been shown to cause fish egg and fry mortality, as well as other deleterious impacts on fisheries and other aquatic resources…Alternative construction techniques (e.g., HDD or dry crossing methods) may be used at selected waterbodies to avoid and minimize impacts on these waterbodies. The HDD method is a well-established construction technique for installing pipeline under large waterbodies that avoids impacts associated with conventional open-cut methods. HDD installations have the potential to affect waterbodies, however, through inadvertent releases of drilling mud during construction." A list of waterbodies where NDPC is planning to use the HDD method is presented in Table 9.2.4-1 of the EIR.

Also, NDPC will avoid or minimize impacts on waterbodies by implementing the erosion and sediment control measures described in Appendix A of the EPP. NDPC will limit the duration of construction within waterbodies and limit equipment operation within waterbodies to the area necessary to complete the crossing. If the HDD method is used to cross waterbodies, NDPC will follow the EPP (see Appendix A) to prevent an inadvertent release of drilling mud or to minimize environmental effects resulting therefrom. NDPC's proposed waterbody construction methods will minimize short- and long-term impacts on the waterbodies along the Preferred Route.

Appendix B of NDPC's February 2014 Application for a License to Cross Public Waters contained a listing of all PWI features crossed by the pipeline. This Appendix contained notes on whether a PWI feature was a trout stream or an impaired water, among other designations. The Appendix also presented a proposed and alternate crossing method for each feature. NDPC will continue to work with the DNR to permit proposed and alternate crossing methods at all PWI features. Future revisions to the application will include site-specific crossing plans for many sensitive waterbodies, including trout streams and impaired waters. NDPC met with DNR Division of Lands and Minerals staff on August 6, 2014, to discuss the content of these site-specific plans. The plans will incorporate civil, environmental, and geomorphic stream survey data, along with geotechnical survey and study data, to inform the most appropriate crossing method. These plans, along with the proposed and alternate crossing method for each PWI feature crossed, will be reviewed and approved by the DNR as part of the licensing process.

INVASION OF NON-NATIVE SPECIES

There are several characteristics of pipeline construction that promote the spread of invasive exotic species. These include: (1) Extensive deep excavation over the trench and on side-hill areas from construction of the work pad, as well as the extensive and extended soil exposure during the construction season; (2) Soil compaction degrading the quality of soil. Many of the most problematic non-native species are adapted to invasion in areas of exposed soil, or areas of poor soil such as where topsoil has become buried or where there is compaction; (3) Lack of topsoil segregation and restoration of topsoil layer [The EPP indicates that topsoil segregation will only occur on certain lands such as cropland, hayfields, pasture land, and residential areas (EPP Section 110)], and (4) Lack of corridor maintenance practices after the

[2] Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association and Canadian Gas Association. 2005. Pipeline Associated Watercourse Crossings. 3rd Edition. Prepared by TERA Environmental Consultants and Salmo Consulting Inc. Calgary, AB

construction period in areas where poor soil prevents or reduces the creation of a good cover of native species.

The CEA should describe habitat integrity of the various habitats traversed by the various route alternatives and the risk of introduction or further spread of invasive non-native species to those habitats. In providing this assessment, the CEA should also describe the impacts of the proposed soil management practices and lack of soil segregation through many habitats (e.g. forested lands).

The CEA and other documents should also indicate whether different methods of invasive species control will be used for co-locations areas (many times already impacted) vs. greenfield areas and areas less affected.

NDPC Response: NDPC plans to conduct surveys for federal, state and locally listed terrestrial noxious and invasive plant species in advance of construction activities. The purpose of the surveys is to document the occurrence of terrestrial noxious and invasive plant species in upland and wetland areas. The surveys will provide background information that will assist in implementing mitigation measures during construction to minimize the potential for introducing or spreading terrestrial noxious and invasive plant species.

Section 1.6 of NDPC's EPP describes measures that will be implemented to prevent the spread of Noxious and Invasive weeds. Where topsoil occurs in non-forested areas, NDPC will remove the entire topsoil horizon and store the material separately from the subsoil to maintain the fertility and structure of the topsoil horizon. The exception is the areas of the Red River Valley where the topsoil depth can exceed 12 inches. In those areas, NDPC will only remove 12 inches during grading.

In forested areas, topsoil segregation is not practical. Extracting stumps within trench line, which is necessary to facilitate pipeline installation, will result in significant mixing of topsoil and subsoil. Trees outside the ditch line are typically cut and the stump is ground below the normal ground level leaving the roots intact. When the tree roots remain intact, topsoil segregation is not feasible; the presence of the roots prohibit conventional grading with a bulldozer blade or use of a backhoe bucket. In this situation, any attempt to segregate topsoil results in further mixing of soil horizons. Furthermore, significant topsoil and subsoil mixing occurs by removing the stumps and tree roots outside the trench line and attempts to strip the upper soil horizon will further mix the soil horizons. Because of these considerations, NDPC will not segregate topsoil in forested areas.

Finally, NDPC land agents are always available to address the concerns of private landowners and tenants following restoration. If NDPC is notified by a landowner or tenant of an infestation of invasive weeds following construction, NDPC will work with the landowner to determine any corrective actions as necessary.

SENSITIVE PLANT COMMUNITIES
The CEA should describe impacts to Sites of High and Outstanding Biodiversity Significance (including preliminary data, where available), Native Plant Communities, sensitive forest resources, sensitive wetlands (see wetland impacts section above), and state-listed species.

NDPC Response: NDPC reviewed publicly available data for Sites of Biodiversity Significance ("SOBS"), Native Plant Communities ("NPCs"), sensitive forest resources, sensitive wetlands, and state-listed species. NDPC found that three SOBS sites with a "High" rank occur within the Project's construction workspace and additional temporary workspace ("ATWS"). These sites are listed below with a description of the relevant rare plant survey efforts and findings. These sites also are presented in the revised Table 7.1.3-1 of the EIR, which appears on page A-40 of this document.

- Gentilly 22: The two areas of overlap between the NPC "Wet Brush-Prairie (Northern)" and the Project at this SOBS site were surveyed for rare plants in 2013 as part of a 1.2-mile survey segment that also included the Agassiz Interbeach Prairie Complex named in the footnote of Table 7.1.3-1. One individual of Hall's Sedge (Carex hallii, special concern) was found in an area of the NPC being grazed, and approximately ten individuals of Blanket Flower (Gaillardia aristata, special concern) were observed growing in a dry prairie community outside of the NPC.

- Lakeview 27: The Project overlaps this SOBS site for 1 mile along the site's southern boundary. The entire 1-mile segment of overlap was surveyed for rare plants in 2013, and no individuals were found.

NDPC included a portion of this 1-mile segment in its 2014 survey efforts due to minor route adjustments since the 2013 survey. Data for 2014 surveys are currently under review.

- Automba 1: The Project overlaps with this SOBS site in two locations. At the first location, the Project overlaps with the NPC "Aspen-Birch-Basswood Forest" for less than 0.1 mile at the western tip of the SOBS site; NDPC included this site in its 2014 survey plans. At the second location, the Project overlaps with the remaining NPCs listed in Table 7.1.3-1 for about 2.7 miles across the northern portion of the SOBS site. The entire 2.7-mile segment was surveyed for rare plants in 2013. Six patches of Pale Manna Grass (Torreyochloa pallida, special concern) were observed growing along the edge of a 5-foot-wide ditch through an alder swamp community at the eastern end of the segment. NDPC included a portion of this 2.7-mile segment in its 2014 survey efforts due to minor route adjustments since the 2013 survey. Data for 2014 surveys are currently under review.

The findings to date indicate that impacts to SOBS sites will be minimal; low numbers of individuals of three special-concern species were found during 2013 surveys. The three preliminary SOBS sites listed in Table 7.1.3-1 are being surveyed for rare plants in 2014. Once 2014 surveys are complete, NDPC will continue to coordinate with DNR to avoid, minimize, and mitigate impacts to rare plants, NPCs, and SOBS sites.

LOSS OF FISH AND WILDLIFE HABITAT VALUE FROM PERMANENT REMOVAL OF FORESTED OR BRUSH HABITAT ALONG RIVER AND CREEK CORRIDORS

River corridors lined with trees and shrubs provide high value fish and wildlife habitat. On past pipeline projects (Alberta Clipper/LSR) Best Management Practices (BMPs) were implemented to maintain these values. Specifically, as part of clearing operations for these aforementioned projects, a 20-foot buffer of herbaceous vegetation was left in place until trench and pipeline installation was necessary. Additionally, wildlife buffers consisting of woody vegetation and replanting on forested public water crossings occurred and consisted of planting of wood species that achieve heights of up to 15 feet. Minnesota shoreland zoning regulations and MDNR protected waters regulations promote retention of such vegetation.

River edge habitat that includes overstory trees, an understory, and shrubs is crucial for species such as mink, otter, beaver, and many species of birds. Open riverbanks would expose some of these species to predators. These include ground predators (such as fox and coyotes), and aerial predators (such as hawks and eagles.) Many prey species avoid open areas because of this exposure. Therefore, removal of woody vegetation directly degrades this habitat value. It is likely that the susceptibility of prey species to either ground or aerial predators increases as the corridor widens, since the wider distance provides the predator with more time and distance to overcome prey species.

Woody vegetation along riverbanks also provide shade that maintains cooler stream temperatures, which is important for cold-water fisheries such as trout streams.

The CEA should assess the impacts of removing woody vegetation along river and stream corridors. Such assessment should include the types of impacts described above for all routes. As part of the assessment, the cumulative loss of vegetation in these areas for all alternatives should be quantified. It is also recommended that the retention and/or replanting of woody vegetation along all forested river and creek corridors be regarded as an overall mitigation measure in the CEA.

NDPC Response: As detailed above, NDPC has worked extensively to reduce the potential for forest fragmentation along the proposed Project route by co-locating with existing rights of way on over 75 percent of the route. This effort also limits the potential for new impacts to impact forest and brush habitat along river and creek corridors. Approximately 75 percent the Project's Preferred Route will limit new losses of fish and wildlife habitat value through collocation efforts. On the remaining 25 percent of the route that crosses contiguous areas, approximately 74 percent of the large areas of habitat overlap with the route for less than 0.1 mile, 21 percent of the habitats overlap with the route for less than 0.2 mile, and the remaining 5 percent overlap with the route for greater than 0.2 mile.

As stated in Section 2.5 of the EPP, a vegetative buffer is maintained on each stream bank during wet trench, dam and pump, and flume stream crossing methods. Waterbodies crossed using the directional drilling/guided bore method

normally do not result in the disturbance of the stream banks or riparian vegetation (with exception to extremely limited hand clearing of woody required to facilitate guide wire placement), which reduces the potential for erosion and sedimentation at the stream crossing. In addition, clearing of forested and brushy areas for ATWS will be avoided as much as possible. Woody vegetation in wetlands and riparian areas will typically not be cleared for the purpose of ATWS unless approved by appropriate regulatory agencies as stipulated in permits issued for the Project (refer to Section 2.3 of the EPP).

NDPC will be working closely with the DNR to identify waterbodies where bioengineering practices could be used as a method of bank stabilization.

> ***LOSS OF WOODY VEGETATION THAT PROTECTS STREAM BANKS FROM EROSION AND CHANNEL MIGRATION***
> *Woody vegetation provides significantly better streambank stability during high river flows than do native grasses. In most situations restoration BMPs involving the planting of woody vegetation (such as willows) instead of rock rip rap provide both more stability and have positive habitat values*
>
> *From a bank erosion standpoint, crossing a stream at a perpendicular angle on a straight segment of stream is the lowest impact approach. A normal undamaged river system typically has meanders that are constantly migrating. Channel migration is also more active in streams in highly modified landscapes. Perpendicular crossings placed between meanders should be the practice implemented to avoid multiple channel crossings, minimize crossing length, and cross at the location with the most stable stream banks.*
>
> *As more pipelines are added to an existing corridor, the likelihood of an available perpendicular river crossing is reduced.*
>
> *It is recommended that the CEA include the following mitigation measures:*
>
> - *Retention and/or replanting of native woody vegetation along river and creek corridors.*
> - *Reshaping the banks to prevent runoff from directly entering a waterbody (perhaps direct runoff to a swale) would allowing stormwater to infiltrate rather than running directly into the waterbody (see berm in Figure 4 of the EPP).*

NDPC Response: As stated in 2.5 of the EPP, a vegetative buffer is maintained on each stream bank during wet trench, dam and pump, and flume stream crossing methods. Waterbodies crossed using the directional drilling/guided bore method normally do not result in the disturbance of the stream banks or riparian vegetation (with exception to extremely limited hand clearing of woody required to facilitate guide wire placement), which reduces the potential for erosion and sedimentation at the stream crossing.

Stream banks disturbed during construction will be restored as near as practicable to pre-construction conditions unless the slope is determined to be unstable which would result in utilizing mitigative measures such as rock riprap or reshaping the banks to prevent slumping or rock riprap in areas where other stabilization methods (such as bioengineering) are not feasible or effective. Once the banks have been stabilized, erosion control devices ("ECDs") will be installed within 24 hours of backfilling the crossing. Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements specified in section 1.17 of the EPP. A temporary seed mix (e.g., annual rye or annual oats) and mulch and/or erosion control blankets will be installed within a 50-foot buffer on either side of the stream, with exception to actively cultivated land. Silt fence or functional equivalent as approved in advance by NDPC will be installed upslope of the temporary seeding area (refer to section 2.5. of the EPP).

NDPC will also be working closely with the DNR to identify waterbodies where bioengineering practices could be used as a method of bank stabilization.

> ***PIPELINE IMPACTS TO STREAM CHANNEL STABILITY AND CHANNEL STABILITY IMPACTS TO THE PIPELINE***
> *Many of the streams proposed to be crossed by the pipeline provide important ecological connections between downstream larger lakes/stream and headwater*

lakes/smaller streams. Pipeline crossings should be designed to maintain upstream and downstream movement of fish under all flow conditions.

Both stable and unstable streams occur would be crossed by pipeline route alternatives. For stable channels, it is important that the crossing and restorations be designed and constructed in a manner that maintains the natural cross-sectional dimensions, longitudinal profile, and meander pattern over time without aggrading or degrading. For channels that are currently unstable or highly mobile, efforts should be taken to ensure that pipeline construction does not worsen unstable conditions and that pipeline to not become exposed overtime. In certain situation where stream channels are deepening, it will be important to provide adequate cover so pipeline segments do not become exposed over time.

Also, certain streams and rivers are particularly sensitive to impacts from the amount of excavation that would take place with a trenched crossing method. For example, some small trout streams in heavily vegetated areas are not capable of handling the amount of sediment that may be mobilized by pipeline construction, since they normally carry very little sediment. If pipeline construction causes sedimentation of if the stream receives a burst of sediment from the construction right-of- way during a rain even, channel modifications can occur for some distance downstream, resulting in a serious, long-term impact.

Water crossing sites where there are banks with groundwater discharge zones or wetland seepage areas on hillsides or slopes next to the stream may be problematic. Some of these areas have deep organic soils; and this is especially problematic because the trench walls continue to slump until the area reaches its angle of repose. Rainfall events, or surges in flow of groundwater caused by trenching during construction can also result in large amounts of organic sediment entering the stream. Often these groundwater discharge areas are adjacent wetlands, extending from the stream, that are sensitive to disturbance. Depending on the type of wetland, they may need special measures to re-vegetate. Other streams may have spring discharge wetlands on hillsides above them. Pipeline construction through such an area can de-stabilize these areas, leading to a long-term source of sediment and nutrient flows into the stream. On steep hillsides next to streams it may be difficult to control sediment during the construction season when temporary bridges are left in place and there is exposed soil on the pipeline right-of-way for the duration of the 2-3 month construction period.

The CEA should specifically assess pipeline impacts to stream channel stability and channel stability impacts to the pipelines. Mitigation measures for the above described challenges should be explored in the CEA.

NDPC Response: NDPC received a letter from DNR on June 12, 2014 outlining the DNR's request for site-specific plans for sensitive stream crossings. These site-specific plans were to incorporate stream survey information on channel longitudinal profile, cross channel sections, bankfull elevations, and geotechnical evaluations, among others. NDPC has initiated detailed stream surveys to document the stability of sensitive waterbodies crossed by the Project. NDPC provided DNR with a list of these waterbodies on September 17, 2014. In addition, NDPC will continue to conduct geotechnical survey at waterbodies where HDDs are planned, and will conduct a desktop geotechnical study for most other waterbodies. This information will be used to inform the site-specific plans requested by the DNR for sensitive PWI waterbody crossings, including the proposed and alternate crossing methods. Survey information will document the pre-construction conditions of streams and inform appropriate restoration activities, which should mitigate DNR's concerns regarding stream destabilization due to construction. In a September 17, 2014 letter, NDPC requested that DNR confirm that NDPC's approach regarding geomorphic stream surveys and geotechnical studies is appropriate. NDPC has not received confirmation of its approach from DNR as of the date of this letter.

On August 6, 2014, NDPC met with DNR Division of Lands and Minerals staff to discuss the content of its site-specific plans. At this meeting, NDPC and DNR discussed how they might work together to plan stream crossings in the least environmentally damaging and practicable way, and NDPC offered to work with regional DNR representatives that have a firsthand understanding of specific waterbody dynamics (deepening channels,

meanders, etc.) as it develops its site-specific crossing plans. NDPC looks forward to working with DNR representatives who can share waterbody-specific information on sensitive species (e.g., trout) and groundwater discharge zones, along with other sensitive issues that will aid NDPC in planning its crossing methods.

> ***STREAM RESTORATION***
> *Stream restoration should aim to restore geomorphic stability to the stream (restore correct dimension, pattern and profile of channel) to restore appropriate sediment transport rates and the creation of appropriate and diverse habitat. Details regarding stream restoration should be provided as part of environmental review or early in permitting and licensing processes.*
>
> *Detailed/high resolution survey data, with figures showing cross sections at intervals greater than 100 feet, is need for all stream crossings except where the horizontal directional drill (HDD) crossing method is used to determine effectiveness of restoration efforts. The following should be included:*
>
> - *Channel Longitudinal Profile Survey - Survey should include entire project area and extend to the first riffle upstream and downstream of the project taking survey shots along the channel thalweg (lowest point in channel) to show details in the channel such as riffles or pools. The number of points (elevations) obtained should be sufficient to show the length and depth of pools and well as other bed features such as runs and glides.*
> - *Channel Cross Sections - Channel cross section survey; take cross sections at 2 riffles and 2 pool areas. At a minimum take elevations 20 to 50 feet from the top of bank, at the edge of the top of bank, at the toe of the bank, and in the thalweg on both sides of channel. Show where the cross sections are taken on the longitudinal profile.*
> - *Bankfull Elevations - Survey should include representative bank cross section at a riffle, survey points should be at top of channel bank (floodplain), at the edge of the top of channel, at the toe of the channel bank, in the thalweg and at all changes in elevation or slope of the banks, noting undercut banks, changes in vegetation and changes in bank material.*
>
> *The only time rock riprap should be considered is when the integrity of infrastructure is in jeopardy. In many instances toe wood or other more natural means of stabilizing the stream bank along with sod mats (wetland sod with sedge and woody components) can be used. The DNR can provide assistance regarding the application of these practices.*

NDPC Response: As described above, NDPC is working with the DNR to develop site-specific waterbody crossing plans that will identify the pre-construction state of the waterbody and that will inform restoration to its pre-construction condition. In addition, NDPC will be providing DNR with a list of waterbodies where bioengineering practices could be used as a method of bank stabilization. NDPC looks forward to working with the DNR to develop bioengineered approaches to bank stabilization and restoration at sensitive waterbodies.

NDPC is conducting detailed geomorphic stream surveys in 2014 at the request of the DNR to document the stability of a subset of sensitive PWI waterbodies crossed by the Project. The results of these surveys will be used to inform the site-specific crossing plans. NDPC provided DNR with a list of these waterbodies on September 17, 2014.

> ***TROUT STREAMS***
> *The DNR is concerned that erosion control will not be sufficient to protect trout streams. The Application proposes the beginning of right-of-way clearing 50 feet from each edge of the stream. The DNR recommends a 100 foot vegetated buffer, rather than 50 feet as discussed.*

NDPC Response: The 50 foot buffer as described in the EPP was developed based on NDPC's experience implementing BMPs during construction as well as the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures (May 2013 Versions). The FERC's Procedures specify a 50-foot offset from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. This requirement is consistent with the 50-foot setback

described in NDPC's EPP (see Section 2.3). If safe work practices or site conditions do not allow for a 50-foot setback, clearing may be allowed up to 20 feet from the Ordinary High Water Mark, subject to site-specific approval. Enbridge's previous pipeline construction experience in Minnesota indicates that this approach is adequate to control erosion, even in proximity to sensitive resources. Further, the MPCA's Construction Stormwater National Pollutant Discharge Elimination System ("NPDES") permit requires a 50-foot natural buffer or use redundant sediment controls near surface waters if a buffer is not feasible.

Also, the corridor should be re-vegetated immediately after pipe placement.

NDPC Response: To the extent it is practicable to vegetate immediately after pipe placement, NDPC will do so. However, this may not be feasible if NDPC constructed in the winter (frozen conditions) or if the right-of-way is too wet to replace topsoil. Per Section 7.14 of the EPP, NDPC will delay seeding during frozen ground conditions until the applicable spring seeding period or will complete dormant seeding where conditions allow (i.e., no snow cover). NDPC developed its seeding windows in consultation with the U.S. Natural Resources Conservation Service and local/regional seed suppliers for normal average growing seasons, in conjunction with normal climate and soils conditions for maximum seed germination. NDPC will install temporary erosion controls during frozen conditions. Additionally, NDPC's experience in pipeline construction indicates that greater environmental damage can occur by allowing equipment to work in too-wet conditions; therefore, NDPC has incorporated Wet Weather Shutdown Procedures in Section 1.3 of the EPP. In the event the conditions as described above are encountered, NDPC will install temporary ECDs per the EPP.

Also, it should be required that the space and clearing for bridge crossings be minimized to the extent possible. These suggestions also apply to ATWS.

NDPC Response: NDPC currently minimizes the bridge width to the maximum extent it can while still allowing for the safe passage of heavy equipment. Minimizing the width further could result in safety hazards such as possible overturning of equipment due to instability. NDPC's commitment to neck-down workspace within the waterbody means that ATWS are necessary for equipment and materials storage, staging, and temporary spoil storage from the crossing itself.

Please also be aware that there are instream work date restrictions for all streams including trout streams. Work date allowances are different in the DNR Northwest and Northeast Regions. Proposed construction scheduling should be described in the CEA to account for these dates. This information can be provided by the DNR.

NDPC Response: NDPC will comply with the in-water work exclusion dates specific to the Northeast and Northwest Regions provided in the email from Nathan Kestner (DNR) to Sara Ploetz (NDPC) on June 13, 2014. Any specific construction work window requirements should be included as part of NDPC's License to Cross Public Waters.

For streambank restoration, we recommend that a mixture of native tree species, both deciduous and coniferous be planted at each riparian site and to restore to preexisting condition. Specific tree species should be tailored to the conditions (i.e. wetland vs. upland soils) at each site. Based on DNR staff experience, using potted tree stock in riparian plantings results in significantly greater survival of plantings requires less maintenance to establish.

NDPC Response: Any specific below-Ordinary High Water Mark streambank restoration mixtures for PWI waterbodies should be included as part of NDPC's License to Cross Public Waters.

IMPACTS ON OTHER IMPORTANT IDENTIFIED HABITATS
The CEA should assess impact to the following habitats:

- *Important deer winter cover complex in sections 31 and 32 of Badoura Township and section 36 of Crow Wing Lake Township.*

NDPC Response: The Project Preferred Route submitted on August 22, 2014, now avoids Sections 31 and 32 of Badoura Township and Section 36 of Crow Wing Lake Township.

IMPACTS OF NEARBY MINING ACTIVITIES ON PIPELINE INTEGRITY

Section 5.2 indicates that pipeline construction could preclude certain mining activities. The CEA should assess all potential impacts to mining.

STATE METALLIC MINERALS

In July, 2013 the DNR conducted a preliminary mineral review of state-owned surface and mineral ownerships as part of early coordination for the NDPL crude oil Sandpiper Project route proposal. Review identified the Sandpiper Project proposal intersecting state-owned lands and minerals under state metallic mineral lease in Carlton County.

The DNR is the administrator for state-owned lands and minerals under state metallic mineral lease to Kennecott Exploration Company ("Kennecott") for part of the project area. The project's proposed route intersects and would encumber one school trust parcel, nine tax forfeited parcels and may extend to adjoining parcels under lease. The 10 parcels are located in Sections 4, S and 6, Township 47 North, Range 21 West, in Carlton County. The state mineral leases include the right to use the state-owned surface for exploration and mining purposes.

