

Minnesota Department of Natural Resources

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April 4, 2014

Larry Hartman, Environmental Review Manager
Energy Environmental Review and Analysis (EERA)
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul MN 55101

Re: Application of North Dakota Pipeline Company, LLC for a Pipeline Routing Permit for the Sandpiper Pipeline Project
Public Utilities Commission (PUC) Docket Number: PL-6668/PPL-13-474
ERDB #20130269

Dear Mr. Hartman:

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 specific 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.

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.

II. ALTERNATIVE ROUTES FOR ANALYSIS IN THE CEA

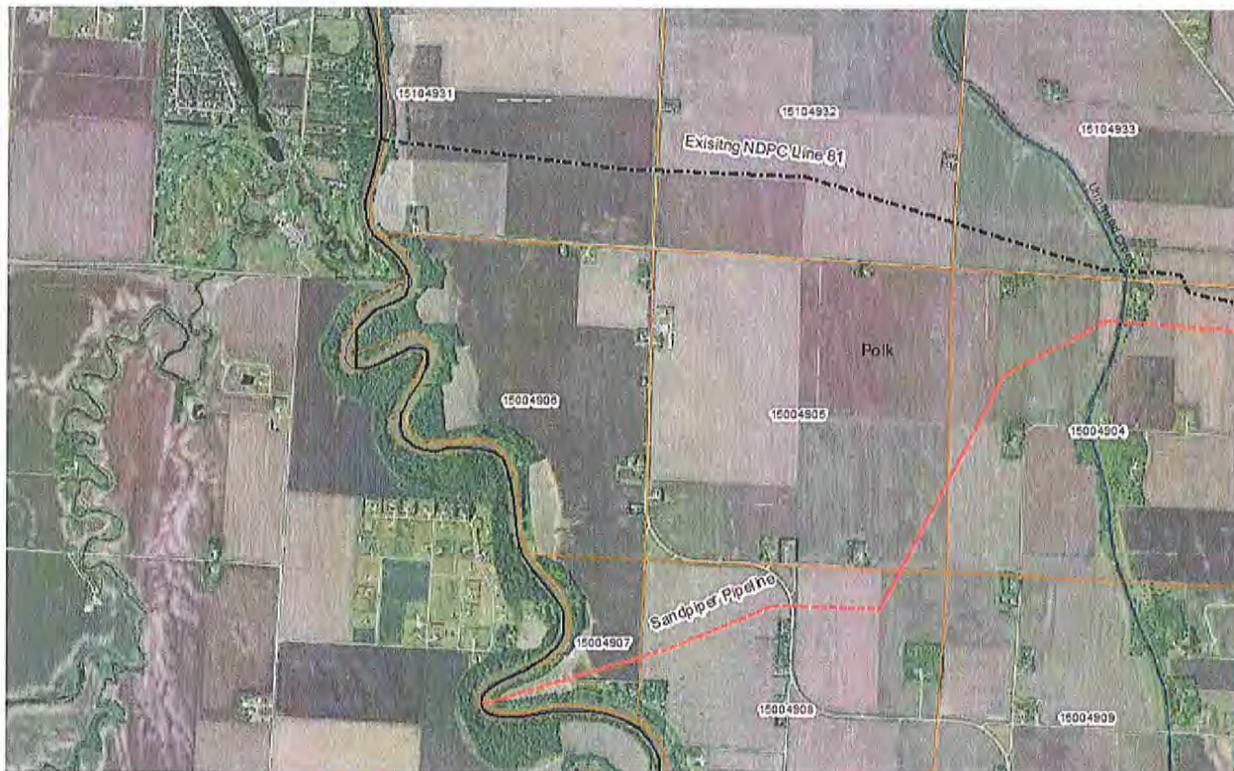
Until reviewing the CEA, the DNR *does not* advocate or support one route over another. After reviewing the CEA, the DNR may identify routing with less natural resource impacts to assist with the natural resource element of the routing criteria the PUC considers for a routing decision. The DNR carefully 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.

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.

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.

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.

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 MNDNR to identify a route alternative with the goal of reducing environmental impact in the vicinity of the Hill River State Forest.

Both the current route and the route alternative are 1.7 miles long. The route alternative is collocated 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.

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 preferred route 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 1.0 mile and extend another 0.5 miles in to section 34 and connecting at the Enbridge preferred route. This 1.5 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.

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.

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.

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.

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.

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.

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.

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.

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.

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 1.10)], and (4) Lack of corridor maintenance practices after the 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.

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.

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.

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).

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.

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.

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. Also, the corridor should be re-vegetated immediately after pipe placement. Also, it should be required that the space and clearing for bridge crossings be minimized to the extent possible. These suggestions also apply to Additional Temporary Workspaces (ATWS). 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.