In accordance with MN Rules 612S.07, the state and county may grant surface leases, permits and licenses to any portion of the surface under state metallic mineral lease, after consultation with the lessee. However, the surface leases, permits, or licenses shall not unduly interfere with exploration or mining operations conducted on the mining unit. As part of the consultation process, NDPL, Kennecott, and the DNR discussed the project route and operations, mining exploration and operations, concerns and options. Kennecott provided a response to the DNR in a letter dated March 20, 2014 (attached). The response included the following:

"Kennecott believes the proposed Pipeline Project will adversely affect Kennecott's non-ferrous metallic mineral interests in Carlton and Aitkin Counties, Minnesota (the "Tamarack Project"). The preferred route will intersect and limit Kennecott's access to mineral deposits critical to the exploration and potential development of copper nickel minerals it has leased from the State in Carlton County...Accordingly, Kennecott urges the Department to deny any request by NDPC for a lease, permit or license that would allow NDPC to unduly interfere with the Tamarack Project. NDPC can, and should, adjust its preferred route to avoid impacting Kennecott's mineral interests by routing its proposed pipeline approximately one and one-half miles south of Kennecott's leases. Attachment A to these comments is a memorandum from Kennecott's consultant, Foth Infrastructure & Environment, LLC, setting forth an alternative route segment, which avoids Kennecott's mineral interests ("FOTH Memorandum"). Kennecott will be proposing this route alternative for the Minnesota Public Utilities Commission's consideration on or before April 4, 2014."

Thus, the consultation as required under the state metallic mineral lease led to a response by the mineral lessee that the proposed pipeline location would unduly interfere with Kennecott's exploration or mining operations on the state-owned land. This response restricts the state and county from granting leases, licenses or permits for the Preferred Route. The DNR also has safety concerns with the possibility of having both future crude oil pipeline and mining operations on the same state-owned lands.

In addition, in selecting a route for the pipeline, the commission is guided by the criteria specified in Minnesota Rules, part 7852.1900, Subp. 3. The principal relevant criteria in this situation include: existing and planned future land use, economies within the route, including industrial and mining operations, natural resources, and relevant policies and rules of other state agencies. The state mineral lease was in effect prior to this project application and must be considered in any route determination.

DNR comments regarding minerals are directed toward encumbrance of Peat, Aggregate and Metallic Mineral resource areas along the proposed route. The DNR early coordination letter of July 25, 2013 indicated that compensation will be required for

peat and aggregate resources encumbered by the pipeline, related facilities and setbacks. DNR Lands and Minerals staff are currently reviewing which of the land or water crossing locations will need further encumbrance determinations for peat or aggregate resources. Outside of the Tamarack metallic mineral exploration area in eastern Aitkin County and western Carlton County, whose significance has already been noted above, locations of metallic mineral resources cannot be defined with sufficient precision in the rest of the proposed route to recommend any deviation from the proposed route as proposed for the purpose of avoiding mineral resources.

NDPC Response: NDPC continues to work with Kennecott to seek a resolution to routing in this area. NDPC submitted a route alternative to the MN DOC that avoids the Salo Marsh WMA and further removes the Preferred Route from the concentrated area of active mineral leases – see RA-38. This route alternative has been incorporated into the revised Preferred Route submitted on August 22, 2014. The Preferred Route now avoids the crossing of the state-administered school trust parcel on which Kennecott holds an active mineral lease, and reduces the number of county-administered parcels on which Kennecott holds an active mineral lease from nine parcels to seven parcels.

DNR notes that its staff are currently reviewing which of the land or water crossing locations will need further encumbrance determinations for peat or aggregate resources; NDPC would appreciate the results of this review.

ASSESSMENT OF RISK AND SUSCEPTIBILITY OF THE HYDROGEOLOGIC ENVIRONMENTAL TO CONTAMINATION

The overall risk of the pipeline to leaks, and susceptibility of various resources to those leaks, is relevant to the environmental review and pipeline permitting process yet Section 6.2 and 6.3 of the EIR (which provide information on soils and impacts on soils respectively) provide no discussion on the susceptibility of resources to contamination.

The DNR encourages discussion in the CEA of how public water crossings would be accessed along proposed and alternative routes for an expeditious emergency response to an accidental release of oil.

The CEA should draw on available literature to assess pipeline leak risk likelihood and consequences to resources. Prior to initiating such a study, a scope of work and methods should be provided for agency review and concurrence. There have been 3 Major Studies of the glacial outwash plain comprising the Straight River basin and surrounding area alone and additional studies may be available for other areas. Studies available for the Straight River Area include:

- *Helgsen, J.O., 1977. Ground water Appraisal of the Pineland Sands Area, Central Minnesota, USGS Water Resources Investigations Report.*
- *Stark, J.R., Armstrong, D.S, and Zwilling, D.R. 1994, Stream — Aquifer Interactions in the Straight River Area, Becker and Hubbard Counties, Minnesota, USGS Water Resources Investigations Report 94-4009.*
- *Kruse, G and Frischman, J, 2002, Surface Water And Ground Water Interaction And Thermal Changes In The Straight River In North Central Minnesota, Minnesota Department of Natural Resources.*

After agency concurrence on methods and scope, a desktop analysis should be completed by a third party licensed professional geologist and at a minimum include:

1. *Descriptions of geologic and hydrologic formations most susceptible to contamination occurring along all routes carried forward (soils types and permeability, watersheds, sensitive aquifers such as glacial wash aquifers, and watersheds).*
    a. *This could be a desktop exercise using publically available data.*
2. *Based on information provided above, descriptions of routes overall sensitivity to contamination.*
3. *Overall connectivity of above mentioned formations to receptors/resources such as lakes, wetlands, and streams, and aquifers.*

a. *Maps showing zones of impact overlaid with environmental resources and other sensitive receptors should be a product of this assessment.*

4. *Consequences of inadvertent releases for a variety of inadvertent release scenarios (e.g. large releases, small releases, frozen and non-frozen soils conditions, beneath snow cover, various responses and detection times, etc.) to identified zones of impact.*
5. *Impacts to fish and wildlife habitats (specific sections for trout waters), water quality, recreation (wild rice harvesting, fishing, hunting, etc.), cultural resources, agriculture, and commercial uses should all be estimated as part of this assessment. Noteworthy is that the Kalamazoo River Oil Spill in Michigan has resulted in the closures the river to recreation and other activities (http://www.epa.gov/enbridgespill/).*
6 *Crude volumes between various segments (segments between shutoff valve locations and other features which can provide similar function) and the impacts of spills of various magnitudes on resources.*

The creation of a cooperative oil spill organization headed by Enbridge could be regarded as a mitigation measure over potential oil spills. The model for this coop could be based on something similar to the Mississippi River Oil Spill Response Cooperative

NDPC Response: NDPC, as an affiliate of Enbridge, has an Integrated Contingency Plan ("ICP") approved by PHMSA under regulations set forth in 49 Code of Federal Regulations ("CFR") 194. That regulation provides standards and guidelines for preparing emergency response plans, including the listing of resources and capabilities of responding to a potential incident.

Enbridge developed ICPs for each region in which it has pipeline operations. The ICP will serve as the Emergency Response Plan ("ERP") for NDPC's pipelines in North Dakota, Minnesota and Wisconsin. As part of the ERP, Enbridge evaluates the equipment and/or access points required to ensure personnel and equipment are able to access the entire right-of-way so that it is able to respond to an incident. Enbridge's ICP was approved by PHMSA on July 11, 2013.

The ICP follows an industry recognized format for response planning, which was developed by the National Response Team ("NRT") as a means by which to consolidate multiple facility response plans. The U.S. Environmental Protection Agency ("USEPA"), U.S. Coast Guard, and the U.S. Occupational Safety and Health Administration, among other agencies, all provided input into the ICP format. Those federal agencies agreed that the ICP, when prepared in accordance with that guidance, will be the preferred method of response planning and documentation (refer to NRT ICP Guidance, at 61 Federal Register 28642 [June 5, 1996]). Enbridge's ICP is the first and only industry plan thus far to undergo an extensive, multi-agency review process, which included participation by USEPA.

The primary purpose of the ICP is to ensure an effective, safe, and comprehensive response to all types of incidents, regardless of what the incident is where the incident occurs, or what type of resource may be impacted. The "Core Plan" serves as the primary response tool within the ICP and is supported by additional Annexes, known as Emergency Response Action Plans ("ERAPs"), which are region-specific, condensed versions of the ICP tailored to the unique features of the region. The ERAPs are publicly-available documents.

The Project will be subject to the North Dakota and Superior Region ERAPs. These ERAPs include High-Consequence Area ("HCA") maps, which show the location of HCAs in the region, and Control Point ("CP") maps, which show downstream water access and collection points. The purpose of the CP maps is to identify, in advance, the best locations for deploying emergency response equipment, such as booms. This allows emergency responders to know exactly what to do in the event of an incident. These maps will be created for the Project once the route is finalized. Facility Response Plans will also be created for terminal and pump sites once the route is finalized.

Enbridge reviews the ICP annually to reflect operational or regulatory changes annually or when required. NDPC will submit regional annex changes to PHMSA prior to completion of the Project. In short, the NDPC ICP is exhaustive, thorough, and was compiled in accordance with stringent guidelines.

NDPC is also implementing changes to its Pipeline Public Awareness and Emergency Response Programs by:

- Developing an online and in-person training tool to provide NDPC-specific information to emergency responders in its host communities;

- Addition of Community Relations positions in key locations along NDPC liquid pipeline routes;

- Increased spending ($50 million) between 2012 and 2013 to improve programs, equipment and capabilities, develop better tools to deal with particular waterborne spills, and improve training programs;

- Implementation of specialized training for a cross-business unit response team, to respond to large-scale events anywhere in North America that would require more resources than a single NDPC liquid pipeline operating region or business unit could provide;

- Conducting an emergency-response preparedness assessment to identify additional strategic equipment purchases to enhance capabilities to more rapidly respond and contain a significant release anywhere in the NDPC system; and

- Addition of personnel in each NDPC liquid-pipeline operating region to improve emergency-preparedness planning and coordination.

Enbridge's Superior Region currently has response equipment located in 11 different areas, including Bemidji, Minnesota and at the Superior, Wisconsin Terminal. Enbridge is planning to increase the number of storage locations with the addition of the Project. Also, Enbridge contracts with a full-service environmental and emergency response company and a classified Oil Spill Response Organization to supplement Enbridge's own resources located at designated terminals, pumping stations, and pipeline maintenance facilities along the existing pipeline system. Those companies are located in many areas throughout the United States and maintain response teams equipped to quickly respond to emergencies upon notification.

Enbridge has operated up to six (6) pipelines for approximately 65 years through numerous segments of large expanses of bog or open water wetlands in Minnesota. Enbridge has also operated thousands of miles of pipeline in remote northern Alberta which also consists of large bog areas that are much more remote than northern Minnesota. These areas may appear on the face of a map to have limited or difficult accessibility during varying seasonal conditions. From an emergency response perspective, however, if a pipeline can be built in an area, emergency responders can reach the pipeline. NDPC carefully designed a route that takes into consideration various environmental and emergency response regulations, which require NDPC to have access to its right-of-way. This type of thorough route evaluation is iteratively honed and developed through tens of thousands of hours conducting detailed environmental surveys, landowner discussions and constructability reviews by staff experienced in pipeline construction and design.

NDPC retained Barr Engineering, Inc. to provide technical assistance in assessing the susceptibility of water table aquifers along the Project in Minnesota to effects from a crude oil release from the Project. Susceptibility is a function of (1) the permeability of the soils above the water table, and (2) the depth to the water table. Based on Barr's susceptibility assessment, water table aquifers have very-low- or low-susceptibility to effects of a crude oil release along 81 percent of the Project Preferred Route.

Even in a scenario where crude oil from a release migrates to the water table and soluble hydrocarbons dissolve into the groundwater, the distance that a plume of dissolved hydrocarbons will move from the site of the release is limited by natural processes. After release response and remediation activities remove contaminated soil, then natural attenuation would limit the maximum movement of a plume of dissolved hydrocarbons to a distance on the order of a few hundred feet. Over 30 years of studies at the U.S. Geological Survey Bemidji Crude Oil Research Site, where dissolved hydrocarbons have not reached a lake approximately 1,000 feet down gradient of the release site, demonstrate the effectiveness of natural attenuation in limiting the extent of effects on groundwater from a crude oil release in a location that is representative of high-susceptibility areas that the Project will cross.

NDPC used the National Hydrography Dataset ("NHD") and detailed topographic analyses to identify waterbodies and drainages crossed by the Preferred Route. These waterbodies and drainages were hydraulically traced downstream to identify which lakes and rivers, if any, would be potentially affected by a pipeline release and which waterbody along each drainage would be the first to be affected. Many of the topographic drainages that do not contain water are landlocked, without an outlet to a surface waterbody. Only a small percentage of lakes and rivers in any of the watersheds were found to hydraulically connect to the pipeline corridor and a much smaller subset were found to be

potentially the first affected lake. If oil were to ever reach the first affected lake, oil migration would cease because of minimal currents in non-riverine lakes and booms could be employed to confine the affected surface area of the lake to a smallest area possible.

Oil that seeps into the ground moves very slowly (feet per year) and quickly reaches an equilibrium condition that results in no further movement. Oil that reaches a surface waterbody moves at the velocity of the current. For wetlands, this velocity is nearly zero. In lakes, the driving force is not current but wind, which moves floating oil at rates that confine the oil to a small area until response teams can deploy booms to prevent further movement and begin removal actions.

> ***MAINLINE VALVE INSTALLATION LOCATIONS AND THEIR ABILITY TO MINIMIZE RESOURCE IMPACTS IN THE EVENT OF PIPELINE LEAKS OR FAILURE***
> *DNR's August 8th, 2013 early coordination letter specifically recommended exploring the feasibility of incorporating shut-off valves in close proximity to trout stream crossings to minimize impacts in the event of a failure. Based on review of the design, it is unclear which mainline valves are been proposed for environmental reasons (such as those provided as part of DNR early coordination review).*
>
> *The EIR indicates that approximately 15 mainline valves are proposed in Minnesota with locations based on engineering design and environmental surveys and will be installed near major rivers, environmentally sensitive areas, population centers, and pumping stations (Section 12.4 of EIR). Due to the amount of and proximity to various resources, this number appears inadequate.*
>
> *To provide context and help to demonstrate the importance of having shutoff valves placed in strategic locations; a pipeline with a 36" inside diameter pipeline one mile in length can hold approximately 279,000 gallons of crude oil. For a ten mile segment this would equate to approximately 2.79 million gallons of crude oil. In the case of the current Sandpiper proposal and the preferred route, there are 40 or more miles and many water and wetland crossings between proposed shutoff valve locations.*
>
> *The CEA should provide a table which lists valve locations and other features that can provide a similar function. This table should also specify what valve location have been installed for environmental concerns. For crossings that do not included valves, justification should be provided. The results of the leak analysis above should then be used to direct/inform placement of additional shutoff valves. As part of this assessment, the time for incident response and for shutoff valve activation and closure should be assessed (we understand shutoff valves need to be closed slowly to prevent a "water hammer effect" that could Infrastructure integrity). It will also be important that specific valve locations are included in route permit conditions.*

NDPC Response: The placement of valves along the Project is regulated by PHMSA in accordance with 49 CFR 195. Specifically, 49 CFR 195.260 provides guidance on where valves should be located. To meet these requirements, Enbridge reviews potential impacts from a release and determines the most effective placement of valves by conducting an Intelligent Valve Placement ("IVP") study for its pipelines, including the Project. The IVP identifies optimal valve locations that will protect major water crossings and HCAs in the event of a pipeline release. HCAs are defined by federal law, and include the following four areas:[3]

1. High Population Area;
2. Other Populated Area;
3. An Unusually Sensitive Area (which means a drinking water or ecological resource area); and
4. A Commercially Navigable Waterway.

NDPC has expanded this list by subdividing the "Unusually Sensitive Area" definition into two types of sensitive areas to create the following five HCA types:

1. High Population Area;
2. Other Populated Area;

[3] 49 CFR 195.450.

3. Drinking Water Resource;
4. Environmentally Sensitive Area; and
5. A Commercially Navigable Waterway.

The IVP complies with all PHMSA regulations, including 49 CFR 195.260 (e), which requires the installation of valves "on each side of a water crossing that is more than 100 feet (30 meters) wide from high-water mark to high-water mark unless the [PHMSA] Administrator finds in a particular case that valves are not justified." The IVP also considers:

- Locations that will reduce the potential consequence of a release;
- Construction limitations;
- Pump station locations;
- Presence of potential HCA as defined by PHMSA;
- Proximity to densely populated areas;
- Accessibility;
- Operational considerations; and
- Future pipeline expansion potential.

The sectionalizing valves on the Project will be remotely monitored and controlled by Enbridge's control center in Edmonton, Alberta. In the event of a release, NDPC can remotely close these valves from the NDPC console within the Enbridge Control Center, thereby significantly decreasing response time and helping mitigate the impact of any release. The initial response would depend on the source of the alarm. The main response would be to shut down the line by turning off the pump(s) and then closing the valve(s) so that there is not a pressure build-up in the pipe.

The Control Center will use multiple systems to monitor the pipeline. The first is a computational pipeline monitoring ("CPM") system, which uses measurements and pipeline data, such as differences in measured and expected pressures and flow rates in a pipeline, to detect potential leaks and trigger leak alarms, which precipitate the shutdown of the line. The second is a Supervisory Control and Data Acquisition ("SCADA") system, which is designed to remotely control the pipeline, detect anomalies, issue controller alarms, and initiate a station shutdown when certain conditions are present. Examples of SCADA data alarms include explosive vapor alarms, pump seal failure alarms, equipment vibration alarms, and fire alarms. Examples of SCADA-initiated shutdown triggers include high pressure limits, low pressure limits, and unintentional valve closures. The third system is line balance calculations, which compare the volume of oil injected into the pipeline to the amount delivered to identify unexpected losses of oil that would indicate a leak. Line balance calculations will be performed every two hours, and negative line balances that exceed the detection thresholds will result in the line being shut down. The fourth system is controller monitoring, where employees will monitor the pipeline on a 24/7 basis in the control center. These controllers monitor the SCADA system and other monitors to identify potential leaks, which can be detected through sudden changes in pressure, changes in pump speed, and changes in flow rates. NDPC will also rely on third-party reports of damage or other anomalies.

The amount of time required to identify a release, and thereby initiate shutdown, depends on the nature of the release. A full line rupture would result in multiple leak triggers and alarms that would notify controllers immediately. Small leaks would be typically detected by the CPM system and the line balance process. The smaller the leak, the more time it takes for these systems to alarm. The highest sensitivity setting requires 24 hours to trigger an alarm. Each controller will be required to shut down the line in the event they suspect an issue with pipeline operation.

As described above, NDPC, as an affiliate of Enbridge, has an ICP approved by PHMSA under regulations set forth in 49 CFR 194. That regulation provides standards and guidelines for preparing emergency response plans, including the listing of resources and capabilities of responding to a potential incident.

Enbridge reviews the ICP annually to reflect operational or regulatory changes annually or when required. NDPC will submit regional annex changes to PHMSA prior to completion of the Project. In short, the NDPC ICP is exhaustive, thorough, and was compiled in accordance with stringent guidelines.

Finally, NDPC would like to note a correction to DNR's calculation regarding the total volume of oil within a 36-inch inside diameter pipeline. DNR noted that a pipeline one mile in length could hold approximately 279,000 gallons of crude oil. DNR's calculation assumed that the pipe would have an inner diameter of 36 inches; however, this is incorrect as this assumption would mean that the 36-inch-diameter pipe would

essentially have no wall thickness. Assuming a standard wall thickness for X70 pipe, the maximum volume of oil within one mile of 36-inch-diameter pipeline would be approximately 263,000 gallons. While it appears DNR's example was intended to be illustrative, NDPC also notes that the Project pipeline is comprised of pipes of two different diameters, 24-inch and 30-inch, both less than the 36-inch example.

> *Many trout streams occur within the preferred corridor provided for review. It appears that six trout stream crossings may be unavoidable (many more within corridor). A GIS shapefile showing legally designated trout streams and trout stream tributaries (as identified in Minnesota Rules Chapter 6264) is available through the public DNR data deli.*
>
> *DNR recommends avoidance of all trout water crossings when practical. Due to the sensitive nature of these special waters, crossing requirements through these areas will be greater. We also recommend exploring the feasibility of incorporating shut-off valves in close proximity to trout stream crossings in the CEA to minimize impacts in the event of a failure.*

NDPC Response: Avoidance of all trout streams in Minnesota would be impractical due to the Project's purpose to move North Dakota crude oil east from the North Dakota/Minnesota border to the Clearbrook, Minnesota to deliver/receive volumes and then continue transport to Superior terminal. Most of the state's trout streams are concentrated in the northeastern part of the state to the south and east of Duluth/Superior. In light of the concentration of trout streams near NDPC's operations, NDPC has continually refined the route to minimize impacts on trout streams. NDPC used the DNR's trout stream layer from the Data Deli to determine the number of trout streams crossed by the Project. NDPC's EIR submitted in November 2013 noted that the route would cross 13 DNR trout streams and trout stream tributaries. NDPC's January 2014 EIR submittal, which reflected a revised route, noted that the route would cross nine trout streams and trout stream tributaries. The new Preferred Route submitted to the MPUC on August 22, 2014 now crosses six trout streams and trout stream tributaries. These include the following streams (proposed crossing method in parentheses):

- La Salle Creek (Open Cut)
- Straight River (HDD)
- Spring Brook (Open Cut)
- King Creek (Open Cut)
- Blackhoof River (Open Cut)
- Unnamed Stream (Blackhoof River Tributary) (Open Cut)

NDPC continues to work with DNR to refine the presentation as well as the list of sensitive PWI waterbodies that will require a site-specific plan. NDPC and DNR have discussed how they might work together to plan stream crossings in the least environmentally damaging and practicable way. NDPC looks forward to working with DNR representatives who can share waterbody-specific information on sensitive species (e.g., trout), along with other sensitive issues that will aid NDPC in planning its crossing methods.

> *At this point, the following locations are specifically recommended for analysis of installation of shutoff valves in the CEA. More recommendations may be added as more environmental review and License to Cross information becomes available. The final list of shutoff valve locations should be included in the PUC Route Permit Conditions.*
>
> - *Mississippi River.*
> - *Clearwater River.*
> - *LaSalle Creek.*
> - *Straight River.*
> - *Spring Brook and Spire River Valley Fish Hatchery.*
> - *The Sandy River will be crossed twice within the preferred route. The DNR recommends shut-off valves on both sides of the river at the County Road 62 crossing northwest of McGregor and the north side of the Sandy River before the pipeline crosses highway 210 east of McGregor.*
> - *West side of the Salo Marsh WMA.*
> - *South side of Willow River.*
> - *Both sides of White Elk Creek. The Willow River and White Elk join the Mississippi River only a short distance downstream.*
> - *Both sides of the Pine River and South Fork in Cass County*

- *Both sides of Spring Brook in Crow Wing County.*

NDPC Response: While the placement of valves is regulated by PHMSA, NDPC completed a review of the DNR's suggested valve locations. Currently, NDPC plans to place valves in the following approximate locations in relation to these waterbodies:

- Mississippi River (two crossings): For the first crossing, 1.25 miles upstream to get upstream of Bear Creek, a tributary to the Mississippi, and 1.25 miles downstream. For the second crossing, less than 0.5 mile upstream and 0.5 mile downstream
- Clearwater River: 2 miles upstream
- LaSalle Creek: 3.5 miles upstream and 2.3 miles downstream
- Straight River: 3.5 miles upstream
- Spring Brook/Spire Valley: 4 miles upstream
- Sandy River (two crossings): Both sides of the County Road 62 crossing – 1 mile upstream and 4.5 miles downstream. The downstream valve of the first crossing covers the upstream valve of the second crossing (1.5 miles upstream)
- West Side of the Salo Marsh WMA: The route filed August 22, 2014 no longer crosses the Salo Marsh WMA.
- South side of Willow River: The upstream valve on the second Mississippi River crossing is downstream of the Willow River 3.5 miles
- Both sides of White Elk Creek: 1.0 mile upstream, 3.5 miles downstream of the Willow River
- Both sides of the Pine River and South Fork in Cass County: 15 miles upstream, 1.3 miles downstream of the Pine River
- Both sides of Spring Brook in Crow Wing County: The Preferred Route does not cross Spring Brook in Crow Wing County, it crosses Spring Brook in Cass County (see response for Spring Brook above).

POTENTIAL FOR TRANSFER OF WATER AND MOVEMENT OF INVASIVE OR EXOTIC SPECIES
Section 9.2.6 of the EIR indicates that as part of pipeline hydrostatic testing, a transfer of water from one section to another and discharges of water to different waterbodies may occur.

These actions could result in the movement of invasive or exotic species known to be in one basin or waterbody but not the other, as well as the possibility of a species not known to be in one basin or waterbody being able to infest another basin or waterbody because of the transfer. This topic is of concern because invasive exotic species infestations are known to have very high economic costs and cause extensive ecological damage.

In an effort to prevent biotic transfer and the impacts identified above; the CEA should adopt avoidance of interbasin water transfers as an overall mitigation strategy. The DNR will also address this in our individual permits.

NDPC Response: Per Section 5.2.4 of the EPP, "To minimize the potential for introduction and/or spread of invasive species due to hydrostatic testing activities, NDPC will discharge water to the same source location from which it was appropriated. If water is used to test multiple test sections, it will be relayed back to the source water through the pipeline for final discharge. Test water will not be discharged to a waterbody other than the appropriation source, unless coordinated and permitted through the applicable agencies."

WORKSPACE AND RIGHT OF WAY REQUIREMENTS
The description of workspace requirements in the EIR and diagrams provided as part of the EPP describe and show pipeline construction techniques that only pertain to construction on flat terrain. For example, total workspace requirements are described as 120-feet for uplands and 95-feet for wetlands. The typical sections provided as part of the EPP (Figures 1-3) also do not show widths measurements.

NDPC Response: NDPC will revise Figures 1-3 in its EPP to show workspace dimensions as described in the EIR. NDPC will prepare a typical drawing that depicts construction on hilly terrain. The revised EPP that contains these figures will be submitted as part of the revised License to Cross Public Lands and Waters Applications.

In addition, the Applications for Licenses to Cross Public Lands and Waters submitted to the DNR in February 2014 included State Land Crossing Plan Sheets and Environmental Crossing Plans, respectively, that depicted the exact widths of the construction and operational right of way as the Project crosses state lands and PWI features. Workspace dimensions also will be presented on the site-specific crossing plans discussed above.

> *Wherever there is hilly terrain, substantially wider areas may be needed, especially if the pipeline crosses a side hill. This is primarily due to the fact that a level work pad of approximately 60-65 feet must be constructed on hillsides. This means that excavation into subsoil will occur on the working side of the pipeline and additional dirt storage is therefore needed. The cuts are the deepest when the slope of the hill is upward on the working side of the ROW; cuts can be 8 or 9 feet deep on an 8-10 percent slope. This will occur when there is side-hill cutting to level the 65-foot work pad. In other areas–such as the tops of sharp hills or at the terrain break into a river terrace or river valley–the work pad and trench will be lower than the existing terrain because the pipe is buried extra deep. In other words, the finished pipeline reflects a softer contour than the contour of the landscape, going beyond the 120 and 95 foot workspaces described in the documents available for review. Actual impact zone of a pipeline ROW in hilly terrain can therefore easily become 150-180 feet wide in such locations ("Construction of the Northern Border Pipeline in Montana" 1983).*
>
> *There is a significant amount of hilly terrain in Clearwater across the preferred route. In such areas, a 120-foot and 95-foot ROW may often be the exception in such areas, with a wider area being more typical. The CEA should disclose actual total workspace requirements/disturbance footprints for all alternatives. The EPP and should also be modified to include Figures for total workspace widths for a variety of terrains.*

NDPC Response: NDPC has planned for ATWS where extra workspace may be needed to safely construct the Project. NDPC will contain its construction workspace to the given construction corridor for any specific area. This corridor does not exceed 120 feet in width, except for in locations where ATWS are proposed.

> ***Reduction in workspace for sensitive habitats***
> *Application documents discuss a smaller workspace for wetland areas. The DNR is interested in an analysis of whether this smaller workspace could be applicable to sensitive upland areas to reduce impacts.*

NDPC Response: NDPC requests that DNR provide NDPC with the locations of sensitive uplands of concern for further evaluation. NDPC can generally accommodate specific requests to avoid special features, but the smaller workspace cannot be used over extended lengths because restricting the width of the construction workspace will require creating ATWS nearby to allow for additional material and equipment staging.

> ***TEMPORARY BRIDGES***
> *The DNR requests a list of all of the locations and timeline where the Applicant is planning to install temporary bridges. The DNR recommends the use of span type bridging, such as the railroad flat cars, rather than the rock and flume type crossing. Totally "clean" rock in any construction setting is hard to find even if it has been washed. Overall, the spanning bridge type will likely have much less disturbance impact to the channel.*

NDPC Response: NDPC provided a preliminary list of locations where bridges will be used to cross waterbodies in its February 2014 application to the DNR for a License to Cross Public Waters. A revised list of bridge locations will be provided in the next revision of the application. Bridge locations will be depicted on site-specific crossing plans.

Section 2.4 of the EPP presents information on bridges used for the Project. The timing of bridge placement will be subject to the receipt of all Project permits. Generally, bridges will be put in place prior to clearing and will be set until final restoration is complete. It is NDPC's preference to use flat car bridges, although not every situation will allow for the use of this approach. A stable bank is required to set these types of bridges; if the stability of the bank is not appropriate, NDPC would be required to use sheet pile. In addition, rail cars to construct the bridges may not be commercially available at the time of construction to be used in all situations. NDPC proposes to use rock flume bridges when single mats or other bridge styles cannot safely be used to span a crossing.

> ***ATV TRAFFIC ON OR NEAR STREAM BANKS***

The corridor provides easy access to locations along the right of way, and for recreation. Such traffic can cause environmental problems from prevention of re-vegetation, especially on sensitive sites such as riverbanks, as well as trespass problems. Barriers to prevent off road vehicle damage are needed in sensitive areas and may be applicable in other areas where recreation is not desired.

NDPC Response: Placement of barriers to address sensitive areas on public land should be included as a special condition as part of NDPCs License to Cross Public Lands. NDPC will only incorporate barriers to the operational right-of-way on private land upon mutual agreement with the landowner. However, NDPC is concerned that restricting access to the operational right-of-way could impede maintenance and emergency response activities. If NDPC finds that such barriers may impede maintenance or emergency response activities, the barriers will not be installed.

DNR ADMINISTERED LANDS CROSSINGS
When large utility projects require environmental review, the environmental review documents are an opportunity to inform us whether crossings of DNR administered lands are unavoidable. Providing information to decision makers is also often cited as a main purpose of environmental review. Section 11 of the EIR described several crossings of State-Designated Recreation Areas but does not provide justification for such crossings or a description of whether avoiding them is possible.

While understanding that this region of Minnesota has a higher percentage of state administered land crossings and that all routing is challenging, in order to better inform the DNR licensing process (and the purpose of environmental review), we recommend that the CEA include specific information regarding the feasibility of route alternatives that avoid DNR administered land crossings.

NDPC Response: Section 11.1.2 of the EIR describes state recreation areas crossed by the Project route. These areas include state forest land, state WMAs, state Aquatic Management Areas ("AMAs"), state trails, and state canoe and boating routes. The Project Preferred Route avoids state parks and state Scientific and Natural Areas.

The January 2014 EIR discussed crossing 24.7 miles of state forests. The route submitted on August 22, 2014, crosses 31.6 miles of state forest. A majority of this increase is due to the current route's avoidance of the Crow Wing Chain WMA at the request of the DNR. It is virtually impossible to cross the state of Minnesota from the North Dakota/Minnesota border to Superior, Wisconsin, without crossing a State Forest using a practicable route corridor. The majority of the major route alternatives currently under review through the CEA cross a state forest, including those proposed by the DNR. NDPC has worked with the DNR to understand sensitive forest resources within the State Forests crossed by the Project and avoid the resources when possible.

The January 2014 EIR discussed crossing four WMAs. NDPC submitted route alternatives to avoid both the Crow Wing Chain and the Salo Marsh WMAs; these revisions are incorporated in the revised route filed August 22, 2014. Therefore, as a result of NDPC route revisions the Project will now be crossing only two WMAs.

The January 2014 EIR discussed crossing two AMAs. The crossing of the LaSalle Creek AMA is in the vicinity of the MinnCan Pipeline; NDPC has revised its alignment after significant discussion with the DNR regarding construction at this crossing. Site-specific plans also will be prepared for this crossing.

The January 2014 EIR also discussed a crossing of the Spire Valley Hatchery AMA. On May 8, 2014 NDPC consulted with representatives from the DNR via conference call to further understand their concerns regarding potential effects to the hatchery located within the AMA. DNR's hatchery supervisor and local fisheries staff were able to provide valuable details on how the hatchery is operated and their site-specific concerns. NDPC and DNR agreed that additional meetings with hydrology staff would be beneficial for both parties and met in Bemidji, Minnesota on May 16, 2014. In addition to the meeting in Bemidji, Minnesota NDPC also met with DNR representatives at the hatchery itself, which provided NDPC environmental, construction and engineering staff an opportunity to evaluate the site with DNR staff. NDPC is currently conducting civil, environmental, geotechnical and cultural surveys in an expanded survey area located to the south further downstream of the AMA. NDPC chose to conduct geotechnical studies off of DNR-administered lands to address DNR's concerns with completing the work on its property, and provided DNR with a

revised geotechnical plan for work south of the AMA on private land on October 6, 2014. This area was outlined in the DOC-EERA comments and recommendations for system and route alternatives dated July 16, 2014.

NDPC understands DNR's concerns and, as indicated above, is currently exploring an alternate further downstream route of the Spire Valley Hatchery AMA and state land; this route was submitted to the DNR and DOC-EERA on September 12, 2014. NDPC is also sensitive to our private landowners' concerns and any new route would take into account information obtained as a result of field surveys and landowner discussions.

Finally, the Project will cross two state-designated trails and seven canoe and boating routes as stated in the January 2014 EIR. Generally, these are north-south running features and would be difficult to avoid with a west-east pipeline across the state. However, these features will not see long-term impacts from construction or operation of the pipeline. Public access will be maintained to the greatest extent safely possible during construction. NDPC is committed to working with the DNR to minimize impacts to users of state trails and canoe routes during construction.

> ***RECREATIONAL TRAILS***
> *A total of 44 Minnesota Recreation Trails and recreational opportunities will be affected by the pipeline activity (mostly during construction, with some impacts possibly long-term) in the DNR Northwest Region.*
>
> *Depending on the time of season Enbridge does the installation work (note construction goal by the "last quarter of 2014"); some of the trails and recreation opportunities will be greatly affected or will result in a closing of the site or trail during time of pipeline activity. Trail closures would need to be coordinated with DNR Parks and Trails Regional staff.*
>
> *The DNR's Trail Assistance Program provides funding for local units of government that provide grant-in-aid (GIA) snowmobile trails as well as numerous trails for all-terrain-vehicles (ATVs). These trails provide significant recreation and tourism benefits. Pipeline project have the potential to limit trail intersections that are essential to trail networks.*
>
> *NW Region Trails:*
> - *Six GIA ATV Trails*
> - *Three Public Water Access locations*
> - *28 GIA Snowmobile Trails*
> - *One State Trail (Paul Bunyan)*
> - *Six Water Trails*
>
> *NE Region Trails:*
> - *The proposed route intersects at least 5 snowmobile GIA trails as well at the Munger State Trail.*
>
> *Local clubs or the DNR (on State lands) should be contacted by the NDPC early to allow them to determine temporary re-routing if necessary. DNR Regional Office Parks and Trails personnel can assist with contact information.*
>
> *Also, there is the possibility of this pipeline having an oil spill due to a leak/break/rupture resulting in a spill which will affect these same recreational opportunities, both in the short-term (closure of trail and/or reduced speeds to accommodate detours and re-routing) and long-term (closure of trail and/or diminished experience of that recreational pursuit due to damage to the environment).*
>
> *The CEA should assess general short and long-term impacts to all recreational trails for all routes carried forward and include the above mentioned considerations. The CEA should also specifically assess whether pipeline construction and associated easements would preclude the ability of landowners to permit trails over or along the pipeline.*

NDPC Response: NDPC is aware that the Project will cross the Willard Munger and Paul Bunyan State Trails. Enbridge has crossed state trails on other projects and NDPC is committed to working with the DNR to minimize impacts to users. NDPC will prepare site-specific crossing plans for these trails as critical elements of its License to Cross Public Lands; a draft site-specific plan for the Willard Munger Trail crossing was submitted along with the February 2014 application. The Project will cross state canoe and boating

routes, as discussed above. Each of these waterbodies also will have a site-specific crossing plan as part of the License to Cross Public Waters.

As stated in NDPC's February 2014 Application for a License to Cross Public Lands, public use of the two state trails, including other trails listed by the DNR, may be interrupted for a short time to allow installation of the pipeline. Boring trail crossings will result in little to no impact to trail users. If the open-cut method is used, NDPC will conduct excavation and pipeline installation activities across the trails within a 48-hour period to limit impacts. NDPC will post signs as needed to notify the public of pipeline construction. NDPC also will install safety fencing around the trench at the trail crossings during periods of inactive construction. After the pipeline is installed across a trail, NDPC will temporarily restore the disturbed trail area to allow passage of both trail users and pipeline construction equipment. Once the pipeline construction equipment has passed, NDPC will restore the trail surface and adjacent areas to pre-construction conditions. Installation of the pipeline should not preclude landowners from establishing trails over or along the pipeline right-of-way.

As stated in NDPC's February 2014 Application for a License to Cross Public Waters, public use of the canoe and boating routes will be interrupted for a short time to allow installation of the pipeline. NDPC will plan to conduct work within the banks of the rivers in accordance with the EPP (section 2.1) and applicable permits to limit impacts. NDPC plans to post signs upstream and downstream of the crossings to notify the public of pipeline construction activities and will work with DNR to arrange for other appropriate user notifications. After the pipeline is installed, NDPC will allow flow to resume and allow river users to cross the construction area.

NDPC appreciates the information on the county snowmobile trails and has initiated outreach to many local clubs/counties crossed by the Project to understand the concerns regarding these trails. NDPC would appreciate if DNR would provide the exact locations of all listed trails so that NDPC may appropriately plan for notification of affected parties.

> ***FORESTRY***
> *The NDPC should work with the DNR to assess and identify impacts of crossings of DNR Forestry administered land so that access is not impeded to blocks of forest for timber management. These crossings will need to support log truck traffic. DNR will also need to maintain access for all purposes, such as forestry and recreation on DNR administered lands during and after construction, understanding that during limited construction periods some lands are not accessible.*

NDPC Response: NDPC has met with staff from the DNR Division of Lands and Minerals to discuss access to DNR Forestry land. As stated in NDPC's February 2014 Application for a License to Cross Public Lands, NDPC will allow permanent access across the pipeline after construction to allow for crossing by DNR vehicles and logging equipment so long as any such crossings does not pose a risk to the safe operation of the pipeline. These crossings should be existing trails or roads that will be agreed upon by the DNR and NDPC and will be submitted in subsequent revisions of the application. NDPC will not construct roads over foreign utility rights-of-way or outside of designated workspace. NDPC anticipates any crossings proposed by DNR associated with permanent wetland fill will be closely evaluated for alternatives. In the event an alternative is not feasible NDPC will request DNR justification to support the permanent impacts as part of the ACOE application. Pipeline crossings will be designed to accommodate vehicles up to 10 tons per axle weight. DNR use of these roads shall not produce rutting within the NDPC right-of-way; in the event that rutting occurs, DNR will need to cease operations until conditions improve or appropriate measures are approved by NDPC and implemented to protect the pipeline. NDPC will reserve the right to withdraw access in the event that a crossing may potentially cause an unsafe condition or damage to the pipeline.

> ***SPECIFIC AREAS OF CONCERN***
> *Mud Lake Crossing*
> *As part of a past pipeline project, this area provided challenges due to extensive saturated soils which are problematic for both construction and restoration. The CEA should assess impacts groundwater resources, wetland, and aquatic habitats around Mud Lake.*

NDPC Response: NDPC met with the DNR on November 12, 2013, to discuss lessons learned regarding waterbody crossings on past projects, and how NDPC might be able to implement procedures through modified waterbody crossing methods to address DNR concerns. One of the waterbodies discussed at this meeting included Mud Lake. Past construction and restoration difficulties associated with winter construction and replacement of peat blocks are still apparent at the crossing. In a letter from DNR to NDPC dated June 12, 2014, DNR

suggested that NDPC prepare a site-specific plan for this crossing and consider winter construction; NDPC will prepare a site-specific plan for this crossing.

> *LaSalle Creek AMA*
> *Page 11-2 of the EIR indicates that the project will cross the LaSalle Creek AMA near MP 408.4 and will be co-located with an existing pipeline right-of-way at this crossing. A review of map #47 in Appendix G shows instead that the proposed LaSalle Creek crossing is approximately 1,500 feet to the north of the existing crossing.*
>
> *The existing pipeline alignment crosses a steep-sided tunnel valley at an oblique angle, with portion crossing very steep side slopes with groundwater seeps common through the entire area. This valley is about 100-115 feet below the surrounding landscape and the existing pipeline length within the valley crests is about one mile in length. Due to the steepness of the slopes in this area, we believe that the actual construction workspace may need to be wider than anticipated or depicted in the EIR and EPP.*
>
> *The DNR requests that the CEA describe the reason for the deviation and the environmental impacts associated with each potential route alignment. Similar to above, the CEA should also assess groundwater resources around LaSalle AMA, potential risks and impacts to groundwater movement from construction and placement of the pipeline, and potential risks from spills or leaks. An analysis of access for leak or spill response should be included in the CEA for this location.*

NDPC Response: NDPC met with the DNR on November 12, 2013, to discuss lessons learned regarding waterbody crossings on past projects, and how NDPC might be able to implement procedures through modified waterbody crossing methods to address DNR concerns. One of the waterbodies discussed at this meeting included LaSalle Creek. DNR considers LaSalle Creek to be a high-value trout stream. DNR and NDPC discussed past construction difficulties with the construction method and alignment, including frac-outs and steep slopes. NDPC has modified its alignment and crossing method at this crossing to address DNR's concerns. Upon conducting a geotechnical investigation at the site, subsurface conditions were deemed unsuitable for an HDD crossing and demonstrated an elevated risk of frac-outs. As a result, NDPC now proposes a dry crossing method. In order to minimize the crossing length of the creek and wetland, a deviation from the existing, adjacent corridor is proposed. In a letter from DNR to NDPC dated June 12, 2014, DNR suggested that NDPC prepare a site-specific plan for this crossing; NDPC will prepare a site-specific plan for this crossing.

As previously stated, Enbridge evaluates the equipment and/or access points required to ensure personnel and equipment are able to access the entire right-of-way so that it is able to respond to an incident, including the area around LaSalle Creek.

> *Hay Creek*
> *As part of a past pipeline project this area provided challenges due to extensive saturated soils and frac-outs during construction. Similar to above, the CEA should also assess impacts groundwater resources, wetland, and aquatic habitats around Hay Creek Specific reasoning for the chosen crossing methods (appears that an HDD is proposed) should be provided. Adaptive management methods based on past site challenges should also be described.*

NDPC Response: NDPC met with the DNR on November 12, 2013, to discuss lessons learned regarding waterbody crossings on past projects, and how NDPC might be able to implement procedures through modified waterbody crossing methods to address DNR concerns. One of the waterbodies discussed at this meeting included Hay Creek. Past difficulties included frac-outs at the crossing during a period of high water flow. Based on preliminary geotechnical data, NDPC believes that use of the HDD method would result in the least impact. NDPC will propose a final proposed and alternate crossing method as part of its revised License to Cross Public Waters application. In a letter from DNR to NDPC dated June 12, 2014, DNR suggested that NDPC prepare a site-specific plan for this crossing; NDPC will prepare a site-specific plan for this crossing.

> *Straight River*
> *As part of a past pipeline project, this area provided challenges due to extensive saturated soils and frac-outs during construction. Similar to above, the CEA should also assess*

impacts groundwater resources, wetland, and aquatic habitats around Straight River. Specific reasoning for the chosen crossing methods (appears that an HDD is proposed) should be provided. Adaptive management methods based on past site challenges should also be described.

NDPC Response: NDPC met with the DNR on November 12, 2013 to discuss lessons learned regarding waterbody crossings on past projects, and how NDPC might be able to implement procedures through modified waterbody crossing methods to address DNR concerns. One of the waterbodies discussed at this meeting included the Straight River. Past difficulties included frac-outs at the crossing and improper staging of emergency response equipment. Geotechnical data for this crossing is pending. NDPC will propose a final proposed and alternate crossing method as part of its revised License to Cross Public Waters application. In a letter from DNR to NDPC dated June 12, 2014, DNR suggested that NDPC prepare a site-specific plan for this crossing; NDPC will prepare a site-specific plan for this crossing.

Crow Wing Chain Wildlife Management Area (WMA)

- *Conservation restrictions on the Crow Wing Chain WMA parcels: Our review of the state land crossings identified deed restrictions on state parcels in Sec 32 and 33 of T139R33 in Hubbard County. These properties were gifted to the state by The Nature Conservancy (TNC) in 1976 (see enclosed TNC letter).*

NDPC Response: On March 28, 2014, DNR provided preliminary comments to NDPC regarding the proposed crossing of the Crow Wing Chain WMA. These comments included the identification of deed restrictions on state parcels associated with the WMA in Section 32 and 33 of Township 139, Range 33 in Hubbard County. These properties were gifted to the state by TNC in 1976. TNC reserved a conservation easement on the property for the purpose of maintaining it as a WMA. The reservation also contains eight terms and conditions. The deed and the management plan for the WMA adopted pursuant to the deed restrictions were provided to NDPC by the DNR. In addition, the DNR filed a letter received from TNC April 4, 2014, during the public comment period that identified the deed restrictions that would not be met by construction of the Project as proposed. On June 10, 2014, DNR provided a final determination on the compatibility of the Project with the deed restrictions. DNR determined that the construction of a pipeline across these state lands is inconsistent with the restrictive covenants in the deed and the management plan adopted pursuant to those restrictive covenants.

On June 24, 2014, representatives of NDPC, DNR and the DOC-EERA met to discuss the need to provide additional routing options that avoid the parcels with the deed restrictions until such a time as NDPC and the DNR have explored alternative construction techniques that may mitigate concerns associated with the deed restrictions. At the request of the DOC-EERA, NDPC prepared and filed on June 27, 2014, the Crow Wing Chain WMA route option to ensure that, in the event NDPC cannot mitigate concerns associated with the deed restrictions on NDPC's Preferred Route, a viable route is included and studied in the CEA.

DOC-EERA staff included the Crow Wing Chain WMA route option as RA-16 for further study in the CEA. The Preferred Route filed on August 22, 2014, includes RA-16.

Spire Valley Aquatic Management Area (AMA)
The Spring Brook crossing is on the Spire Valley Hatchery AMA (map 85 in App. G.5 of the EIR) and protection of both the groundwater supply and groundwater quality is essential for continued operation of this facility.

The groundwater appears to be quite close to the surface in this area so even the relatively shallow pipeline activities are a concern. If the highway crossing is an HDD or guided bore, there may be concerns about inadvertent release of drill mud and also about the possible effects on the ground and surface waters. Spring Brook and Scout Camp Pond should not be considered as sources of surface water for hydrostatic testing.

The proposed route on Spring Brook between Spire Valley Hatchery and Scout Camp pond runs along the aquifer that supplies the Spire Valley hatchery's water. The elevation of the crossing point is 1298 feet, while the main springs that supply the hatchery are at 1340 feet, and the hatchery grounds are 1327 feet. This means if during the installation of the pipeline the hard pan of the aquifer is opened up below the 1340 foot elevation the hatchery will lose water flow.

The loss of the entire hatchery's fish stocks would happen within just a matter of hours should the water flow be lost. The annual production value is $290,000. The brood stock value is far greater as it takes 5 years to raise mature females for egg production, and would require starting a new brood stock line from scratch. The loss of a single year's production would be over 790,000 fish, resulting in at least 30 lakes and streams, including Lake Superior not being stocked with Kamloop rainbows and Steelhead fry. If the loss of water flows where permanent, the hatchery would need to be closed (current estimated value is $2,200,000). There would be a statewide economic loss and approximately $21,000,000 to Lake Superior trout fishery. It would also mean the loss to the general public of the free spring water (estimated 35,000 annual users).

As the proposed crossing point is downstream of the hatchery, any spills or leaks should not affect the hatchery. However, there would be affects to the lower portion of Spring brook, Scout camp pond, and lake Roosevelt.

The CEA should assess groundwater resources around Spire Valley, potential risks and impacts to groundwater movement from construction and placement of the pipeline, risks to Spire valley hatchery fish stocks, and potential risks to the trout stream and connected waters from spills or leaks.

NDPC Response: As described above, NDPC is currently conducting civil, environmental, geotechnical, and cultural surveys in an expanded survey area located to the south further downstream of the AMA. This area was outlined in the DOC-EERA comments and recommendations for system and route alternatives dated July 16, 2014. NDPC understands DNR's concerns and, as indicated above, is currently exploring an alternate further downstream route in this area to avoid the AMA and state land; this route was submitted to the DNR and DOC-EERA on September 12, 2014. A revised geotechnical survey plan for work on private land to the south of the AMA was provided to DNR on October 6, 2014. NDPC is also sensitive to our private landowners' concerns and any new route would take into account information obtained as a result of field surveys and landowner discussions.

NDPC does not plan to use Spring Brook or Scout Camp Pond as sources of water for hydrostatic testing.

Significant Fisheries Resources Near Outing. MN
Several significant fisheries resources are located near the proposed pipeline route in the area northwest of Outing between Washburn and Roosevelt lakes. The resources in this area include three designated and actively managed stream trout lakes: Margaret Lake — managed for rainbow trout, provides a good trout fishery; Marion Lake – managed for brook trout, provides a good trout fishery; and Little Andrus (Snowshoe) Lake — managed for brook trout, reclaimed in 2009, provides an excellent and popular trout fishery. Washburn and Roosevelt Lakes both provide quality fisheries including supporting strong cisco populations, and walleye, northern pike, bass, and panfish. Roosevelt Lake is also managed for a muskellunge fishery. Another excellent trout lake, Allen Lake, is located south of the project area near the southwest end of Roosevelt Lake. All of these lakes have public water access sites, and a DNR campground is located on Washburn Lake.

DNR Fisheries Aquatic Management Areas (AMAs) are located on Little Andrus and Washburn lakes and near the project area at Pine Mountain Lake, as well as the aforementioned Spire Valley AMA.

From an aquatic perspective in the Brainerd Area leaks in or near the five stream crossings have to potential to affect not only those streams crossed by the pipeline, but the downstream waters which include significant aquatic resources including the Crow Wing River, the Whitefish Chain of Lakes, and Roosevelt Lake.

As part of the CEA, potential impacts to all these significant fisheries resources should be assessed.

NDPC Response: NDPC recognizes the importance of understanding how the Project could impact surface waters crossed by or downstream of the Project, including the sensitive fisheries noted by the DNR. It should be noted that

NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has developed procedures for handling abnormal operating conditions and emergencies. The Control Center has a protocol for addressing abnormal operating conditions, which consists of shutting down the pipeline if it cannot verify the alarm within 10 minutes and notifying local emergency responders to respond to the site of a suspected release. NDPC would supplement the initial response with personnel from other Enbridge locations and contract resources as necessary.

In accordance with 49 CFR 195.402, NDPC will monitor its liquid petroleum pipelines 24 hours a day, 7 days a week using four primary methods, each having a different focus and featuring different technology, resources, and timing. These methods have been previously discussed in this response. Used together, those methods provide an overlapping and comprehensive leak detection capability.

Grayling Marsh WMA
Please avoid aspen reserved patches and consider this area for winter wetland construction.

NDPC Response: NDPC would appreciate if DNR could share the exact locations of the aspen reserved patches within the Grayling Marsh WMA. NDPC will consider implementing winter construction across the WMA to address the DNR's concern; however NDPC cannot guarantee winter construction due to uncertainty in timing of receipt of all regulatory approvals. Any specific construction work window requirements should be included as part of NDPC's License to Cross Public Lands.

Hill River State Forest
The DNR supports further analysis of an alternative route in the Comparative Environmental Analysis as discussed in Section II.

The DNR needs access for mowing the Hunter Walking Trail system in September and access needs to be maintained for hunters during hunting seasons.

NDPC Response: The Hill River Route Alternative was presented as RA-24 in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014. NDPC sponsored this route alternative as a result of communication with the DNR and has included this route alternative in its Preferred Route filed August 22, 2014.

NDPC requests that DNR provide the exact location of the Hunter Walking Trail system in the Hill River State Forest. NDPC will work with the DNR to maintain access across the Project area for hunters and DNR personnel should NDPC's construction schedule align with hunting season.

Sandy River Watershed
The DNR has concerns regarding oil pipeline rupture and seeps in the Sandy River Watershed and would recommend that the CEA analyze alternative routes provided in Section II. The Sandy River is crossed in two locations and the pipe would be placed in floodplain areas of the Sandy River as well as the Salo Marsh WMA.

The Big Sandy Lake Watershed is an important fisheries resource in the Aitkin Area. The reaches of the Sandy River just upstream from the first crossing above Steamboat Lake near proposed crossing at mile post 543.3 is near walleye spawning habitat important to sustaining the walleye population in the Sandy River system, including Big Sandy Lake. DNR Area Fisheries is concerned about the risk of chronic and acute perturbation from seeps and ruptures to this naturally reproducing population of walleye, especially at the crossings, ditches and floodplain that flow into the Sandy River east of County Rd 62 and extending to the Salo Marsh WMA. In addition, Big Sandy Lake is currently listed as an impaired water due to excessive nutrients (phosphorus), which further demonstrates the need conservative measures for projects to minimize impacts in this watershed. Alternative routes that do not cross the Sandy River should be analyzed to compare reducing the risk to this important fisheries resource to the benefits and drawbacks of other routing options. Any work done within the watershed should minimize risk of additional phosphorous loading as well as minimize risks due to pipeline seeps and ruptures.

Attached below is an area of greatest concern for the Sandy River. The Salo Marsh should also be considered an area of greatest concern due to its direct surface connection to the Sandy River. Just east of County Rd 62 the route corridor begins to cross a series of ditches that empty directly into or above the primary spawning area for walleye on the Sandy River. The proposed crossing may impact the Sandy River Flowage a large and significant natural wild rice area just upstream of Big Sandy Lake. If a spill were to occur in this stretch of pipeline, there is little to prevent it from quickly moving downstream to the walleye spawning area, wild rice beds and Big Sandy Lake. The CEA should address possible impacts to these fisheries and wild rice beds.

NDPC Response: NDPC's route filed August 22, 2014 avoids the Salo Marsh WMA. NDPC believes that it has designed the least environmentally damaging and practicable route through this area when looking at statewide resources as a whole. There are very few reasonable alternatives in this area that will not cross the Sandy River while remaining outside of other sensitive areas including WMAs, large expansive wetlands, and other areas with restrictions (e.g., a private wetland mitigation site, the city of McGregor). As described above, NDPC is planning to install a mainline valve 1 mile upstream and 4.5 miles downstream of the first Sandy River crossing. The downstream valve at the first crossing will cover the upstream valve at the second crossing (1.5 miles upstream) in order to curtail and limit the possible release of product and control the extent of a spill. NDPC will abide by all DNR timing restrictions for construction across all waterbodies.

NDPC understands that Big Sandy Lake is impaired for excessive nutrients (phosphorous). Under natural conditions, phosphorous is typically scarce in water. Phosphorous contributed by human activity (e.g., farming, erosion caused by development/stormwater runoff) is a major cause of excessive algal growth and degraded lake quality. Pipeline construction at both Project crossings of the Sandy River would not contribute to further impairment of Big Sandy Lake for excessive phosphorous because NDPC currently proposes to use the HDD/bore methods. Use of these methods will result in no disturbance of substrate, and no chance that disturbed substrate could flow downstream and contribute to the lake's impairment. The minimal clearing conducted along HDD/bore crossings as well as the measures implemented in the EPP will ensure that any phosphorous that might enter the waterbody will be minimized.

NDPC will work with the MPCA's NPDES staff to ensure the Project's Stormwater Pollution Prevention Plan ("SWPPP") will protect soils and prevent potential discharges to waterbodies and impacts to impaired waterbodies. Temporary erosion and sediment controls as described in Section 1.9 of the EPP include, but are not limited to, slope breakers, sediment barriers (i.e. silt fence, straw bales, bio-logs, etc.), stormwater diversions, trench breakers, mulch, and revegetation subsequent to seeding of exposed soils. NDPC will install temporary ECDs after clearing and prior to grubbing and grading activities at the base of sloped approaches to streams, wetlands, and roads and at the edge of the construction right-of-way as needed, and/or in other areas determined by the Environmental Inspector ("EI") to slow water leaving the site and prevent siltation of waterbodies and wetlands down slope or outside of the construction right-of-way (e.g., swales and side slopes). NDPC will also place temporary ECDs across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from tile line inlets, drainage ways, wetlands, and/or waterbodies until the area is revegetated and there is no potential scouring or sediment transport to surface waters. Adequate room will be available between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

NDPC plans to prepare site-specific plans for both crossings of the Sandy River. NDPC filed its plans for geotechnical survey at specific waterbodies with the DNR on September 17, 2014. In this submittal, NDPC committed to conducting geomorphic stream surveys and geotechnical borings for both crossings of the Sandy River. NDPC has already conducted geotechnical investigations at both crossings of the Sandy River. Subsurface conditions appear favorable for a successful HDD at both locations. These studies will inform NDPC's final crossing plans for the Sandy River.

Mississippi River
Naturally reproducing populations of several fish species targeted by anglers occur in the Mississippi River (near proposed crossing at mile post 534.0) including northern pike, smallmouth bass, walleye, channel catfish, and sucker species. Muskellunge are also stocked in the section of the Mississippi River between Aitkin and Jacobson to provide additional angling opportunities. Elsewhere in the watershed, northern pike, yellow perch, walleye, and sucker species are the primary fisheries resource in Moose, White Elk, and Willow Rivers. Any proposed crossing of the Mississippi River in Aitkin County has the

potential to impact these resources. As part of the CEA, potential impacts to these significant fisheries resources should be assessed.

NDPC Response: NDPC currently plans to conduct both crossings of the Mississippi River using the HDD method. The HDD method would not result in impacts to these fishery resources. In the event of a frac-out during the HDD crossing, NDPC will use the response measures outlined in the EPP to coordinate an efficient response. NDPC also will prepare site-specific plans for both crossings of the Mississippi River.

CULTURAL RESOURCES
It is recommended that the CEA disclose the additional sites mentioned in our specific comments on the EIR and assess impacts to all identified sites.

NDPC Response: NDPC's cultural resource surveys of the Preferred Route are ongoing. NDPC shared data from 2013 cultural resources surveys with DOC-EERA through a response to an information request on June 27, 2014.

IV. APPLICATION FOR ROUTING PERMIT
SECTION 7852.2700 ENVIRONMENTAL IMPACT OF PREFERRED ROUTE
Subpart B, the natural environment... — This section addresses temporary impacts on fish, wildlife, surface water, and groundwater resources related to construction related activities. It does not address potential impacts that might result from operational activities such as spills. The CEA should include an analysis of leak related impacts.

NDPC Response: As described above, NDPC has a number of leak detection capabilities in accordance with PHMSA regulations and industry standards. In compliance with PHMSA requirements set forth in 49 CFR 195.402, NDPC has procedures for handling abnormal operating conditions and emergencies.

Subpart I. cumulative potential effects of related or anticipated future pipeline construction: - This section states "At this time, NDPC has no firm plans for future pipeline construction that would result in cumulative potential effects on environmental resources." However, a news article on 3/7/14 stated that Enbridge is planning to replace another of their pipelines (Line 3) and an Enbridge representative was quoted as saying "the company may consider that route for a new Line 3, which takes a northerly route." The CEA must include an analysis of cumulative impacts.

NDPC Response: On May 30, 2014, NDPC provided supplemental information to the MPUC to address cumulative impacts of the Line 3 Replacement project. The supplemental information provided updates to the tables in the EIR filed with NDPC's Application showing the potential additive impacts of the Line 3 Replacement project.

As part of the ACOE permitting process, NDPC anticipates that the ACOE will prepare a cumulative impacts analysis on aquatic resources that considers the potential impacts of the Project's Preferred Route when added to past, present, and reasonably foreseeable future projects.

SECTION 7852.3100 EVIDENCE OF CONSIDERATION OF ALTERNATIVE ROUTES
The section states "in some locations east of Clearbrook it is not feasible to use existing Enbridge rights-of-way due to inability to acquire land (even through the exercise of eminent domain authority), congestion, poor crossing conditions, or other constraints."

The inability to exercise eminent domain authority should not preclude use of a route or be used as a route screening criteria as land may still be acquired through negotiation. Also, before a factor should be used as a screening criteria full explanations of "poor crossing conditions and other constraints" unique to the northern alternative should be provided.

While the land use disturbance of those utilities is similar to that of the proposed pipeline, the environmental impacts and overall disturbances of pipeline construction or impacts resulting from potential spills are significantly different than impacts of an electric utility. Those differences in potential impacts do not appear to have been considered or addressed in the selection of the preferred alternative and should be considered as part of the CEA and ultimate route decisions.

NDPC Response: DNR requested that NDPC provide a more detailed discussion of the "poor crossing conditions and other constraints" associated with the Northern Route Alternative. In addition to the difficulties exerting eminent domain over sovereign nations discussed below, the Northern Route Alternative presents a number of unique and significant disadvantages to the Preferred Route. The Northern Route Alternative would cross approximately 34.1 miles of the Chippewa National Forest ("CNF") and 4.3 more miles of state forest lands, which presents additional impacts to public users and sensitive environmental forest features, including known populations of Botrychium species, bald eagle nests, a nearby heron rookery and several Regional Forester Sensitive Species. Despite the existing corridor through the CNF, a new 120-foot-wide right-of-way would have to be cleared, as the Project could not be co-located with Enbridge's existing Line 67 because of the presence of the newly constructed CapX Grand Rapids-Bemidji 230 kV transmission line. Additionally, NDPC consulted with U.S. Forest Service ("USFS") staff from the CNF early in Project planning; USFS staff expressed concern regarding a new utility corridor on its property, or expanding the existing corridor significantly. The route alternative, although shorter than the Preferred Route, also would cross 5.6 more miles of NWI-mapped wetlands.

The Northern Route Alternative would cross areas within the defined boundary of the St. Regis Paper Company federal Superfund site ("Site") in the town of Cass Lake, MN. The site generally lies south of an existing Burlington Northern Santa Fe railroad right-of-way and east of State Highway 371. The site is bounded to the south and east by a wooded parcel owned by USFS and beyond by Pike Bay Lake. In 1984, the site was placed on the National Priorities List due to the presence of dioxin, pentachlorophenol, polycyclic aromatic hydrocarbons and heavy metals in soil and groundwater. RA-07 would cross the site at two locations near Operable Unit 2, which is an engineered vault where soils and waste were interred during clean up as well as Operable Unit 3, which is near former surface impoundments and active groundwater extraction wells.

The Northern Route Alternative would impact a number of large population centers, including Bemidji, Grand Rapids, Cass Lake, and Floodwood. Approximately 163,000 people live along the Preferred Route, which is less than half the population along the Northern Route Alternative. As such, the Northern Route Alternative would impact more total residences than the Preferred Route. There is one residence within 50 feet of Northern Route Alternative and 396 residences within 500 feet. In contrast, there are 4 residences within 50 feet of the Preferred Route and 123 within 500 feet.

Finally, the Northern Route Alternative presents construction constraints and increased safety concerns associated with installation of the project adjacent to an existing right-of-way with up to seven pipelines. In addition to landowner concerns with adding another pipeline in this established right-of-way corridor, the width of the existing right-of-way results in constructability constraints. For example, with seven lines traversing population centers such as Bemidji, Cass Lake, or Grand Rapids, installing a new line usually means placing it between existing lines or existing lines and residences, businesses, or other infrastructure. Through the city of Bemidji, multiple instances of the line being squeezed between homes and existing infrastructure exist. In Cass Lake, the line is squeezed between homes on one side and existing lines and a railroad on the other. On the east side of town, Highway 2 blocks the line from moving further north away from the congestion of the existing lines. In all cases, this equates to a restricted workspace for installing new lines. Constructing within restricted workspace has both safety and productivity impacts. Working over existing lines may not be possible and if it is, usually requires working off mats to protect the existing lines from heavy equipment loads. Activities such as moving crews, stacking spoil and moving dirt becomes slower and less efficient through a constricted workspace, as each move must be carefully coordinated to ensure continued safety of the workers in and around equipment and materials within the limited works space. In some cases, crews will need to wait for the crew ahead of them to finish a task and move on before they have sufficient space to move along themselves. This creates longer impact durations for landowners as construction time through these areas will likely double in most cases. Impacts to landowners include, extra noise, high volumes of traffic, dust control, and loss use of property for longer periods of time.

NDPC respectfully disagrees with DNR's statement that the "inability to exercise eminent domain authority should not preclude use of a route or be used as a route screening criteria as land may still be acquired through negotiation." Similar to NDPC's consideration of federal conservation easement restrictions prohibiting the grant of a utility easement and NDPC's consideration of the time and resources required to gain approval of state lands with federal funding restrictions, inability to acquire land through the use of eminent domain is a relevant routing factor. NDPC negotiated in good faith with tribal entities along the Northern Route but was unable to reach agreement that allowed the Project to move forward in the timeframe needed to support the commercial drivers for the Project. The inability to acquire the necessary easements, coupled with the constraints discussed in this response, made the Northern Route Alternative less desirable than the Preferred Route.

V. ENVIRONMENTAL INFORMATION REPORT (EIR)

It is unclear how the factors in the environmental features comparison tables were chosen (see section 2.3.3). Many of the resources listed in comparisons provided in DNR early coordination letters have not been incorporated (see August 2013 DNR Early Coordination Letter).

In order to provide a comprehensive objective comparison of the potential environmental impacts associated with the proposed routes and alternatives; the CEA analysis should cover all resources and impacts described in this letter and all other DNR's correspondence provided to date (DNR letters dated 08/14/13 and 10/3/13 w/ attachments).

NDPC Response: NDPC developed the set of features presented in its alternatives analysis within the EIR to be consistent with the Alberta Clipper Federal Environmental Impact Statement. In addition to those features, NDPC added features to the comparison tables in the EIR, such as bedrock outcrops, National Forest land, Tribal land, State Forest land, State WMA land, State AMA land and a reserve category for other major issues as identified during the routing process. NDPC moved the discussion of forested lands, agricultural lands, herbaceous lands, and open waters to the remaining sections of the EIR. The alternatives analysis in the EIR used sources of publicly available environmental data to compare the factors above, in addition to length, proximity to existing rights-of-way, wetlands, highly wind erodible soils, prime farmland soils, perennial waterbodies, railroads crossed, and roads crossed. NDPC proposes that this set of features provided a comprehensive environmental review of the project against the route alternatives considered for the Project.

NDPC reviewed the August 2013 Early Coordination letter and used this letter extensively in the preparation of the EIR, including its alternatives analysis. NDPC appreciates the DNR's Early Coordination letter as it was extremely useful for initial planning purposes. The comparisons that DNR presented in the August 2013 letter were based on DNR's review of a 2-mile-wide study area centered on a May 2013 version of the Project route. Because of this, DNR's comparison table included features that were avoided by the Project route presented in the November 2013 and January 2014 versions of the EIR. On October 10, 2013, NDPC formally responded to DNR's Early Coordination letters (the August 2013 letter and an additional letter dated October 3, 2013). NDPC structured its response using similar headings to those used in the August 14, 2013, letter and addressed all of the resources of concern to the DNR, either specifically mentioning that the resource would be avoided, or providing discussion of those resources that would be impacted. All resources that were impacted were discussed in greater detail in the November 2013 and January 2014 EIRs.

1.1 Project Description and Need — This section does not match the description provided in the application under Table 7852.2100-D. This section describes the proposed pipeline having "an annual capacity 375,000 bpd of crude oil from Clearbrook, Minnesota, to Superior, Wisconsin." This number is actually the initial operational capacity. The pipeline will have an ultimate design capacity of 711,000 bpd (640,000 bpd annual capacity).

It is important that impacts associated with the ultimate capacity included in the CEA.

NDPC Response: The Project has been designed for an ultimate design capacity of 406,000 barrels per day ("bpd") (365,000 bpd ultimate annual capacity) from the North Dakota/Minnesota border to Clearbrook, Minnesota. From Clearbrook, Minnesota to the Minnesota/Wisconsin border the pipeline has been designed for an ultimate design capacity of 711,000 bpd (640,000 bpd ultimate annual capacity). The potential future increases in capacity to the ultimate design capacity would be achieved through the addition of new pumping units along the right-of-way. The pipeline will be designed, constructed, and hydrostatically tested for potential future operation at the ultimate design capacity. However, an increase in initial design capacity above that requested in the application, 250,000 bpd (225,000 bpd initial annual capacity) from the North Dakota/Minnesota border to Clearbrook, Minnesota and 417,000 bpd (375,000 bpd initial annual capacity) from Clearbrook to the Minnesota/Wisconsin border, would be subject to the permitting requirements of the MPUC and other state agencies and the impacts of that capacity would be addressed at that time.

1.2.4 Aboveground Facilities — This section generically states "valve installation locations will be near major rivers, other environmentally sensitive areas, population centers, and pumping stations." Table 1.2.4 shows only one valve proposed in Hubbard County, despite 6 significant stream crossings.

As part of the CEA, specific criteria should be provided for locating individual valves. For water crossings where shutoff valves are not proposed, justifications for not proposing valves should also be provided.

NDPC Response: NDPC undertook a risk assessment in developing its Preferred Route and made adjustments to minimize the possible adverse impact of the Project on the environment and the public. Enbridge reviews potential impacts from a release and determines the most effective placement of valves by conducting an IVP study for its pipelines, including the Project. The IVP identifies optimal valve locations that will protect major water crossings and HCAs in the event of a pipeline release. As described above, PHMSA regulations at 49 CFR 195.260 (e) require the installation of valves "on each side of a water crossing that is more than 100 feet (30 meters) wide from high-water mark to high-water mark unless the [PHMSA] Administrator finds in a particular case that valves are not justified." NDPC took into consideration sensitive surface water resources during placement of all valves in Minnesota.

> *2.3.1 Initial Route Selection Process — This section states "From Clearbrook, Enbridge operates seven pipelines within the Enbridge Mainline System that provide connections with the Superior terminal and refineries throughout the Midwest and the East Coast. Once Sandpiper is constructed, the NDPC connection with the Enbridge Mainline System will be removed and Sandpiper will carry the existing NDPC Line 81 volumes to Superior, Wisconsin, where they will enter the Enbridge Mainline System."*
>
> *Clarity is needed on whether this mean all seven pipelines on "the northern route" will no longer be used for petroleum transport, or only Line 81. Recent news articles have also suggested that Line 3 might be relocated from the northern route to the southern route. If removal of capacity from other lines will be a result of the project, the CEA should assess those activities as connected actions.*

NDPC Response: The Enbridge Mainline System, including all existing pipelines contained within, will continue to carry petroleum products to the Enbridge terminal in Superior, Wisconsin. The information quoted above pertains to the removal of the existing interconnect from Line 81 to the EEP system at the Clearbrook Terminal. Currently, Line 81 volumes not delivered to the Minnesota Pipe Line Company system at Clearbrook are delivered into the Mainline System for further delivery to the Enbridge terminal in Superior. From Superior, the crude oil can be shipped on various other pipelines to refining centers in the Midwest and beyond. Once the Project is constructed, the Line 81 volumes not delivered to the Minnesota Pipe Line Company system will be transported to Superior on the Project. All of the lines in the Enbridge Mainline System will continue to operate with deliveries to Superior.

On May 30, 2014, NDPC provided supplemental information to MPUC to address cumulative impacts of the Line 3 Replacement project. The supplemental information provided updates to the tables in the EIR filed with NDPC's Application showing the potential additive impacts of the Line 3 Replacement project. Replacement of Line 3 will be subject to additional MPUC and other agency approvals.

> *Table 2.3.3-1 Environmental Features Comparison — Northern Route Alternative — It might be helpful to compare acreages impacted by each alternative, in addition to just miles or number.*

NDPC Response: NDPC chose to use a miles-only comparison to provide a like-for-like analysis of the Preferred Route as compared to all route alternatives. The Project construction workspace has been carefully engineered based on civil and environmental field survey. These surveys have informed neck-downs in wetlands and other sensitive areas, and the placement of ATWS in specific locations to address NDPC's construction needs. No detailed survey has been completed for the Northern Route Alternative, or any other alternative for that matter. NDPC has not developed equivalent detailed construction workspace and ATWS for the Northern Route Alternative or any other route alternative. Therefore, an accurate comparison of the impacts of the Preferred Route to any alternative cannot be made using acreage.

> *Aitkin County Powerline Route Alternative (Page 2-14) — This section states "From a constructability perspective, there is limited access to and from major roads along this alternative. This would have added several risks to the project, including equipment and material hauling limitations and lack of access for emergency responders in the event of a safety incident. This limited access would have created greater environmental impacts to the right-of-way and greater safety concerns from increased movement of construction equipment and materials. The limited access also resulted in disadvantages in the operability of the pipeline because access for maintenance would be difficult and limited." This description seems to indicate that fewer road crossings are a liability. That contradicts the description of the*

Northern Route Alternative which suggests that more road crossings are a liability (Page 2-10 paragraph 5 indicates more roads as an additional constraint).

NDPC Response: NDPC understands the potential confusion caused by these two sections. However, the statements refer to two different issues related to road access. First, the concerns related to the Northern Route Alternative are related to public safety concerns associated with the large number of road crossings on the Northern Route Alternative. On the Northern Route Alternative, these road crossings are associated with the more populated cities of Bemidji, Grand Rapids, Cass Lake, and Floodwood. Construction along the Northern Route Alternative would involve more road closures that would impact users in these populated areas. There is approximately one road crossing for every mile of pipeline along the Northern Route Alternative, and the pipeline is generally located along Highway 2. Therefore, there is not a right-of-way access concern, but rather a public safety and use concern.

The access concerns related to the Aitkin County Powerline Route Alternative relate to limited access to the right-of-way during construction and the construction-related delays that can occur as a result. With limited access, crews must back track on the right-of-way to exit or travel many miles down the right-of-way before being able to exit. This makes refueling, gathering additional supplies, mobilizing, and many other everyday tasks far more time consuming and complicated in frozen conditions. This limited access would also create greater safety concerns and environmental impacts from increased movement of construction equipment and materials during construction. Limited road access is a concern during construction, since the pipeline right-of-way, which will be the primary method of accessing these areas during pipeline operations, will have open trenches for construction and equipment within it. These open trenches pose a safety and logistic concern during construction that is not present under normal operation.

Once the pipeline is operational, NDPC will be able to access the right-of-way to perform regular maintenance work and activities or respond to an emergency situation. NDPC has access to numerous types of equipment that can, in any condition, traverse the environments and ecosystems found across the Project corridor and support timely response to emergencies.

4.3.1 Forest Land — The first paragraph of this section which states, "Following construction, approximately 618.6 acres of forest will be permanently converted to shrub and herbaceous cover types. This conversion is required to facilitate safe pipeline operation and inspection." (emphasis added) contradicts the next paragraph that which states, "The existing permanent right-of-way will be maintained in an herbaceous state to facilitate aerial inspection." (not shrubs).

Clarity on what the long-term vegetative management for these areas is needed. In the interests of minimizing fragmentation and habitat loss it would be desirable to allow shrubs to re-establish through these areas.

NDPC Response: 49 CFR 195.412 (a) states that "each operator shall, at intervals not exceeding 3 weeks, but at least 26 times each calendar year, inspect the surface conditions on or adjacent to each pipeline right-of-way. Methods of inspection include walking, driving, flying or other appropriate means of traversing the right-of-way." NDPC's preferred method to perform these required inspections is flying. In order to perform these inspections aerially, the right-of-way needs to be adequately cleared to be able to identify abnormal surface conditions.

5.1 Terrain and Geology — This section should include a description about how surficial geology might affect HDD boring (risk of frac-outs). Such information would better inform decisions about whether to bore at stream crossings or not.

NDPC Response: An HDD is primarily designed based on the allowed bend radius of the pipe and the depth underneath the obstacle that is being avoided. From there, a geotechnical assessment is done to confirm that the HDD design is put into a favorable material for drilling or to confirm if the sub-surface conditions are completely unfavorable to drilling. If the sub-surface conditions are marginal, the design is adjusted to get to more favorable conditions but that still may not guarantee a successful drill without inadvertent returns to the surface (i.e. frac-outs). The company designing the HDD completes calculations that consider soil fracture mechanics to provide an estimate on the potential for frac-outs. The soil fracturing software is strictly a modeling tool and does not perfectly reflect actual conditions during drilling.

7.1.3 Sensitive Plant Communities
It should be noted that the DNR Native Plant Communities layer is incomplete within the project boundary, and therefore there are likely additional native plant communities within the

project boundary than those identified in Table 7.1.3-1. As most of the native plant communities listed are wetlands, it should also be noted that these wetlands may qualify as "rare natural communities" under the Wetland Conservation Act if they have a Conservation Status Rank of 1, 2, or 3, or are within a Site of High or Outstanding Biodiversity Significance (e.g., the Wet Brush-Prairie in T150N R45W Section 23 has a Conservation Status Rank = S3 and the Rich Tamarack (Alder) Swamp in T47N R21W Section 1 and T47N R20W Section 6 is within a Site of High Biodiversity Significance).

Table 7.1.3-1 should include the Conservation Status Rank, Site of Biodiversity Significance rank, and location of each native plant community that will be crossed by the proposed project.

NDPC Response: NDPC accounted for the incompleteness of the DNR NPC layer by using multiple data sources to identify sensitive plant communities and by conducting field surveys for rare plants, the protocols for which have been developed in consultation with DNR. The data sources used to identify sensitive plant communities included publicly available Sites of High and Outstanding Biodiversity Significance, Minnesota Biological Survey ("MBS") data, designated Calcareous Fens, Railroad Rights-of-Way Prairies, and interpretation of aerial photography by professional plant surveyors approved by DNR. NDPC has updated Table 7.1.3-1 (below) to include: (1) NPCs and SOBS that occur within the Project's construction workspace and ATWS; and (2) the Conservation Status Rank, SOBS rank, and location of each NPC that will be crossed by the proposed project. Impacts to NPCs that qualify as "rare natural communities" under the Wetland Conservation Act ("WCA") will be addressed in the relevant WCA application(s).

Table 7.1.3-1
Native Plant Communities Identified in the Sandpiper Pipeline Project Area

NPC Code	NPC Class [a]	NPC Type/Subtype	Conservation Status Rank	SOBS Rank	County (Site Name)
APn81	Northern Poor Conifer Swamp	a and b combined	n/a	High	Carlton (Lakeview 27)
APn81a	Northern Poor Conifer Swamp	Poor Black Spruce Swamp	S5	High	Carlton (Lakeview 27)
APn81b	Northern Poor Conifer Swamp	Poor Tamarack-Black Spruce Swamp	S4	High	Carlton (Automba 1)
FPn73a	Northern Rich Alder Swamp	Alder (Maple-Loosestrife) Swamp	S5	High	Carlton (Lakeview 27)
FPn73a	Northern Rich Alder Swamp	Alder (Maple-Loosestrife) Swamp	S5	High	Carlton (Automba 1)
FPn82a	Northern Rich Tamarack Swamp (Western Basin)	Rich Tamarack (Alder) Swamp	S5	High	Carlton (Automba 1)
MHn35	Northern Mesic Hardwood Forest	n/a	n/a	High	Carlton (Lakeview 27)
MHn35a	Northern Mesic Hardwood Forest	Aspen-Birch-Basswood Forest	S4	High	Carlton (Automba 1)
WFn64	Northern Very Wet Ash Swamp	n/a	n/a	High	Carlton (Automba 1)
WPn53b	Northern Wet Prairie	Wet Brush-Prairie (Northern)	S3	Moderate	Polk (Gentilly 22)

[a] Agassiz Interbeach Prairie Complex (AIP_CX), an unclassified community, also occurs in the Project area in Polk County (Gentilly 22).

7.2.2 Special Wildlife Areas (page 96).
Please consider including maps that display Large Block Habitats and Key Habitats similar to WMA map (figure 7.2.2.1). The pipeline crosses approximately 3 miles of State Forest designated as a Site of High Biodiversity Significance. It is known as the Lakeview 27 Site and features high quality, large acid peatlands including Northern Poor Fen, Northern Poor Conifer Swamp, and Northern Spruce Bog. It is generally located in Section 15, T52N R17W. It is critical that suggested Non Native Invasive Species (NNIS), Recreational Motorized Vehicles (RMV) management and monitoring measures identified in the following paragraphs be addressed in this Site of Biodiversity Significance.

NDPC Response: NDPC used GIS software to identify where polygons of grassland/herbaceous, wetland, and/or forested land combine to create contiguous areas that are 40 acres or larger. Contiguous areas included MBS SOBS, MBS NPCs, and land cover types (grasslands, forested, wetland) from the U.S. Geological Survey's Land Use and

Land Cover Classification System as presented in Section 4 of the EIR. NDPC then used GIS to determine where the contiguous areas intersected the Project route and which segments of overlap were co-located with existing third-party rights-of-way. NDPC would have to conduct further analysis of the Large Block Habitat data to develop maps that account for factors such as the distinction between grassland, forest, and wetland habitat blocks; the distinction between those segments that are already co-located with other utilities and those that are not; and the perimeter-to-area ratio of many of these blocks (which limits their value to wildlife as contiguous habitat).

NDPC reviewed the Section, Township, and Range location data provided by the DNR for the Lakeview 27 site. This Section, Township, and Range is located in St Louis County, which is not crossed by the Project, and is located approximately 24 miles north of the Preferred Route centerline. However, the Project overlaps the Lakeview 27 site for 1 mile along the site's southern boundary. The entire 1-mile segment of overlap was surveyed for rare plants in 2013, and no individuals were found. As previously stated, a portion of the 1-mile segment is being re-surveyed for rare plants in 2014 due to minor route adjustments.

Section 7.2.3 General Construction and Operation Impacts and Mitigation
Please ensure all seed mixtures are certified weed free. One potential long term impact is permanent or long term ecological loss resulting from NNIS establishment and spread. Physical disturbance provides ideal sites for NNIS establishment and spread. Workers and equipment, as well as wildlife, can be vectors of NNIS spreading seeds are plant parts from adjacent infested areas. It is critical that proactive steps be taken to prevent establishment and if aggressive species to become established that rapid treatments be implemented over multiple years.

NDPC Response: NDPC has prepared a seeding supplement for the project, which will be become a part of the contract documents. The seeding supplement includes a stipulation that the seed used to restore the right-of-way be certified and as weed free as possible. Under Minnesota rules, up to 1 percent of seed by weight can be weed seed in seed mixtures. The seed mixtures NDPC will use, however, will not contain any prohibited weed seeds.

Section 1.6 of NDPC's EPP outlines steps that it will take to prevent the spread of noxious and invasive weeds. NDPC will minimize the potential for the establishment of undesirable species by minimizing the time duration between final grading and permanent seeding. To prevent the introduction of the noxious weeds and invasive species identified into the Project area from other construction sites, construction equipment will be cleaned prior to arriving at the Project site. This cleaning consists of removing visible dirt from the equipment and blowing loose material from equipment using compressed air. Equipment found to be in noncompliance with the cleaning requirement will not be allowed on the Project site until it has been adequately cleaned.

Table 7.3.1-1 Game Fish Species in the Sandpiper Pipeline Project Area — This table should include Brown trout under Cold-Water Game Fish

NDPC Response: Thank you for the information. A revised Table 7.3.1-1 is presented below:

Table 7.3.1-1
Game Fish Species in the Sandpiper Pipeline Project Area

Warm-Water Game Fish	Cold-Water Game Fish
Bass (largemouth, rock, smallmouth)	Brook trout
Bullhead (black, brown, yellow)	Rainbow trout
Catfish (channel)	Brown trout
Crappie (black)	
Muskellunge	
Perch (yellow)	
Pike (northern)	
Sunfish (bluegill, green, hybrid, pumpkinseed)	
Walleye	

7.3.2 General Construction and Operation Impacts and Mitigation — This section did not adequately address all impacts. Removal of woody vegetation will leave banks less protected and susceptible to erosion and channel instability, and with less ability to slow runoff and allow it to infiltrate rather than running directly into the stream.

See Section III above for specific impacts discussion and recommendations about stream bank vegetation.

NDPC Response: As stated in Section 7.3.2, NDPC will implement erosion and sediment control measures specified in the EPP (see Appendix A) and limit the duration of construction in waterbodies to minimize the potential for adverse impacts on the fisheries at river and stream crossings. Section 1.9 of the EPP includes discussion of temporary erosion controls, including temporary stabilization, erosion control blankets, mulch, cat tracking, and temporary slope breakers. Additional requirements will apply at impaired waters crossed by the Project, and will be outlined in NDPC's NDPES permit from the MPCA.

7.4 Threatened and Endangered Species
This section should not be limited to threatened and endangered species, but should include all state-listed species. Table 7.4.1-1 should include state-listed species of special concern, NHIS records that are more than 20 years old, and the last observed date. In particular, Table 7.4.1-1 should include bog adder's-mouth (Maaxis paludosa), a state endangered plant, and sterile sedge (Carex sterilis), a state threatened plant. Likewise, The CEA should describe potential impacts to all state-listed species.

NDPC Response: A table presenting state-listed species within the environmental survey area is presented below. Minnesota's Endangered Species Statute and the associated Rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules. [4]

Element Occurrences in Minnesota's Natural Heritage Information System for State-Listed Species		
ZOOLOGICAL RECORDS		
Species	State Status	County (Last Observed)
Black Sandshell (Ligumia recta)	special concern	Aitkin (2007), Hubbard (2003), Wadena (2003)
Blanding's Turtle (Emydoidea blandingii)	threatened	Cass (1997), Crow Wing (1990) [a]
Creek Heelsplitter (Lasmigona compressa)	special concern	Clearwater (2004),[a] Hubbard (2004), Polk (2004), Red Lake (2004), Wadena (2003)
Dakota Skipper (Hesperia dacotae)	endangered [b]	Polk (1936)
Four-toed Salamander (Hemidactylium scutatum)	special concern	Aitkin (2001)
Greater Prairie-chicken (Tympanuchus cupido)	special concern	Cass (2001), Hubbard (2000), Polk (2007), Red Lake (2007), Wadena (1991)
Henslow's Sparrow (Ammodramus henslowii)	endangered	Hubbard (1988),[a] Red Lake (2003)
Lake Sturgeon (Acipenser fulvescens)	special concern	Aitkin (1990)
Least Darter (Etheostoma microperca)	special concern	Hubbard (1984), Wadena (2000)
Marbled Godwit [a] (Limosa fedoa)	special concern	Red Lake (2005)
Nelson's Sparrow [a] (Ammodramus 42uccin)	special concern	Aitkin (1977)
Prairie Vole (Microtus ochrogaster)	special concern	Cass (1994)
Pugnose Shiner (Notropis anogenus)	threatened	Wadena (1998)
Red-shouldered Hawk (Buteo lineatus)	special concern	Hubbard (2005)
Short-eared Owl [a] (Asio flammeus)	special concern	Aitkin (1995)
Trumpeter Swan (Cygnus 42uccinators)	special concern	Cass (2008), Clearwater (2008), others [c]
Yellow Rail (Coturnicops noveboracensis)	special concern	Polk (1995)
BOTANICAL RECORDS		

[4] http://www.dnr.state.mn.us/rsg/laws.html

Blanket Flower [a] (Gaillardia aristata)	special concern	Red Lake (1998)
Blunt Sedge [a] (Carex obtusata)	special concern	Polk (1993)
Bog Adder's-mouth (Malaxis paludosa)	endangered	Hubbard (1984)
Bur-marigold (Bidens discoidea)	special concern	Cass (2010)
Butternut (Juglans cinerea)	endangered	Cass (1994)
Clinton's Bulrush [a] (Trichophorum clintonii)	threatened	Clearwater (1939), Hubbard (1939)
Few-flowered Spike-rush (Eleocharis quinqueflora)	special concern	Cass (2008)
Hall's Sedge (Carex hallii)	special concern	Polk (1993)
Lanceleaf Grapefern (Botrychium lanceolatum ssp. Angustisegmentum)	threatened	Carlton (2008)
Oake's Pondweed (Potamogeton oakesianus)	endangered	Cass (2010)
Oat-grass [a] (Avenula hookeri)	special concern	Polk (1960), Red Lake (1960)
Pale Manna Grass (Torreyochloa pallida var. fernaldii)	special concern	Aitkin (2009)
Prairie Moonwort (Botrychium campestre)	special concern	Polk (1995)
Southern Naiad (Najas guadalupensis ssp. Olivacea)	special concern	Cass (2010)
Sterile Sedge (Carex sterilis)	threatened	Polk (1993)
Thread-like Naiad (Najas gracillima)	special concern	Aitkin (1998), Cass (2010)
Twig-rush (Cladium mariscoides)	special concern	Cass (2008)
White Adder's-mouth (Malaxis monophyllos var. brachypoda)	special concern	Aitkin (1991), Hubbard (1935)

[a] The polygon(s) for this Natural Heritage Information System ("NHIS") record overlap(s) with the 2-mile-wide study area, but the point(s) do(es) not. Where the last observed data differs between polygon and point, the table shows the most recent year.

[b] This species is also a candidate under the federal Endangered Species Act.

[c] The NHIS records for this species refer to a group of observations made between 1997 and 2008; not all counties are named in the records that overlap the 2-mile-wide study area.

7.4.1 General Construction and Operation Impacts and Mitigation

This section should identify whether there will be any impacts to known occurrences of state-listed threatened or endangered plants. If so, mitigation measures will be developed during the takings permit process. Otherwise, this section should include proposed plans for avoiding and minimizing impacts to state-listed species. In particular, it may be appropriate to include best management practices for Blanding's turtles and four-toed salamanders.

NDPC Response: NDPC will continue to coordinate with the DNR regarding impacts to state-listed threatened and endangered species. In a meeting in February 2014, DNR indicated to NDPC that there were no areas of statewide importance to the Blanding's turtle that overlap with the Project route and that the Project route was generally not impacting Blanding's turtle habitat. NDPC is continuing to communicate with DNR about BMPs (such as signage, temporary erosion and sediment controls, temporary equipment bridges, and restoration practices) that may be implemented in the vicinity of the one Blanding's turtle NHIS record that occurs within 1 mile of the centerline (in Cass County). NDPC is conducting a desktop assessment of the one four-toed salamander NHIS record that occurs within 1 mile of the centerline (in Aitkin County). Results of this assessment will be shared with the DNR when available.

8.1 Aquifers – The Groundwater resources section of the EIR does not mention the wells and springs that supply water for the Spire Valley State Fish Hatchery (SVSFH) which are located about 1,700 ft north of the proposed route. The SVSFH currently produces most of the Kamloops strain rainbow trout used for stocking in lakes and streams in Minnesota and also rears Steelhead rainbow trout for Lake Superior stocking.

The groundwater resources used by the Hatchery and the potential impact of the pipeline construction on the groundwater should be evaluated as part of the CEA.

NDPC Response: As previously stated, NDPC is currently conducting civil, environmental, geotechnical and cultural surveys in an expanded survey area located to the south further downstream of the AMA. This area was outlined in the DOC-EERA comments and recommendations for system and route alternatives dated July 16, 2014. NDPC understands DNR's concerns and, as indicated above, is currently exploring an alternate further downstream route in this area to avoid the AMA and state land; this route was submitted to the DNR and DOC-EERA on September 12, 2014. A revised geotechnical survey plan for work on private land to the south of the AMA was provided to DNR on October 6, 2014. NDPC is also sensitive to our private landowners' concerns and any new route would take into account information obtained as a result of field surveys and landowner discussions.

8.1.1 Glacial Aquifers — In describing buried drift aquifers, this section states "The confining layer (e.g., glacial till) above the aquifer generally protects it from contamination resulting from human activity at the surface."

Buried drift aquifers may be connected to surficial aquifers and both may be connected to surface waters which would not protect them from contamination. That is known to occur in the Straight River watershed, and is likely around other trout streams.

See Section III above for comments on Risk and Susceptibility of the Hydrogeologic Environmental to Contamination.

NDPC Response: NDPC retained Barr Engineering, Inc. to provide technical assistance in assessing the susceptibility of water table aquifers along the Project in Minnesota to effects from a crude oil release from the Project. Susceptibility is a function of (1) the permeability of the soils above the water table, and (2) the depth to the water table. Based on Barr's susceptibility assessment, water table aquifers have very-low- or low-susceptibility to effects of a crude oil release along 81 percent of the Project route.

Even in a scenario where crude oil from a release migrates to the water table and soluble hydrocarbons dissolve into the groundwater, the distance that a plume of dissolved hydrocarbons will move from the site of the release is limited by natural processes. After release response and remediation activities remove contaminated soil, then natural attenuation would limit the maximum movement of a plume of dissolved hydrocarbons to a distance on the order of a few hundred feet. Over 30 years of studies at the U.S. Geological Survey Bemidji Crude Oil Research Site, where dissolved hydrocarbons have not reached a lake approximately 1,000 feet down gradient of the release site, demonstrate the effectiveness of natural attenuation in limiting the extent of effects on groundwater from a crude oil release in a location that is representative of high-susceptibility areas that the Project will cross.

9.2.1 Water Quality — This section states "the Project will cross one new waterbody on the 2014 Inventory that was not previously listed (two crossings of the Shell River)." The project will cross the Shell River three times (see Appendix E). The section also states "The Project crosses the Crow Wing River (MP 454.6), which is designated as being infested with Eurasian watermilfoil." DNR does not have record of the Crow Wing River being infested with Eurasian watermilfoil, however; the Crow Wing and Shell Rivers are infested with Faucet snail.

NDPC Response: The Preferred Route submitted to the MPUC on August 22, 2014, and DNR on August 27, 2014, crosses the Shell River (and an associated oxbow pond) five times. These five crossings were presented to DNR in NDPC's updated list of PWI crossings dated September 17, 2014. The Shell River remains on the MPCA's Proposed 2014 Impaired Waters List. The list will remain Proposed until the EPA approves the list; then the list status will change to Final.

NDPC reviewed publicly available data from the DNR for the most recent information regarding known locations of infested waters.[5] The infested waters list indicates that the Crow Wing River downstream of Highway 87 to its confluence with the Mississippi River is infested with the Faucet snail. In addition, the Shell River from Upper Twin to Crow Wing River, including 500 feet upstream into its tributaries is also infested with the Faucet snail.

> *9.2.4 Waterbody Construction Methods*
> *Open Cut Method. Dam and Pump Method — These sections indicate that "Spoil excavated from the waterbody bed or banks will be temporarily placed on the right-of-way at least 10-feet from the water's edge."*
>
> *This description contradicts the EPP that describes and illustrates a 20' vegetative buffer minimum for these methods.*

NDPC Response: Vegetative buffers along waterways are maintained only until waterbody construction starts. NDPC must remove vegetation from the waterbody banks once construction crews are ready to cross the waterbody to accommodate trenching, pipe placement, and equipment travel. NDPC anticipates that the MPCA's NPDES Permit will likely require redundant sediment controls near surface waters were a buffer is not feasible.

> *Table 9.2.4-1 Proposed Horizontal Directional Drill Locations — Waterbodies — This section does not include specific criteria that is considered in determining an appropriate crossing methods. Crossings should only be completed using HDD if geologic surveys or other site specific information indicate a low risk of frac-outs.*

NDPC Response: NDPC completes a comprehensive review of waterbodies prior to determining a preferred crossing method. As previously discussed, NDPC will continue to conduct geotechnical survey at waterbodies where HDDs are planned and will conduct a desktop geotechnical study for all other waterbodies. This information will be used to inform the site-specific plans requested by the DNR for sensitive PWI waterbody crossings, including the proposed and alternate crossing methods. Crossing methods at PWI features are approved by the DNR through its License to Cross Public Waters. In the event that DNR considers the risk of HDD at a waterbody to be too high-risk, then NDPC can cross a feature using the open cut/wet trench method. NDPC would appreciate understanding the DNR's concerns at specific waterbodies through the licensing process.

In a letter dated July 24, 2014 to the DNR, NDPC committed to conducting a geotechnical desktop analysis for most PWI features where geotechnical surveys are not being conducted. In addition, NDPC provided a detailed list of waterbodies crossed by the Project and its plans for geotechnical survey or study to the DNR on September 17, 2014. In July 24, 2014 and September 17, 2014 letters, NDPC requested that DNR confirm that NDPC's approach regarding geotechnical studies. NDPC has not received confirmation of its approach from DNR as of the date of this letter.

NDPC will provide a summary of its geotechnical analyses in its revised application for a License to Cross Public Waters. NDPC will prepare a surficial geology summary for most PWI features crossed by the Project. The analysis will encompass a one-mile radius of each crossing. NDPC will review readily available public domain information regarding the bedrock and surficial geology and general hydrogeology for the target areas. Each summary will include information regarding the surficial and bedrock geologic formations and estimated depth to bedrock, a summary of the hydrogeologic setting, maps and figures showing known conditions, and a list of records reviewed during the analysis. The level of detail regarding the geologic formations and hydrogeologic setting will vary dependent on the information readily available for the area. This information will be used to inform site-specific plans for waterbody crossings.

> *9.2.5 General Construction and Operation Impacts and Mitigation — This section states "NDPC will limit the duration of construction within waterbodies and limit equipment operation within waterbodies to the area necessary to complete the crossing."*
>
> *In order to minimize impacts of fish reproduction and migration, DNR approvals many times include specific work exclusion dates. The CEA should include these dates and indicate how work will be completed in a manner that complies with work exclusion dates.*

[5] http://www.dnr.state.mn.us/invasives/ais/infested.html

NDPC Response: NDPC will comply with the in-water work exclusion dates specific to the Northeast and Northwest Regions provided in the email from Nathan Kestner (DNR) to Sara Ploetz (NDPC) on June 13, 2014. Any specific construction work window requirements should be included as part of NDPC's License to Cross Public Waters.

> *9.2.6 Hydrostatic Testing — This section states "NDPC is evaluating potential sources for appropriating hydrostatic test water." Appropriation sources should not include designated trout streams, waters infested with aquatic invasive species, impaired waters, or smaller streams.*
>
> *Water used for hydrostatic testing should be discharged in appropriate places on land where it will not runoff to waterbodies, and should not be returned to the waterbody from which it was appropriated.*
>
> *See Section III above for additional comments on Hydrostatic Testing.*

NDPC Response: NDPC continues to evaluate potential sources for appropriating hydrostatic test water. NDPC intends to use the DNR's General Permit 1997-0005 for water appropriations over 10,000 gallons. Per guidance from Nathan Kestner (DNR) via email on June 16, 2014, NDPC will select appropriation sites that would meet DNR's criteria of "doing no harm." All appropriation sites would be reviewed by the DNR prior to issuance of a Water Appropriations Permit. The DNR General Permit further states that water withdrawals must have a minimal potential for impacts to groundwater resources and must not adversely impact trout streams, calcareous fens, or other significant environmental resources. NDPC may request withdrawal from impaired waters if use of the water will not impact the impairment for which the waterbody is listed. In the event that NDPC must use water from a surface water source that is designated as infested, NDPC will apply for an Infested Waters Diversion or Transportation Permit and will comply with all requirements of that permit.

Discharges of hydrostatic test water will be regulated under the Individual NPDES Permit issued by the MPCA. NDPC will comply with all of the terms of this permit.

> *9.3.1 Existing Wetland Resources — The types of wetlands described in Table 9.3.1-2 to not match with the predominant types of wetlands previously described in text. Specific mention of palustrine unconsolidated bottom ("PUB") is missing.*

NDPC Response: Section 9.3.1 of the EIR states, "Predominant wetland types crossed by the Project, as classified per Cowardin et al (1979), are palustrine emergent ("PEM"), palustrine shrub-scrub ("PSS"), and palustrine forested wetlands ("PFO")." Table 9.3.1-2 presents all wetland impacts presented by the project, by acres. Of the 929.4 acres of wetlands impacted by the Project, only 7.9 acres are palustrine unconsolidated bottom ("PUB") wetlands. Therefore, PUB does not qualify as a "predominant wetland type crossed by the Project."

> *9.3.4 General Construction and Operation Impacts and Mitigation — This section indicates that, "NDPC does not anticipate that wetlands will be permanently filled as a result of the Project". On past projects it was necessary to relocate access roads to private and public lands. These relocation efforts may result in wetland impacts. Section 12.3 indicates a need for at least 202 access roads and locations are subject to change.*
>
> *The CEA should estimate and disclose wetland impacts associated with access roads, discuss wetland avoidance, and indicate whether mitigation is needed under the Wetland Conservation Act (WCA) or Section 404 of the Clean Water Act.*

NDPC Response: NDPC believes that the Project minimizes permanent loss of wetlands to the extent practicable. NDPC does not anticipate that there will be wetland impacts related to access roads. As discussed above, NDPC is working with the ACOE to conduct a LEDPA analysis for the Project. NDPC also does not expect that mitigation will be required under the WCA; however, NDPC will be mitigating for ACOE wetland type conversion and permanent fill through a Wetland Mitigation Plan.

Additionally, as stated in NDPC's February 2014 Application for a License to Cross Public Lands, NDPC will allow permanent access across the pipeline after construction to allow for crossing by DNR vehicles and logging equipment so long as any such crossings does not pose a risk to the safe operation of the pipeline. These crossings should be existing trails or roads that will be agreed upon by the DNR and NDPC and will be

submitted in subsequent revisions of the application. NDPC anticipates any crossings proposed by DNR associated with permanent wetland fill will be closely evaluated for alternatives. In the event an alternative is not feasible, NDPC will request DNR justification to support the permanent impacts as part of the ACOE application.

> *10.0 Cultural Resources – Page 10-2 of Section 10.1 (Previously Recorded Cultural Resources) is missing a reference to the Shell River Prehistoric Village and Mound District. This site is located in close proximity to where the line is proposed between Duck Lake and Palmer Lake just east of Crow Wing Chain WMA.*
>
> *It is recommended that the environmental survey area (ESA) be expanded from Crow Wing River to the north end of Duck Lake to look for additional cultural resources (Maps 64-65 of App G.5). This information should then be used in the CEA in assessing cultural resource impacts.*

NDPC Response: NDPC did identify the Shell River Prehistoric Village and Mound District (the District) in the November 2013 filing as this site was located within the environmental survey corridor ("ESC") at the time of filing. The intent of the supplemental January 2014 EIR was to capture those resources documented within the ESC. The District boundary did not meet that criteria at the time of the supplemental January 2014 filing as the documented boundary was south of the ESC. NDPC and its cultural resources contractors obtained the available documentation on the District (HB0006) and were aware that the ESC held potential for archaeological resources and earthworks and was previously subject to little field investigation. Indeed one Pre-contact artifact scatter (HB0088) was documented within the ESC north of the District Boundary; the ESC was subsequently expanded to the north to avoid the site and the District.

As noted previously, in consultation with the DNR, NDPC was notified that properties within the Crow Wing Chain WMA were gifted to the DNR by The Nature Conservancy and were reserved with deed restrictions. At the request of the DOC-EERA, NDPC prepared a route alternative (see Crow Wing Chain WMA submitted by NDPC on June 27, 2014 and designated by DOC-EERA as RA-16) that avoids the WMA and the District.

> *11.2 General Construction Operation Impacts and Mitigation*
> *Noise associated with construction can be significant particularly where construction route is near State Parks where people are camping or State Forests and/or wildlife areas where visitors are hunting. The DNR recommends proactive information through press releases or other media outlets be distributed to public prior to construction within a particular area.*
>
> *It is important to restrict motorized use upon completion of pipeline project. A new corridor could be an inviting route to Recreational Motor Vehicles (RMV) users and lead to additional user created trails resulting in resource impacts to soils and vegetation and also a vector in NNIS establishment and spread. The pipeline corridor particularly if it is adjacent to existing RMV routes may be closed if necessary.*

NDPC Response: As described in Section 11.2 of the EIR, the Project will have only minor and temporary impacts on public recreational areas. Impacts on recreational use of public land areas primarily will be limited to temporary inconveniences and localized disturbances, including noise, dust, and visual intrusions associated with construction activities. There will be no long-term impact on recreational activities within the public lands areas as a result of construction and operation of the pipeline.

Placement of barriers to address recreational motor vehicle use on public land should be included as a special condition as part of NDPC's License to Cross Public Lands. NDPC will only incorporate barriers to the operational right-of-way on private land upon mutual agreement with the landowner. However, NDPC is concerned that restricting access to the operational right-of-way could impede maintenance and emergency response activities.

> *12.3 General Construction and Operation Impacts and Mitigation – This section describes Dust control practices that may include wetting soils on the right-of-way.*
>
> *The CEA should include information indicating that source water for dust control, hydrostatic testing, etc. will not be taken from designated trout streams, waters infested with aquatic invasive species, impaired waters, or smaller streams.*

NDPC Response: As described above, NDPC continues to evaluate potential sources for appropriating water for the Project, which includes sources used for dust suppression. NDPC intends to use the DNR's General Permit 1997-0005 for water appropriations over 10,000 gallons. Per guidance from Nathan Kestner (DNR) via email on June 16, 2014, NDPC will select appropriation sites that would meet DNR's criteria of "doing no harm." All appropriation sites would be reviewed by the DNR prior to issuance of a Water Appropriations Permit. The DNR General Permit further states that water withdrawals must have a minimal potential for impacts to groundwater resources and must not adversely impact trout streams, calcareous fens, or other significant environmental resources. NDPC may request withdrawal from impaired waters if use of the water will not impact the impairment for which the waterbody is listed. In the event that NDPC must use water from a surface water source that is designated as infested, NDPC will apply for an Infested Waters Diversion or Transportation Permit and will comply with all requirements of that permit.

The EIR did not include any discussion related to Sites of Biodiversity Significance. The CEA should include a subsection on Sites of High and Outstanding Biodiversity Significance (including preliminary sites where available). Please identify each Site that will be impacted and the acreage within the Site that will be impacted. Examples include:

- *Prelim Site of High Biodiversity Significance along river in T147N R37W Section 21*
- *Prelim Site of High Biodiversity Significance along river in Tl45N R36W Section 35*
- *Prelim Site of High Biodiversity Significance along river in T144N R35W Section 19 & T144N R36W Section 24*

NDPC Response: The findings of NDPC's SOBS review and protected flora surveys to date indicate that impacts to SOBS sites will be minimal; low numbers of individuals of three special-concern species were found during 2013 surveys. Once 2014 surveys are complete, NDPC will continue coordinating with DNR to avoid, minimize, and mitigate impacts to rare plants, NPCs, and SOBS sites.

Additional EIR Comments
Both bald eagle and osprey nests have affected schedules on past projects. Sometimes this was due to the need to comply with "no disturbance" windows limiting certain activities within specific distances to nests. As part of the CEA, information about listed species presence and specific mitigation requirements should be described. Any impacts to construction schedules should also be described and planned for.

The DNR requires permits to remove unoccupied eagle and osprey nests. Osprey nest removal permits are typically issued from October 1st through April 1st. Eagle nest permits are issued on a case-by-case basis. Disturbance permits for both species are issued only for public safety purposes. For permits or questions, please contact Lori Naumann 651-259-5148.

NDPC Response: NDPC appreciates the contact information regarding DNR permitting requirements for removal of unoccupied eagle and osprey nests. NDPC has engaged in discussions with Lori Naumann with the DNR to ensure NDPC meets all applicable regulatory requirements.

NDPC conducted aerial bald eagle surveys in mid-March 2014. Aerial surveys for bald eagle nests are also planned for March 2015. NDPC's aerial survey identified two inactive nests within Carlton and Hubbard counties, only one of which was located within the proposed construction workspace. NDPC is consulting with the United States Fish and Wildlife Service ("USFWS") on avoiding, minimizing, and mitigating potential impacts on nests and individuals for bird species protected by the Migratory Bird Treaty Act ("MBTA") and Bald and Golden Eagle Protection Act ("BGEPA") since April 2013, and will employ any measures developed through those consultations during the construction of the Project.

VI. APPENDIX A – ENVIRONMENTAL PROTECTION PLAN (EPP)
The following comments, concerns, and recommendations are not limited to state lands, likewise; they should be applied to the project as a whole, including state lands. It is important that the following considerations, impacts, and mitigations measures be included in the CEA and future revisions of the EPP.

Introduction: The introduction to the EPP indicates that the contractor is responsible for implementing the EPP. The document should be revised to indicate that EPND is responsible for ensuring implementation.

NDPC Response: NDPC's intent is to obtain all permits for the Project. NDPC will hold the contractor responsible for implementing the conditions of all permits. Contract specifications will incorporate environmental protection and mitigation measures required by regulations, NDPC specifications, and environmental permits. NDPC's contractors will be obligated to implement these measures in the field.

> *Third party independent monitors: It is our understanding that under the current proposal; only company environmental inspectors (EIs) will be used. Ensuring effective communication regarding permit conditions with the various subcontractors and across the multiple spreads is an enormous enterprise.*
>
> *On past large utility projects, third-party agency monitors have been used to work with and supplementing agency field presence. These monitors would also satisfy reporting expectations, help to ensure that impacts to protected resources are avoided and/or minimized.*
>
> *The CEA should regard usage of independent third party environmental monitors as an overall mitigation strategy. The EPP should also be updated to describe use of this approach. The DNR is also interested in discussing various models of funding and oversight for a third party monitors during this environmental review and routing process.*

NDPC Response: NDPC provided a proposal regarding third party monitoring to DNR, MPCA and ACOE. The proposal was intended as starting point in this discussion and to demonstrate commitment to the State agencies regarding our willingness to collaborate. To date, NDPC has been unsuccessful in obtaining a meeting with all applicable agencies to discuss the third party monitoring program.

NDPC has constructed numerous projects with the oversight of third-party monitors as suggested by the DNR. NDPC will continue to work with the appropriate agencies to define the role and qualifications of proposed third party monitors to ensure they are experienced in the type of construction they will be observing and knowledgeable regarding the resources potentially impacted.

NDPC looks forward to having discussions with participating agencies in order to establish a third-party monitoring program. NDPC recognizes that the success of an inspection program is tied directly to ensuring that the duties of the monitors and their authority is clearly identified and understood by all parties. NDPC would appreciate DNR's assistance in coordinating or facilitating these meetings so that a comprehensive monitoring program can be developed as soon as possible. NDPC agrees that costs for the monitoring program will be borne by NDPC which is common practice with past monitoring programs.

The above-referenced proposal regarding independent/third-party environmental monitors for the Project was based on past experience with third party monitoring programs in Minnesota on other Enbridge affiliate and foreign utility projects. However, Enbridge also has constructed numerous projects with the oversight of third-party monitors as suggested by the DNR. NDPC will continue to work with the appropriate agencies to define the role and qualifications of proposed third party monitors to ensure they are experienced in the type of construction they will be observing and knowledgeable regarding the resources potentially impacted.

In addition to third-party monitors, NDPC has designated EIs that will be assigned to the Project, as they have been on other Enbridge projects in past years. Environmental inspection will be conducted during and following construction. Contract specifications will incorporate environmental protection and mitigation measures required by regulations, NDPC specifications, and environmental permits. NDPC's contractors are obligated to implement these measures in the field. Both the contractors and the EIs are required to attend a Safety and Environmental Orientation training prior to start of construction, and must comply with the Project safety and environmental requirements at all times.

The EIs act as a resource for construction personnel and a liaison between the contractor, NDPC's Project Management, and agency officials. The EIs are responsible for assisting with pre-construction field tasks such as marking wetland and waterbody boundaries, clarifying environmental requirements, identifying possible issues and challenges ahead of construction, conducting environmental training of construction staff, offering advice and consultation to NDPC's contractors, and conducting inspections/monitoring in accordance with applicable laws, permits and/or Project plans. The EIs are also required to document environmental compliance throughout the

duration of the Project and are responsible for monitoring construction activities to ensure compliance with all applicable environmental laws, regulations, permits and NDPC's Project-specific plans.

> *Siting adjacent to existing powerlines: In the recent construction of the Otter Tail CAPX transmission line adjacent to the Alberta Clipper, Enbridge required the installation of copper wire for cathodic protection and AC mitigation. The documents do not mention this technology as being needed for the new pipeline segment that would parallel the existing transmission lines.*
>
> *Information about the necessity of cathodic protection should be included in a revised EPP.*

NDPC Response: Cathodic protection and AC/DC mitigation will be installed when co-located with a transmission utility to protect the pipeline from the effect of co-located utilities. NDPC has studied the utilities (specifically powerlines) that would be co-located with the Project to determine their effect on the pipeline. Modeling for both AC and DC mitigation requirements is in progress to determine what equipment will be required to properly protect the pipeline. NDPC can share the results of this modeling if requested.

> *Siting adjacent to existing pipelines: It appears that there will be an overlap of easement areas between Sandpiper and the adjacent MinnCan pipeline (MPL). If so, there will need to be a clear understanding between the companies as to the responsibilities in the overlapping area. This information should also be disclosed in the CEA and an updated EPP.*

NDPC Response:
NDPC received a letter from DNR dated June 12, 2014, that requested that NDPC include overview maps identifying the areas of collocation with existing utilities in its next revision of its application for a License to Cross Public Lands. In addition, DNR requested detailed maps of each 40 acre parcel crossed by the Project that shows the location of the Sandpiper right-of-way in relation to the existing utility right-of-way. NDPC responded to DNR on July 24, 2014, stating that it plans to provide a set of high-level overview maps depicting areas of collocation with existing utility rights-of-way, as long as the data is not publically restricted in any way, in the next revisions of its Applications to Cross Public Lands and Waters.

NDPC has contacted environmental staff at Minnesota Pipe Line Company in an attempt to try to meet DNR's request to portray areas of overlap between the rights-of-way. NDPC will attempt to gather and present as much detailed information as possible in its next revisions of its License to Cross Public Lands applications; however, the location of existing utility infrastructure is often protected information and may not be able to be shared publicly. NDPC also may need the assistance of DNR to request information from these utilities on its behalf.

> *Pipeline compatibility with adjacent utilities and infrastructure: Sandpiper proposes to use existing utility and infrastructure corridors for their preferred route. The EPP provides limited discussion about the compatibility of a new pipeline with the other uses already established in these corridors. The question is further heightened with the recent announcement from Enbridge about their interest in rebuilding Line 3, possibly adjacent to the Sandpiper.*
>
> *The CEA should and updated EPP should describe Project compatibility with adjacent utilities and infrastructure.*

NDPC Response: Construction of the Project alongside other crude oil pipelines (e.g., Line 81, Line 3) would not present any issues regarding use or compatibility. Further, co-location with existing utility rights-of-way is consistent with the State of Minnesota's Chapter 7852.1900 Subpart 3.F to co-locate with existing utility infrastructure. As a result, and in accordance with that requirement, NDPC has co-located approximately 75 percent of the Preferred Route alongside existing utility corridors.

In addition, the Project would be compatible when installed alongside transmission infrastructure. Cathodic protection and AC/DC mitigation will be installed when co-located with a transmission utility to protect the pipeline from the effect of co-located utilities. NDPC has studied the utilities (specifically powerlines) that would be co-located with the Project to determine their effect on the pipeline. Modeling for both AC and DC mitigation requirements is in progress to determine what equipment will be required to properly protect the pipeline. NDPC can share the results of this modeling if requested.

> *Federal funding encumbrances on certain DNR administered state land: DNR has provided Enbridge with preliminary information that identifies state parcels with federal funding encumbrances. These lands are primarily the Wildlife Management Areas and Aquatic Management Areas. Obtaining approval to cross these parcels from the federal entity will require considerable time.*
>
> *The CEA should describe state parcels with federal funding encumbrances, project compatibility, and actions needed to obtain approval. Also, as mentioned above alternative sites for the WMA and AMA parcels should also be considered as part of the environmental review process. This is an applicant responsibility.*

NDPC Response: NDPC understands that certain state lands are federally funded and that crossing these lands would involve input from the federal agency that provides the aid. Representatives of the USFWS were included in the May 8, 2014 conference call with NDPC and DNR staff. NDPC has been working with DNR Lands and Minerals staff to determine the status of state lands that may receive federal funding throughout the utility license permitting process.

NDPC requested that DNR conduct an analysis of the Project route associated with the January 2014 EIR route to determine what parcels were funded with federal aid. DNR's June 12, 2014, letter presented sixteen parcels along the Project route that corresponded with the January 2014 EIR that were funded with federal aid. These parcels were located within the Crow Wing Chain, Salo Marsh, and Lawler WMAs and the Spire Valley Hatchery AMA.

NDPC responded to the DNR's letter on July 24, 2014, outlining an updated analysis of impacts on federally funded land. In this letter, NDPC stated that it had filed the Salo Marsh WMA Route Alternative with the DOC on May 30, 2014. This route alternative avoids the one "Salo Marsh WMA" parcel in Aitkin County at Township 47N, Range 22W, Section 2. NDPC also filed the Crow Wing Chain WMA Route Option at the request of the DOC-EERA on June 27, 2014. This route option avoids the nine "Crow Wing Chain WMA" parcels in Hubbard County at Township 139 N, Range 33 W, Sections 32 and 33. NDPC continues to evaluate the Project route as it crosses the three parcels associated with the Lawler WMA, including any necessary federal actions that would be associated with a crossing.

As previously stated, NDPC is currently conducting civil, environmental, geotechnical, and cultural surveys in an expanded survey area located to the south further downstream of the Spire Valley Hatchery AMA. This area was outlined in the DOC-EERA comments and recommendations for system and route alternatives dated July 16, 2014. NDPC understands DNR's concerns and, as indicated above, is currently exploring an alternate further downstream route in this area to avoid the AMA and state land; this route was submitted to the DNR and DOC-EERA on September 12, 2014. NDPC is also sensitive to our private landowners' concerns and any new route would take into account information obtained as a result of field surveys and landowner discussions. As NDPC continues to study the area located to the south further downstream of the AMA our goal of addressing DNR's resource concerns also extends to the avoidance of the three federally funded parcels associated with the AMA.

Consultation regarding the Spire Valley Hatchery AMA and Lawler AMA are ongoing. NDPC provided DNR with an updated list of DNR-administered parcels crossed by the August 2014 Preferred Route on September 16, 2014 and requested an updated review for federally funded parcels.

> *DNR easement interests where there is private fee ownership: The Project will entail crossing properties with easement interests. For DNR administered parcel, we may need to review, approve, and or receive approval from other agencies that provided funding for the easement. Compensation for encumbered easement interests may be required.*
>
> *The CEA should describe encumbered easements for the various routes carried forward. The EPP should also describe specific requirements associated with easements.*

NDPC Response:
DNR has made NDPC aware of one set of state administered lands that is subject to an easement. Via a letter dated June 10, 2014, DNR notified NDPC that Sections 32 and 33 of Township 139N, Range 33W (within the Crow Wing Chain WMA) was subject to conservation restriction language associated with the gifting of the property by The Nature Conservancy. The DNR determined that the construction of a pipeline across these state lands is inconsistent with the restrictive covenants in the deed and the management plan adopted pursuant to those restrictive covenants. Therefore, NDPC modified its route in this area to avoid these parcels and the Crow Wing Chain WMA. The August 22, 2014 route reflects this route modification.

NDPC would appreciate if DNR could provide information on any other properties with easement interests. .

> *Construction schedule: Construction kicks off according to the schedule during the last quarter of 2014 with an in-service date of first quarter 2016 allowing for about one year of construction. The EPP and the winter construction plan do not clearly describe how Enbridge proposes to adapt their construction methods and schedule to the extreme seasonal weather changes in Minnesota.*

NDPC Response: The EPP outlines construction-related environmental policies, procedures, and protection measures developed by NDPC and is designed to address typical circumstances that may be encountered along the Project. NDPC has committed to preparing site-specific crossing plans to supplement the License to Cross Public Waters and will further discuss seasonality concerns within those plans.

> *The EPP and CEA should specifically describe how NDPC will they deal with extremes in snow cover, frozen conditions, extremely low temps, persistence of winter beyond normal ranges and the converse (hot and dry). Conditions are unpredictable, but being prepared to encounter obvious extreme weather is crucial to understanding potential impacts, necessary mitigation, and project planning. The EPP should also include contingency plans, and applicable alternative construction methods, to use in the event the in service date is not possible to meet.*

NDPC Response: NDPC has committed to preparing site-specific crossing plans to supplement the License to Cross Public Waters and will further discussion seasonality concerns within those plans.

> *Grand-in-Aid (GIA) Permits/Hunting seasons: Although some recreational trails and features were identified, the document did not outline measures on how to address temporary disruption. GIA snowmobile trails were not mentioned and Enbridge would need to work with GIA trail clubs and sponsors on temporary reroutes. The firearm deer season was also not mentioned. On past projects, firearms season has affected the construction schedule to a degree.*
>
> *The CEA should assess these concerns for all routes carried forward.*

NDPC Response: As described for the crossings of the two state trails, use may be interrupted for a short time to allow installation of the pipeline. Crossing will result in little to no impact to trail users. If the open-cut method is used, NDPC will conduct excavation and pipeline installation activities across the trails within a 48-hour period to limit impacts. NDPC will post signs as needed to notify the public of pipeline construction. NDPC also will install safety fencing around the trench at the trail crossings during periods of inactive construction. After the pipeline is installed across a trail, NDPC will temporarily restore the disturbed trail area to allow passage of both trail users and pipeline construction equipment. Once the pipeline construction equipment has passed, NDPC will restore the trail surface and adjacent areas to pre-construction conditions.

During Minnesota hunting seasons (Special Youth Firearm Deer Season, Firearm Deer Season, Muzzleloader, etc.), NDPC will make appropriate individual communications with landowners. If positive confirmation of 'no hunting activity' is received for specific working areas, work will be completed. There will be specific safety requirements in place to control and mitigate hazards associated with hunting activity. These controls/mitigations include but are not limited to: wearing high-visibility blaze orange safety vests and hard hat covers, training and increased awareness around hunting hazards to all workers, signage posted around the work area and daily toolbox meetings focused on hunting safety and DNR hunting rules and regulations. Work will stop and the area will clear if hunting activity is spotted in the land owner confirmed 'no hunting' area until communication with the landowner is established and plan is agreed upon between the NDPC and landowners.

> *Paul Bunyan/Willard Munger State Trails: The CEA and EPP should assess temporary disruption to trail usage and special events involving these trails. We are not aware of specific events planned at this time, however; special events are held on these trails (bike rides, etc.) and there may be a need to coordinate.*
>
> *In the event a route is selected that would cross these trails, the EPP should describe results of coordination and special measures needed to maintain access.*

NDPC Response: NDPC is aware that the Project will cross the Willard Munger and Paul Bunyan State Trails. NDPC will be preparing site-specific crossing plans for these trails as critical elements of its License to Cross Public Lands; a draft site-specific plan for the Willard Munger Trail crossing was submitted along with the February 2014 application. As stated in NDPC's February 2014 Application for a License to Cross Public Lands, public use of the two state trails, including other trails listed by the DNR, may be interrupted for a short time to allow installation of the pipeline. Boring trail crossings will result in little to no impact to trail users. If the open-cut method is used, NDPC will conduct excavation and pipeline installation activities across the trails within a 48-hour period to limit impacts. NDPC will post signs as needed to notify the public of pipeline construction. NDPC also will install safety fencing around the trench at the trail crossings during periods of inactive construction. After the pipeline is installed across a trail, NDPC will temporarily restore the disturbed trail area to allow passage of both trail users and pipeline construction equipment. Once the pipeline construction equipment has passed, NDPC will restore the trail surface and adjacent areas to pre-construction conditions. Installation of the pipeline should not preclude landowners from permitting trails over or along the pipeline right-of-way, as long as any requests are coordinated with NDPC prior to doing so.

As described in Section 11.2 of the EIR, the Project will have only minor and temporary impacts on public recreational areas. Impacts on recreational use of public land areas primarily will be limited to temporary inconveniences and localized disturbances, including noise, dust, and visual intrusions associated with construction activities. There will be no long-term impact on recreational activities within the public lands areas as a result of construction and operation of the pipeline.

> *<u>Trout streams:</u> The EPP mentions trout streams but the "no-construction windows" were not included. In past projects, the no-construction windows posed significant challenges to the construction schedule. Likewise, the EPP and CEA should assess work exclusion date impacts on construction schedules.*

NDPC Response: NDPC will comply with the in-water work exclusion dates specific to the Northeast and Northwest Regions provided in the email from Nathan Kestner (DNR) to Sara Ploetz (NDPC) on June 13, 2014. Any specific construction work window requirements should be included as part of NDPC's License to Cross Public Waters.

> *<u>Beaver dams:</u> Beaver dams were not mentioned in any of the documents. In past projects, beaver dam removal up or downstream of proposed crossings has been a necessary.*
>
> *The EPP and CEA should describe needed beaver dam removals, impacts of those activities, and necessary permits/licenses.*

NDPC Response: NDPC anticipates that it may need to remove beaver dams to construct across some waterbodies and is currently working to identify locations where removal could be necessary. If removal is necessary, NDPC will work with local DNR Conservation Officers or Area Wildlife Offices prior to conducting a stream crossing where beavers will be impacted. NDPC understands that DNR prefers that beavers are trapped during the trapping season (late October through mid-May). NDPC will obtain permission from the affected landowner and a permit (NA-012650-02) from the local DNR Conservation Officer.

NDPC will update the EPP to include preventative measures to address beavers from re-entering areas where NDPC has obtained permits and landowner permission to remove them.

> *Mats: It appears that there is no language regarding cleaning of mats between redeployment. Mats should be cleaned before arriving at different sites and before being transported between sites to prevent the spread of invasive species.*

NDPC Response: Sections 2.5.1, 2.5.2 and 2.5.3 of the EPP note that if equipment must encroach into a stream, it must operate on clean construction mats (free of soil and plant material prior to being transported onto the construction right-of-way). Section 3.5 states that to prevent the spread of noxious and invasive plant species, timber mats will be free of soil and plant material prior to being transported onto the construction right-of-way and/or moved from one area of the construction right-of-way to another area.

> *Rutting and Compaction:*
> *The EPP should be updated to specify maximum rutting depths in wetlands, number of mats, when mats would be use, when winter constructions would be used, etc. The CEA should*

also include these specifics and specify maximum rutting depths as a mitigation measure. The plans should describe when construction would cease due to excess rutting or compaction, alternatives planned, and restoration for rutted areas.

NDPC Response: NDPC does not propose a maximum rutting depth in a wetland as there should be no rutting in a wetland at all. The FERC's Procedures (which NDPC used as a guideline in developing its EPP) specify that the construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting, or when the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats). Based on NDPC's pipeline construction experience, the matting is done specifically to avoid any rutting in wetland resources. The ACOE permit will authorize mats in wetlands although does not typically state a required number of mats, only that they will be used in wetlands to minimize disturbance.

<u>Invasive species:</u> The EPP should specify and emphasize that the NDPC will be responsible for the control of invasive species on DNR administered state land and in public waters for 50 years, the term of the license.

NDPC Response: The EPP is a specifically designed as a construction document and is not intended to address long-term maintenance requirements. NDPC will continue to work with DNR Division of Lands and Minerals staff related to license conditions for its Utility License across DNR administered lands to address long-term maintenance. NDPC notes that it would only have the ability to control or treat the invasive species on its right-of-way. It also is probable that others accessing DNR land could be responsible for spreading invasive species (all-terrain vehicles, logging equipment and trucks, etc.).

A baseline inventories for noxious weeds and invasive species for the right-of-way will be required for state land and public water crossings, however, this should also occur for the entire route as Enbridge will be responsible for noxious weeds and invasive species management on the licensed right-of –way. The EPP should include results of the baseline survey.

NDPC Response: NDPC plans to conduct surveys for federal, state and locally listed terrestrial noxious and invasive plant species in advance of construction activities. The purpose of the surveys is to document the occurrence of terrestrial noxious and invasive plant species in upland and wetland areas. The surveys will provide background information that will assist in implementing mitigation measures specified in the EPP during construction to minimize the potential for introducing or spreading terrestrial noxious and invasive plant species.

<u>Unauthorized use:</u> The EPP should describe how Enbridge proposes to manage unauthorized activities on the license right-of-way such as ATV use. The CEA should assess impacts of unauthorized ATV use during and after construction.

NDPC Response: Placement of barriers to address sensitive areas on public land should be included as a special condition as part of NDPC's License to Cross Public Lands. NDPC will only incorporate barriers to the operational right-of-way on private land upon mutual agreement with the landowner. However, NDPC is concerned that restricting access to the operational right-of-way could impede maintenance and emergency response activities. If NDPC finds that such barriers may impede maintenance or emergency response activities, the barriers will not be installed.

<u>Subsidence/Crowning in wetlands/peatlands:</u> Restoration over the pipeline should be to preconstruction conditions. During a previous utility project, Enbridge (NDPC) had difficulty with settling and crowning over the pipeline and then difficulty returning the site for restoration to the preconstruction elevations. The EPP provides no discussion regarding subsidence and crowning in wetlands. The EPP should be updated to describe how these situations will be handled.

It appears there will be only one winter season in the construction phase. Documents (CEA and EPP) should also specify construction methods in summer versus winter and their associated restoration methods.

NDPC Response: NDPC will restore wetland crossings in accordance with ACOE permit conditions. In addition, NDPC anticipates long-term monitoring will be a condition of the ACOE permit. NDPC will prepare site-specific crossing plans per DNR request which will address seasonality concerns.

> *Impaired waters: Although mentioned in the documents, there is no discussion regarding how NDPC will manage livestock. In the past, keeping the livestock out of waters has been a challenge on impaired water crossings and in ensuring effective restoration. The EPP should describe how livestock will be excluded from work and restoration areas.*

NDPC Response: During construction NDPC will work with the landowners to ensure safe movement of livestock. NDPC does not manage livestock at any time. Management of livestock is the responsibility of the owner or leaser of the land. NDPC will erect temporary fences as required before construction to limit access for livestock to the right-of-way. Once restoration is complete NDPC will erect permanent fences as agreed to with the landowner. NDPC cannot require landowners to exclude livestock from their property upon completion of restoration.

> *Bioengineering methods for stream bank restoration/site specific plans: For public water crossings, it will be necessary to restore streambanks to their preconstruction cross sections. The EPP and CEA should provide detailed descriptions on how this will be accomplished. The documents only suggest that restoration to preconstruction conditions will be accomplished as near as practicable to preexisting conditions. There are a few diagrams in the typicals depicting bioengineering methods; however, the text did not suggest a strong commitment to using these methods routinely. Site specific plans are also mentioned not discussed in detail.*
>
> *The DNR will require detailed site specific plans for most crossings. In many cases it will be necessary to have detailed surveys of bank elevations, stream profiles, and geotechnical analysis. Specific survey information will be needed to document preexisting site conditions, determine effectiveness of restoration efforts, and in the case of geotechnical surveys (i.e. soil borings) to inform least environmentally damaging crossing methods. The EPP and CEA should include these details.*

NDPC Response: As previously discussed, NDPC received a letter from DNR on June 12, 2014, outlining the DNR's request for site-specific plans for sensitive stream crossings. These site-specific plans were to incorporate stream survey information on channel longitudinal profile, cross channel sections, bankfull elevations, and geotechnical evaluations, among others. NDPC has initiated detailed stream surveys to document the stability of sensitive waterbodies crossed by the Project. In addition, NDPC will continue to conduct geotechnical survey at waterbodies where HDDs are planned, and will conduct a desktop geotechnical study for all other waterbodies. All of this information will inform the site-specific plans prepared for the Project, including the proposed and alternate crossing methods. In a July 24, 2014, letter NDPC requested that DNR confirm that NDPC's approach regarding geotechnical studies is appropriate. In addition, NDPC provided a detailed list of waterbodies crossed by the Project and its plans for geotechnical survey or study to the DNR for review on September 17, 2014. NDPC has not received confirmation of its approach from DNR as of the date of this letter.

NDPC has met with DNR Division of Lands and Minerals staff to discuss the content site-specific plans for waterbody crossings. The plans will incorporate civil, environmental, and geomorphic stream survey data, along with geotechnical survey and study data, to inform the most appropriate crossing method. These plans, along with the proposed and alternate crossing method for each PWI feature crossed, will be reviewed and approved by the DNR as part of the licensing process. The site-specific plans will inform restoration of the waterbody crossings and may include bioengineering methods.

In addition, NDPC will be providing DNR with a list of waterbodies where bioengineering practices could be used as a method of bank stabilization. NDPC looks forward to DNR's assistance with identifying these waterbodies.

> *Woody debris management: The CEA and EPP should specific woody debris management and include the following measures:*
>
> - *Woody debris should be disposed of promptly in an appropriate manner to reduce future fire hazard and to reduce disease.*

- *In areas adjacent to watercourse crossing requiring stream bank restoration, retention of some woody debris as a source of material for bio-engineering methods is recommended.*

- *Woody debris should be scattered in a manner that does not inhibit germination or growth of the underlying plant material.*

NDPC Response: Section 1.8.1 of the EPP describes the management of woody debris: "Unless otherwise directed by NDPC, non-merchantable timber and slash will be disposed of by mowing, chipping, grinding, and/or hauling off site to an approved disposal facility or used in stabilizing erodible slopes or construction entrances. In non-agricultural, non-wetland areas, chips, mulch, or mechanically cut woody debris may be uniformly broadcast across the right-of-way where the material would ultimately be incorporated into the topsoil layer during grinding activities, with landowner approval (coordinated through NDPC right-of-way agents). Burning of non-merchantable wood may be allowed only where the Contractor has acquired all applicable permits and approvals (e.g. agency, tribal, and landowner) and in accordance with all tribal, state, and local regulations.

NDPC plans to use bioengineering at specific stream crossings, pending the input of the DNR as described as above. NDPC will consider using the use of woody debris for this purpose when the approach is suggested by DNR at specific waterbody crossings.

Drilling Mud Containment. Response and Notification Plan.
Frac-out mitigation should be addressed. Also, the content of drilling mud should be included, along with an analysis of environmental impacts of the content in drilling mud.

NDPC Response: Section 11.0 of the EPP, specifically 11.2, addresses procedures outlined for the containment, response and clean-up equipment.

An HDD is primarily designed based on the allowed bend radius of the pipe and the depth underneath the obstacle that is being avoided. From there, a geotechnical assessment is done to confirm that the HDD design is put into a favorable material for drilling or to confirm if the sub-surface conditions are completely unfavorable to drilling. If the sub-surface conditions are marginal, the design is adjusted to get to more favorable conditions but that still may not guarantee a successful drill without inadvertent returns to the surface (i.e. frac-outs). The company designing the HDD completes calculations that consider soil fracture mechanics to provide an estimate on the potential for frac-outs. The soil fracturing software is strictly a modeling tool and does not perfectly reflect actual conditions during drilling.

The HDD drilling fluids/mud consists primarily of water mixed with inert bentonite clay. Under certain conditions an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons. NDPC will only use non-hazardous additives and will maintain an MSDS for the drilling fluid at the work site. The drilling additives are used to create mud with desired characteristics that help maintain the integrity of the hole along the drill path. Different additives are used at different times depending on the conditions. For example, some additives will help stabilize the walls from collapsing, others will prevent or slow the escape of drilling mud through small cracks or porous material.

NDPC will not know the specific types or contents of the drilling mud that will be used for the Project until it has selected a drilling contractor to complete the work. Different types of mud may be used depending upon the specific needs of each HDD crossing or the preferences of a specific HDD drilling contractor.

HDD mud releases, duty officer: Notification of the duty office did not seem to be covered by either the spill plan or the sections of the EPP covering drilling fluid. The EPP should be modified to describe requirements for contacting the state duty officer. In doing so, specifics about reporting requirements on land and water should be provided.

NDPC Response: Section 11.4 of the EPP addresses notifications related to drilling mud releases. Section 10.8.3 of the EPP addresses notifications related to construction spills, specifically Agency Notification. The Contractor will report spills to appropriate federal, state and local agencies as soon as possible. A listing of federal, state, and local agencies including reporting thresholds and timeframes is provided in Appendix G. Appendix G has the Minnesota Duty Officer listed as an appropriate contact. In addition, Appendix G also provides the reporting criteria whether land or water.

HDD mud releases, landowner: It doesn't appear that Enbridge plans to contact the landowner in the event of a release. DNR's license will require notification to DNR if there is a release on

state land. It is recommended that the EPP specify who will be reported and that it include all landowners.

NDPC Response: A representative from NDPC Land Services will notify all landowners affected by a frac-out release, including the DNR if a release should occur on state lands.

HDD mud releases, vac truck: Vac-truck is listed on the plan as being on 24-hour call, but not necessarily on site during an HDD. In past projects, the vac-truck was on 24 hour call but it may have been 2 or 3 hours away. It is recommended that the EPP be modified to include more specific timeframes for vac-truck availability.

NDPC Response: Section 11.2 of the EPP states that, "Containment, response and clean-up equipment will be available at both sides of an HDD crossing location and one side of a guided or road bore prior to the commencement to assure a timely response in the event of an inadvertent release of drilling fluid." Vacuum trucks will be available to respond within a 24-hour notice; however, actual response time will likely be much less. Even if NDPC included more specific timeframes for vac truck availability in its EPP, a number of unexpected conditions outside of NDPC's control could result in delayed response (e.g., mud release onto land adjacent to the right-of-way that cannot be immediately attended to without trespassing, drivers trying to meet specific timelines in unsafe driving conditions).

HDD operations, on site observers: This EPP is too general on this topic and should be modified to describe to following:

- *How observers will see under snow and ice;*
- *how observers will see in excessively high flow conditions;*
- *how observers will see in streams or deep water;*
- *how containment and clean up protocols will be deployed in extreme conditions of cold, snow, wind, or high flows; and*
- *how mud would be recovered safely in high flow conditions or frozen conditions.*

Preparing for such conditions is necessary because these conditions are likely, rather than hypothetical.

NDPC Response: NDPC will be developing site-specific plans for all waterbodies that are crossed using the HDD method. NDPC will incorporate procedures to address DNR concerns within these plans.

Timely completion of crossings: The EPP and CEA should be modified to indicate that construction of crossings will not be initiated until Enbridge is confident crossings can be completed safely and incompliance with permit and license conditions.

NDPC Response: NDPC and its Contractors strive to comply with all safety and permit requirements. This includes not constructing across waterbodies until it is confident that crossings can be completed safely and in compliance with the terms and conditions of its Utility License from the DNR.

Access across the pipeline: DNR will identify and require access crossings at locations over the pipeline to ensure continued access to the adjoining state land for resource management purposes. The crossings will be required to be completed prior to completion of initial pipeline construction.

The CEA and EPP should describe access needs for both private and public lands.

NDPC Response: As described above, NDPC has met with staff from the DNR Division of Lands and Minerals to discuss access to DNR Forestry land. As stated in NDPC's February 2014 Application for a License to Cross Public Lands, NDPC will allow permanent access across the pipeline after construction to allow for crossing by DNR vehicles and logging equipment so long as any such crossings do not pose a risk to the safe operation of the pipeline. These crossings should be existing trails or roads that will be agreed upon by the DNR and NDPC and will be submitted in subsequent revisions of the application.

NDPC anticipates any crossings proposed by DNR associated with permanent wetland fill will be closely evaluated by the ACOE for alternatives. In the event an alternative is not feasible, NDPC will request DNR justification to support the

permanent impacts as part of the ACOE application. Access to private land is agreed upon between NDPC and the landowner.

> *Temporary access to the pipeline ROW across state land: Temporary access to the ROW across state land is not part of the license application process and is considered a separate transaction. The access should be included as connected actions as art of the CEA. Such temporary access could be granted through a lease. Requests for temporary access require review and approval and may not be granted. Allow adequate time for processing these requests.*

NDPC Response: NDPC has worked with DNR to obtain the short term leases for survey access on state lands for the 2013 and 2014 field seasons. NDPC understands the process to obtain a short term lease and will make application as soon as it determines that a short term lease is necessary. Additionally, NDPC is aware that temporary access across state lands during construction will require a long-term lease as well as the use of any DNR administered trails or forest roads.

> *Shut off valves: Justification for placement or lack of placement must be provided for all crossings.*
>
> *Also see Section III above.*

NDPC Response: As discussed above, the placement of valves along the Project is regulated by PHMSA in accordance with 49 CFR 195. Enbridge reviews potential impacts from a release and determines the most effective placement of valves by conducting an IVP study for its pipelines, including the Project. The IVP complies with all PHMSA regulations.

> *Temporary Workspaces and Additional Temporary Workspace: Additional details describing why and when Additional Temporary Workspace may be needed within public water wetlands and within the 50-foot setback from a wetland or public water is needed.*

NDPC Response: ATWS are generally set back from wetlands and waterways. ATWS is needed to accommodate a variety of construction processes. Spoil and material storage are the main reasons for ATWS. Such construction methods as auger bores, guided bores, and HDD's require extra space to accommodate the extra equipment involved in constructing in this method."

NDPC conducted a review of its current ATWS (using the route shapefiles provided on to DOC on August 22, 2014 and provided to DNR on August 27, 2014) against the DNR's digital data for Public Water wetlands and basins. No ATWS are located within Public Water wetlands or basins.

> *Timber: Utilization of all merchantable timber on both public and private lands is recommended.*

NDPC Response: During acquisition, the landowner (whether public or private) determines what happens to the merchantable timber from their property. This is reflected in Section 1.8.2 of the EPP: "All merchantable timber will be managed in accordance with Enbridge contract specifications."

> *Equipment bridges: Describe when and why rock flume bridges would be used (figure 20).*

NDPC Response: NDPC proposes to use rock flume bridges when single mats or other bridge styles cannot safely be used to span a crossing. Bridge types at specific waterbody crossings will be included in NDPC's application for a License to Cross Public Waters.

> *Decommissioning: Environmental impacts should be considered for the life of the project, including decommissioning plans, impacts, and mitigation measures.*

NDPC Response: The Project will be decommissioned per CFR 49 195 and other applicable regulations when it reaches the end of its serviceable life.

> *Additional Items to consider for inclusion in the CEA*

- *Environmental Planning sheets*
- *Drilling Mud Containment Plan*
- *Noxious Weed Plan*
- *Construction Environmental Control Plan, regarding roles and responsibilities of Environmental Compliance people.*
- *Typical Extra Workspace graphics*
- *Winter Construction Plan*
- *Waterbodies and Wetlands -Table of information*
- *Emergency Response Measures*
- *Pre-construction meeting details for Enbridge/Contractor/and DNR at high priority stream crossings*

NDPC Response: Many of these plans were prepared for Enbridge's Alberta Clipper/Southern Lights Projects. At that time, the plans were stand-alone and accompanied Enbridge's applications for Licenses to Cross Public Lands and Waters. For the Project, NDPC has chosen to incorporate these plans into one document, the EPP. The EPP contains NDPC's Drilling Mud Containment Plan, Noxious Weed Plan, Construction Environmental Control Plan, and Winter Construction Plan. Environmental planning sheets have been provided as part of the Project's applications for Licenses to Cross Public Lands and Waters and will be updated with subsequent revisions to these applications. The specific location of ATWS will be depicted on these Environmental Crossing Plans.

A list of public waters and wetlands, including dimensions of the temporary workspace, operational right-of-way, and ATWS has been provided in the application for License to Cross Public Waters and will be updated with subsequent revisions to the applications. Emergency response measures will be addressed with Enbridge's ICP, as discussed previously. NDPC anticipates that pre-construction meetings will occur between NDPC Environment staff, DNR, and NDPC's contractor before the start of work, and the timeline for such meetings will be outlined in NDPC's Utility Crossing License.

Section Specific Comments
16.1 Prevention and Control Measures. Page 6.
Many Non Native Invasive Species (NNIS) remain viable in the soil for years and/or the risk of new NNIS establishment and spread is high following ground disturbance, subsequently, the DNR would recommend there be inventories and necessary follow-up control measures required following reclamation.

NDPC Response: The EPP outlines construction-related environmental policies, procedures, and protection measures developed by NDPC as a baseline for construction of the Project. The EPP is designed to address typical circumstances that may be encountered along the Project. NDPC is currently conducting noxious and invasive weed surveys along the entire Project route in Minnesota. NDPC will continue to work with DNR related to license conditions on DNR administered lands.

1.8.1 Disposal of Non-Merchantable Timber - Stream or surface water banks that should be protected following construction should be identified prior to construction. Non-merchantable timber should be retained at those sites to use in bioengineering bank stabilization methods.

NDPC Response: As described above, NDPC will be providing DNR with a list of waterbodies where bioengineering practices could be used as a method of bank stabilization. DNR will be responding and providing comment on NDPC's preliminary list. NDPC can retain non-merchantable timber to use for biorevetment at these crossings if it is the wish of the DNR and the adjacent landowner (where a PWI feature crosses on private land).

2.1 Time Window for Construction – Instream Work Dates in Trout Streams

*The DNR Northwest Region (Region 1) Fisheries recommends no instream work for the dates **September 1 to April 15**. The DNR Northeast Region (Region 2) Fisheries recommends no instream work from **September 15 through April 30**. The geographic location of the two regions exhibit different trout spawning activity time periods, thus, there is not a general statewide recommendation. This allows for fish migration and spawning.*

> *Instream Work in Cool and Warm Water Streams*
> *Several streams along the route contain fish and other aquatic species that use these streams during all or a portion of the year. Some species include significant populations of the following gamefish: black crappie, bluegill, channel catfish, largemouth bass, northern pike, smallmouth bass, walleye, and yellow perch. A number of critical spawning areas and overwintering deep holes exist in these streams. Impacts to mussels if they are present at the disturbed location or downstream within the zone where there will be sediment deposition, Effects on spawning habitat during the spawning seasons (even if temporary) and if the construction causes obstacles to passage of spawning fish. Crossings warrant minimal impact construction methods. The DNR Recommends there be no work in these streams from April 1 through June 30.*

NDPC Response: NDPC will comply with the in-water work exclusion dates specific to the Northeast and Northwest Regions provided in the email from Nathan Kestner (DNR) to Sara Ploetz (NDPC) on June 13, 2014.

> *2.4 Bridges - This section states "With exception to clearing-related equipment, fording of waterways is prohibited (i.e. civil survey, potholing, or other equipment are not permitted to ford waterways prior to bridge placement). Clearing equipment and equipment necessary for installation of equipment bridges will be allowed a single pass across waterbodies prior to bridge installation, unless restricted by applicable permits." Clearing-related equipment should not be allowed to ford streams.*

NDPC Response: The EPP was developed based on NDPC's experience implementing BMPs during construction as well as the FERC's Procedures (May 2013 Version). The FERC's Procedures specify that "only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment." Allowing the equipment to pass through the waterbody improves NDPC's ability to set the bridge and complete clearing activities safely.

> *2.4.2 Bridge Design and Maintenance - Bridges on streams that are used by watercraft must provide navigation or in the case of canoes or kayaks can provide a marked location for portaging. This section also states "Soil that accumulates on the bridge decking will be removed as needed, or as deemed necessary by the EI." Soil should be removed from the area, not just from the bridge decking.*

NDPC Response: As described in NDPC's February 2014 application for a License to Cross Public Waters, the Project will cross DNR designated canoe and boating routes. The Red River of the North, Red Lake Rivers, and Mississippi Rivers are currently proposed to be crossed by HDD; therefore, no impacts to users of the waterbodies are anticipated. The Crow Wing River and Pine River are both proposed as dry crossings. Public use of these waterbodies will be interrupted for a short time to allow installation of the pipeline. NDPC will plan to conduct work within the banks of the rivers in accordance with the EPP Section 2.1 and applicable permits to limit impacts. NDPC plans to post signs upstream and downstream of the crossings to notify the public of pipeline construction activities and will work with DNR to arrange for other appropriate user notifications. After the pipeline is installed, NDPC will allow flow to resume and allow river users to cross the construction area. NDPCL plans to develop site-specific crossing plans for these waterbodies.

Section 2.4.2 of the EPP states: "Bridges will be designed and maintained to prevent soil from entering the waterbody. Soil that accumulates on the bridge decking will be removed as needed, or as deemed necessary by the EI." Past construction experience indicates that this is adequate to prevent soil from entering the waterway as a result of use of the bridge. If additional soil removal will be required, NDPC requests further guidance as to the "area" that DNR is referring to.

> *2.5.4 Directional Drill and /or Guided Bore Method - More information is needed. Geologic surveys should be conducted at any water body being considered for HDD. This section should describe how a decision is made whether to use HDD (based on geology and risk of frac-out).*

NDPC Response: Geotechnical survey is being conducted at all water body locations where an HDD is planned. NDPC completes a comprehensive review of waterbodies prior to determining a preferred crossing method.

NDPC typically selects the HDD crossing method when it is determined to be geotechnically and economically feasible and offers the required minimum level of environmental protection. Regulatory agencies often prefer an HDD for its minimal disturbance to a waterbodies bed and banks even though that crossing method may not meet any or all of these criteria and may have a low likelihood of success.

When NDPC proposes an HDD crossing, a number of criteria are taken into account including but not limited to the following:

- pipeline diameter;
- environmental impacts (including impacts to the waterbody of choice of another crossing method, not solely limited to inadvertent returns);
- project schedule;
- waterbody depth, width, and flow;
- geotechnical information (subsurface conditions, geology, hydrology);
- costs of the various alternatives;
- amount of work space;
- permit requirements including timing constraints;
- landowner issues; and
- construction season.

2.6.2 Supplemental Bank Stabilization – This section describes "Bioengineering techniques may also be implemented as determined by EPND (refer to Figures 26 through 28)." The EPP and CEA should be modified to indicate that bioengineering techniques will be the first choice for any necessary supplemental bank stabilization, and rip-rap should only be used as a last resort and after agency approval.

NDPC Response: NDPC will provide DNR with a list of waterbodies where bioengineering practices could be used as a method of bank stabilization. NDPC understands that DNR will provide comment on NDPC's preliminary list. NDPC recognizes site-specific approval will be necessary in the event rip rap is required to achieve bank stabilization.

5.1 Trench Dewatering. Filtering Mechanism. Alternative dewatering methods – This section suggests alternative methods may be approved by EPND on a site-specific basis. The section should be modified to indicate alternative dewatering methods must also be approved by regulatory authorities.

NDPC Response: NDPC will comply with all requirements of the Individual NPDES Permit issued by the MPCA.

5.2 Hydrostatic Test Discharges - This section states "Chlorinated source water will be used and treated as specified in applicable permits. After the hydrostatic test is complete, the line will be depressurized and the water discharged." The EPP should state that Chlorinated test water cannot be discharged into a surface water or wetland.

NDPC Response: NDPC will comply with all requirements of the Individual NPDES Permit issued by the MPCA.

5.2.2 Siting of Test Manifolds – The definition of a test manifold is unclear. If it involves discharging hydrostatic test water, they should not be sited where they will discharge to a waterbody or wetland. The EPP should be modified as appropriate.

NDPC Response: NDPC will comply with all requirements of the Individual NPDES Permit issued by the MPCA. The use of test manifolds will not result in the discharge of hydrostatic test water.

7.18 Monitoring P.37. 11.6 Restoration and Post-Construction Monitoring Page 50.
The DNR recommends expanded monitoring on, (a) NNIS establishment and spread up to 3 years following construction for reasons stated under 16.1 on page 6. (b) Possible recreational motorized use along pipeline right of way particularly where new routes/corridors are constructed. We have found that new corridors can be attractive to unauthorized motorized use. Such use can be a vector in NNIS spread and create unnecessary disturbance to wildlife particularly rare species.

There should be a separate monitoring plan prepared which addresses items to monitor, frequency and precision, and follow-up actions if issues are identified.

NDPC Response:
NDPC plans to conduct noxious and invasive weed surveys along the Project route in Minnesota. NDPC will continue to work with DNR related to license conditions on DNR administered lands.

7.8 Permanent Seeding of Waterbody Banks - This section indicates "EPND will reestablish stream bank vegetation using the Upland seed mix listed in Appendix C, Table 2, unless an alternate seed mix is requested by applicable agencies." Waterbody banks should be reseeded with native seed mix to establish deeper rooted plants that can better withstand erosion and better allow runoff infiltration. The EPP and seeding plans should be modified to include use of woody vegetation on stream banks for restoration and habitat and bank integrity/maintenance purposes.

NDPC Response: NDPC's proposed seed mixes are in Appendix C of the EPP. Should DNR require a specific seed mix below the Ordinary High Water Mark or on Public Lands, please provide it as part of the License to Cross Public Waters and Lands.

11.0 Drilling Fluid Response, Containment, and Notification Procedures – Generally, this is a good emergency plan. However, this section states "Under certain conditions an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons." Additives should not be used for HDD bores under surface waters.

The CEA should also specifically describe drilling mud additives and effects on water quality.

NDPC Response: The HDD drilling fluids/mud consists primarily of water mixed with inert bentonite clay. Under certain conditions, an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons. NDPC will only use non-hazardous additives and will maintain an MSDS for the drilling fluid at the work site. The drilling additives are used to create mud with desired characteristics that help maintain the integrity of the hole along the drill path. Different additives are used at different times depending on the conditions. For example, some additives will help stabilize the walls from collapsing, others will prevent or slow the escape of drilling mud through small cracks or porous material. Other additives help with removal of cuttings, lubrication of the drill bit, or other necessary functions. Not allowing drilling additives may result in an increased chance of frac-outs and a higher potential for failed crossings.

NDPC will not know the specific types or contents of the drilling mud (or necessary additives) that will be used for the Project until it has selected a drilling contractor to complete the work. Different types of mud may be used depending upon the specific needs of each HDD crossing or the preferences of a specific HDD drilling contractor.

11.1 On-Site Observation During Construction — It should be noted some of the methods described would preclude winter HDD crossings of waterbodies or would need to be modified.

NDPC Response: NDPC's plans for winter construction have not been finalized, as the need for winter construction is dependent on regulatory approvals. Should winter construction be required, NDPC would submit a winter construction plan as required during the DNR licensing process.

11.2 Containment. Response and Clean-up Equipment - The list of equipment include one small boat (for larger rivers and open water wetlands). It should be modified to include motor or oars, and life preservers.

NDPC Response: NDPC will includes information about the availability of frac-out response equipment as part of its site-specific crossing plans for waterbodies where HDD is proposed as the preferred crossing method.

Figures 16 and 17 - It should be made clear that the brown stippled area in the channel indicates dewatered and not fill.

NDPC Response: The brown stippled area shown on Figures 16 and 17 is the trench line and does not represent fill.

Figure 18 – Trees depicted on the bank are misleading. Even with HDD, those will still be removed in the permanent right-of-way.

NDPC Response: The EPP's typical drawings are meant to be a broad representation to address typical situations. The HDD method normally does not result in the disturbance of the stream banks or riparian vegetation, with exception to extremely limited hand clearing of woody vegetation required to place a guide wire(s) on the ground along the drill path between the drill entrance and exit points or for foot patrols. The use of light-duty trucks and/or hand crews would be used to gain access to the stream bank to place the guide wire. In the event of the use of a light duty truck, a limited turn around may be required. The turnaround would be cleared in the same manner as that used to lay the guide wires. NDPC will replant the limited area of disturbance that will be generated from these activities. NDPC will provide site-specific information in its application for a License to Cross Public Waters for areas of larger clearings for hoses, etc. This information will include the width of cleared access to waterways, if necessary.

VII. SPECIFIC COMMENTS - APPENDIX G.5 - AERIAL AND TOPO ROUTE MAPS

Pages 94 & 95 - The proposed pipeline makes a "dog leg" at the LaSalle Creek crossing, leaving the existing corridor, resulting in "green field" construction, converting forest and disturbing riparian wetland flood plain.

NDPC Response: The crossing of the LaSalle Creek AMA is in the vicinity of the Minnesota Pipe Line Company right-of-way; NDPC has revised its alignment after significant discussion with the DNR regarding construction at this crossing. NDPC's rationale for the proposed alignment was previously discussed.

Mile 371. pages 31 - The proposed alignment south of existing "foreign" and Enbridge pipes to the north. An explanation of this deviation should be provided.

NDPC Response: This deviation moves further away from a nearby homestead. If not for the deviation, the Project would take down multiple buildings and be within approximately 100 feet of a residence. Deviating to the south also allows for a singular, perpendicular crossing of the Lost River. Following the existing Line 81 would result in the project crossing the river at a shallow angle more parallel to the stream channel.

Mile 412. pages 96 & 97 - The proposed alignment is well to the east of the existing "foreign" pipelines. An explanation of this deviation should be provided. The proposed alignment should follow existing pipes as closely as possible, and avoid temporary right-of-way on the west side of existing pipelines.

NDPC Response: NDPC would appreciate clarification regarding this comment. NDPC does not see a deviation from the existing right-of-way at this location.

Thank you for the opportunity to provide comments regarding the Sandpiper Pipeline Project. DNR staff is available during preparation of the CEA to assist with questions regarding the above comments. Meetings among natural resource agencies and the Department of Commerce are also encouraged to discuss the content of the CEA. We appreciate your time and consideration of these topics.

End of DNR Letter

Appendix B

NDPC Response to DNR Letter Dated May 30, 2014

Appendix B
NDPC Response to DNR Letter Dated May 30, 2014

NDPC has incorporated the text of DNR's letter below (in italics), with NDPC's response inserted below the text to which it is responding.

DNR Letter

The Minnesota Department of Natural Resources (DNR) appreciates the extension of the review period regarding the Pipeline Routing Permit Application for the Sandpiper Pipeline Project. The DNR previously submitted comments dated April 4, 2014. Please consider the following supplemental comments in addition to those submitted April 4, 2014 regarding the Pipeline Routing Permit Application.

Spire Valley AMA and Hatchery

Page 18 of the April 4, 2014 DNR comment letter explains the substantial construction and leak risk concerns regarding crossing Spring Brook in or near the Spire Valley Aquatic Management Area (AMA). As explained in more detail in the April 4, 2014 letter, this area includes a trout stream and a uniquely located, highly valuable, and sensitive fish hatchery. Due to a shallow artesian aquifer, the DNR is concerned that construction in this area may intercept the aquifer, causing a possible loss of flow to the hatchery. As previously described, it is not acceptable for a loss of flow to occur, even for a few hours.

NDPC Response: On May 8, 2014, NDPC consulted with representatives from the DNR via conference call to further understand their concerns regarding potential effects to the hatchery facilities located within the Spire Valley AMA. DNR's hatchery supervisor and local fisheries staff were able to provide valuable details on how the hatchery is operated and their site-specific concerns. NPDC and DNR agreed that additional meetings with hydrology staff would be beneficial for both parties and met in person in Bemidji, Minnesota on May 16, 2014. In addition to the meeting in Bemidji, NDPC also met with DNR representatives at the hatchery itself, which provided NDPC environmental, construction, and engineering staff an opportunity to evaluate the proposed crossing in coordination with DNR staff.

NDPC is currently conducting civil, environmental, and cultural surveys in an expanded survey area located to the south and downstream of the AMA, which was outlined in the DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and accepted by the MPUC for further analysis in the CEA and at the public hearings. Additionally, NDPC staff held a conference call with DNR on September 10, 2014 to discuss upcoming geotechnical surveys on private land to the south of the AMA and the DNR's concerns about how that activity might impact hatchery operations. NDPC has provided additional information to DNR regarding the location of the boring activities associated with those surveys, including a revised Geotechnical Investigation Memorandum on October 6, 2014. NDPC will continue to work with DNR as it conducts the drilling and prepares the associated reports.

NDPC understands DNR's concerns and, as indicated above, is currently exploring an alternate alignment further downstream in this area to avoid the AMA and state land; this alignment change was submitted to the DNR and DOC-EERA on September 12, 2014. NDPC is also sensitive to private landowners' concerns at the southern site near the AMA and any new alignment would take into account information obtained as a result of field surveys and landowner discussions. NDPC will continue to coordinate with DNR staff as the routing process continues.

The Spire Valley Aquatic Management Area (AMA) is also federally funded by Dingell-Johnson Sport Fish Restoration funding administered by the United States Fish and Wildlife Service (USFWS). The DNR must receive federal approval prior to issuing a License to Cross Public Lands and Waters for this area and any other state administered land crossing with federal funding. Obtaining a DNR License to Cross Public Lands and Waters in areas requiring federal approval requires a considerably longer review period, as previously described on page 28 of DNR's April 4, 2014 letter. Due to the sensitive nature of this crossing, additional review information may be required compared to other federal approvals, including possibly the need for an Environmental Assessment and the associated process time.

NDPC Response: NDPC understands that certain state lands are federally funded and that crossing these lands would involve input from the federal agency that provides the aid. Representatives of the USFWS were included in the May 8, 2014, conference call with NDPC and DNR staff. On September 16, 2014, NDPC provided DNR with an

updated list of DNR-administered parcels that would be crossed by the August 2014 Project centerline, temporary workspace, and ATWS. NDPC requested that DNR provide a redetermination of federally funded lands impacted by the Project. The August 2014 Preferred Route still crosses the federally funded lands within the Spire Valley AMA; however, as NDPC continues to study the area located to the south of the AMA, our goal of addressing DNR's resource concerns also extends to the avoidance of federally-funded lands in this area. NDPC is considering moving its Preferred Route outside the AMA; this alignment change was submitted to the DNR and DOC-EERA on September 12, 2014.

> *To address concerns regarding the Spire Valley AMA, the DNR met with representatives from the North Dakota Pipeline Company, LLC (NDPC) and discussed information needs and possible solutions. The DNR appreciates the thorough coordination occurring with the project proposer regarding this topic. In order to assess the depth to the aquifer, potential project impacts, and necessary mitigation measures (including alternative routes) near the Spire Valley AMA; the DNR is working with NDPC to carefully plan geotechnical borings in a manner that will not impact the aquifer. The DNR issues temporary leases for this type of data collection.*

NDPC Response: NDPC submitted an application for a Short Term Lease to conduct geotechnical surveys on the Spire Valley AMA property on June 6, 2014. NDPC withdrew its application on August 26, 2014, as it determined that geotechnical surveys were no longer required on the Spire Valley AMA property. As described above, NDPC is now working with the DNR to mitigate the agency's concerns regarding geotechnical evaluations located on the private property to the south of the AMA. No DNR temporary lease will be required to complete the work as currently planned.

> *Until more investigation is completed and more engineering options are considered, there is uncertainty about the feasibility of constructing through this area. Therefore, the DNR recommends including the additional routing options described below in the CEA. Routing through this Lake Country region of the state is challenging and many options were considered before recommending route ideas for further analysis. It is important to also thoroughly explore creative engineering solutions through the AMA. For example, the CEA should clarify whether the pipeline could be buried above ground with a tunnel for the trout stream to avoid trenching the trout stream or puncturing the artesian aquifer with horizontal directional drilling.*

NDPC Response: NDPC offers the following information regarding the request for creative engineering solutions, specifically above-ground pipe installation. Per 49 CFR 195.248, all pipe must be buried so that it is below the level of cultivation. The pipe must be installed so that the cover between the top of the pipe and the ground level, road bed, river bottom, or underwater natural bottom (as determined by recognized and generally accepted practices), as applicable, complies with the mandated depth of pipeline cover set forth in Table 1.

Table 1
Mandated Depth of Pipeline Cover

Location	Cover inches (millimeters)
	For normal excavation
Industrial, commercial, and residential areas	36 (914)
Crossing of inland bodies of water with a width of at least 100 feet (30 millimeters) from high water mark to high water mark	48 (1219)
Drainage ditches at public roads and railroads	36 (914)
Deepwater port safety zones	48 (1219)
Gulf of Mexico and its inlets in waters less than 15 feet (4.6 meters) deep as measured from mean low water	36 (914)
Other offshore areas under water less than 12 ft. (3.7 meters) deep as measured from mean low water	36 (914)
Any other area	30 (762)

Thus, above-ground pipe installation directly conflicts with federal requirements. Minn. Stat. § 216G.07 also contains depth of cover requirements that may conflict with the suggested above-ground installation.

As described above, NDPC is currently exploring an alternate alignment in this area to avoid the Spire Valley AMA and state land. Any new alignment would take into account information obtained as a result of field surveys and landowner discussions.

Additional Routing Alternatives

Until reviewing the CEA, the DNR does not advocate or support one route over another. After reviewing the CEA, the DNR may identify routing with less natural resource impacts to assist with the natural resource element of the routing criteria the PUC considers for a routing decision. We encourage, and look forward to learning from, a comparison of these routing alternatives with a variety of proposed routing alternatives from NDPC, public commenters, organizations, and government agencies to best inform the Pipeline Routing Permit decision.

Spire Valley Route Widening Alternative

The DNR recommends widening the route width to be analyzed in the CEA approximately one half mile to the south along the Preferred Route at the crossing of Spring Brook at the Spire Valley AMA. Routing just south of Scout Camp Pond may help buffer possible hydrologic impacts to the Spire Valley hatchery due to construction activities. Though this would increase greenfield routing and forestry impacts, added flexibility is needed in this area to address substantial fisheries concerns. Note that there is limited geotechnical data currently available in the vicinity of the AMA. It is possible this route width increase may not fully address concerns regarding impacts to the hatchery. More investigation is needed.

NDPC Response: NDPC is currently conducting civil, environmental, and cultural surveys in an expanded survey area located to the south and downstream of the Spire Valley AMA. As DNR suggests, there is limited geotechnical data available in the vicinity of the AMA. Therefore, NDPC has proposed geotechnical surveys on private land to the south of the AMA. NDPC will continue to work with DNR to notify them of the occurrence and results of the geotechnical surveys.

Great Lakes Gas Lines Alternative

Page 3 of the April 4, 2014 DNR comment letter recommended analysis of the "Northern Route Alternative" in the CEA. The Northern Route and would avoid the Spire Valley hatchery. A nearby corridor of existing Great Lakes Gas pipelines is located in the vicinity of the Northern Route and would also avoid the hatchery and reduce greenfield routing in comparison to the Preferred Route. This corridor would also add flexibility to the project routing process due to its periodic interconnection with the Northern Route corridor, creating various crossover segments for the Public Utilities Commission to consider. The Great Lakes Gas Lines Alternative may avoid some challenges of the Northern Route such as more populated areas and a Superfund site. The DNR recommends analyzing the Great Lakes Gas Lines Alternative corridor in the CEA as depicted in the map below or using other combinations of nearby interconnections.

NDPC Response: This route alternative, a version of NDPC's "Northern Route Alternative," was presented as RA-08 in DOC-EERA's comments and recommendations for system and route alternatives dated July 16, 2014, and was accepted by the MPUC for further consideration in the CEA and at the public hearings. Appendix A to this response offers detailed information on the unique landowner, environmental, and constructability concerns associated with the Northern Route Alternative. In addition, we offer the following information for consideration by DNR related to this route. This same segment of the Great Lakes Gas Alternative was previously studied in the 2009 Final Environmental Impact Statement ("EIS") developed for Enbridge's Alberta Clipper Project. The Alberta Clipper Final EIS indicated that there were concerns with this alternative stating:

> It should be noted that both the Chippewa National Forest (CNF) and Leech Lake Band of Ojibwe (LLBO) have expressed serious concerns about the GLG [Great Lakes Gas] Alternative. The CNF has indicated that the GLG Alternative would result in substantially greater impact on its Experimental Forest. In addition, LLBO opposes consideration of the GLG Alternative due to increased impacts to sensitive forestland and wetland resources.

NDPC considered the conclusions of the 2009 EIS for the Alberta Clipper Project when planning the Project. Based upon these EIS findings, which are equally applicable to the Project, NDPC determined that maintaining its Preferred Route, as opposed to following RA-08, would avoid conflicts with both federal and tribal agencies, in addition to the other concerns outlined in detail in Appendix A.

Third Party Monitoring

Third party environmental construction monitors have been required for previous pipeline and transmission projects. The DNR supports a Pipeline Routing Permit requirement for on-site third party monitors to review construction and restoration activities, considering various overlapping regulations. It has also been helpful when monitors keep agencies regularly updated. For the Sandpiper project the DNR recommends continuing this approach, with the exception of changing the method of hiring and administration of monitors' contracts.

Third party monitor(s) should not be hired by NDPC or Enbridge, but rather by a state agency such as the Public Utilities Commission (PUC) or Department of Commerce (DOC) or as a state contractor for the PUC or DOC. The position may still need to be funded by the project developer. This recommended separation in oversight is intended to increase the reporting and accountability to state agencies. Also, the DNR is concerned that environmental monitoring for a previous pipeline project ended earlier than all restoration activities. We recommend permitting language that would increase state agency direct control of environmental monitors' work assignments, reporting, and duration of monitoring. Note the distinction between PUC required monitors and various agency monitoring efforts related to permits and licenses other than the Pipeline Routing Permit (e.g. License to Cross Public Lands and Waters). This comment applies to PUC required monitors for the line as a whole.

NDPC Response: NDPC provided a proposal regarding third-party monitoring to DNR, MPCA and the ACOE on April 16, 2014. The proposal was intended to confirm to both the State and Federal agencies NDPC's commitment to collaborate with the agencies regarding independent/third-party monitors, and be a starting point for further discussions. NDPC looks forward to collaborating with participating agencies in order to establish a third-party monitoring program. NDPC recognizes that the success of an inspection program is directly tied to ensuring that the duties of the monitors and their authority is clearly identified and understood by all parties. NDPC would appreciate DNR's assistance in coordinating or facilitating a joint agency meeting so that a comprehensive monitoring program can be developed as soon as possible. NDPC agrees that costs for the monitoring program should be borne by NDPC, which was the practice for monitoring programs on past pipeline projects.

Enbridge has constructed numerous projects with the oversight of third-party monitors as suggested by the DNR, and supports the recommendation by both the DNR and MPCA regarding the use of third-party monitors. NDPC will continue to work with the appropriate agencies to define the role and qualifications of third-party monitors to ensure they are experienced in the type of construction they will be observing and knowledgeable regarding the resources potentially impacted.

Federally Funded Areas

As discussed above and in the April 4, 2014 DNR letter, when state lands that are federally funded are crossed, additional approval and process time is needed. For additional detail, please see the list below of locations of federally funded parcels associated with the Sandpiper Preferred Route. There may be more locations associated with alternative routes proposed during review of the Pipeline Routine Permit Application.

Crow Wing Chain WMA (9 parcels)
T139 R33 S32 SENW
T139 R33 S 32 SWNE - also The Nature Conservancy (TNC) easement
T139 R33 S32 SENE - also TNC easement
T139 R33 S33 SWNW
T139 R33 S33 SENW
T139 R33 S33 SWNE - also TNC easement
T139 R33 S33 SENE - also TNC easement
T139 R33 S33 NWSE - also TNC easement
T139 R33 S33 NESE - also TNC easement

Spire Valley Hatchery (3 parcels)
T139 R26 S10 NESE
T139 R26 S11 NWSW
T139 R26 S33 SWSW

Lawler WMA
T47 R22 S6 NENW (GL03)
T47 R22 S6 NWNE (GL02)
T47 R22 S6 SWNE

Salo WMA (1 parcel)
T47 R22 S2 NESE

NDPC Response: NDPC has held numerous meetings with DNR Lands and Minerals staff throughout 2013 and 2014 to determine the status of state lands that receive federal funding. These meetings were held as part of the utility license permitting process, and NDPC has responded to DNR concerns regarding crossing federally-funded lands during these consultations. For example, NDPC filed the Salo Marsh WMA Route Alternative with the MPUC on May 30, 2014; this alternative was incorporated into the Preferred Route. DOC-EERA identified this route alternative as RA-38, and the MPUC accepted it for further analysis in the CEA and at the public hearings.

In addition, DNR provided comments to NDPC regarding the proposed crossing of the Crow Wing Chain WMA on March 28, 2014. These comments included the identification of deed restrictions on state parcels associated with the WMA in Sections 32 and 33 of Township 139, Range 33 in Hubbard County. These properties were gifted to the state by TNC in 1976. TNC reserved a conservation easement on the property for the purpose of maintaining it as a WMA. The reservation also contains eight terms and conditions. The deed and the management plan for the WMA adopted pursuant to those restrictive covenants were provided to NDPC by the DNR. In addition, the DNR filed a letter received from TNC with the MPUC on April 4, 2014 during the public comment period that identified deed restrictions that would not be met by construction of the Project as proposed. On June 10, 2014, DNR provided its final determination on the compatibility of the Project with the deed restrictions. DNR determined that the construction of a pipeline across these state lands was inconsistent with the restrictive covenants in the deed and the management plan adopted pursuant to those restrictive covenants.

On June 24, 2014, representatives of NDPC, DNR and the DOC-EERA met to discuss the need to provide additional routing options that avoid the parcels with the deed restrictions in the event that NDPC and the DNR were unable to identify alternative construction techniques that are consistent with the deed restrictions and federal requirements. At the request of the DOC-EERA, on June 27, 2014, NDPC prepared and filed the Crow Wing Chain WMA route alternative with the DOC, which has been incorporated into the Preferred Route. The DOC-EERA identified this route alternative as RA-16 in its comments, and the MPUC accepted it for further analysis in the CEA and at the public hearings.

Consultation regarding the Spire Valley AMA and Lawler AMA are ongoing. On September 16, 2014, NDPC requested that DNR provide updated information on federally funded lands along the Preferred Route. Additionally, NDPC will request that DNR provide updated information on federally funded lands when the final Project route is approved by the MPUC.

Cumulative Impacts

The DNR previously recommended a robust analysis of cumulative impacts in the Comparative Environmental Analysis (CEA). Since the end of the previous comment period, Enbridge has announced a proposal for an additional pipeline, Line 3, along the Sandpiper Preferred Route. This development increases the importance of assessing cumulative impacts of possible future development such as increased corridor usage and work areas along the Preferred Route.

NDPC Response: On May 30, 2014, NDPC provided supplemental information to address cumulative impacts of the Line 3 Replacement project. The supplemental information provided updates to the tables in the Environmental Information Report ("EIR") filed with NDPC's Application showing the potential additive impacts of the Line 3 Replacement project.

In addition, as part of the ACOE permitting process, NDPC anticipates that the ACOE will prepare a cumulative impacts analysis on aquatic resources that considers the potential impacts of the Project's Preferred Route when added to past, present, and reasonably foreseeable future projects.

Resource Agency Coordination

Representatives from the Minnesota Pollution Control Agency, United States Army Corps of Engineers and DNR have met during the review periods for the Sandpiper Application for a Pipeline Routing Permit. The DNR has also met with the Department of Commerce and the United States Fish and Wildlife Service. The DNR appreciates this coordination and supports the efforts of state and federal resource agencies to encourage analysis of topics including accessing various routes in the event of a leak, leak risk analysis, and reducing impacts to wetlands, lakes and streams.

Thank you for the opportunity to provide comments regarding the Sandpiper Pipeline Project. Please contact me with any questions or to set up meetings regarding DNR application input during the preparation of the CEA.

End of DNR Letter