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.

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.

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, 5 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 6125.07, 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.

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.
 - a. 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/>).
5. 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

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 being 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 1.2.4 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 include 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 compromise infrastructure integrity). It will also be important that specific valve locations are included in route permit conditions.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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).

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 were 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.

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.

MN 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.

Grayling Marsh WMA

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

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.

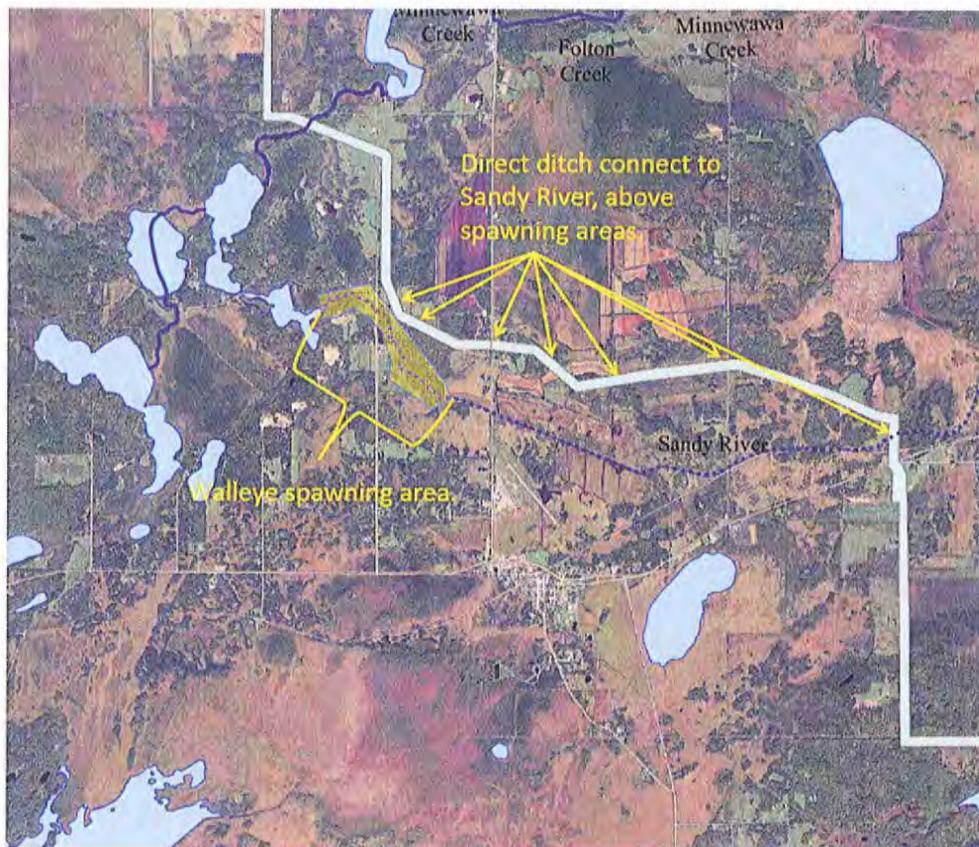
Sandy River Watershed

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.



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.

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.

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.

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.

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.

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).

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.

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.

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.

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.

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).

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.

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.

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.

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.

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 or 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.

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

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.

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 (*Malaxis 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.

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.

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.

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.

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.

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.

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.

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.

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.

9.3.1 Existing Wetland Resources – The types of wetlands described in Table 9.3.1-2 do not match with the predominant types of wetlands previously described in text. Specific mention of palustrine unconsolidated bottom (“PUB”) is missing.

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 1.2.3 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.

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.

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.

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.

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 T145N R36W Section 35
- Prelim Site of High Biodiversity Significance along river in T144N R35W Section 19 & T144N R36W Section 24

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.

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.

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.

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.

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.

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 and updated EPP should describe Project compatibility with adjacent utilities and infrastructure.

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.

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.

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.

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.

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.

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.

Trout streams: 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.

Beaver dams: 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.

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.

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.

Invasive species: 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.

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.

Unauthorized use: 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.

Subsidence/Crowning in wetlands/peatlands: 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.

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.

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.

Woody debris management: The CEA and EPP should specify 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.

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.

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.

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.

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.

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.

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 in compliance with permit and license conditions.

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.

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.

Shut off valves: Justification for placement or lack of placement must be provided for all crossings.

Also see Section III above.

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.

Timber: Utilization of all merchantable timber on both public and private lands is recommended.

Equipment bridges: Describe when and why rock flume bridges would be used (figure 20).

Decommissioning: Environmental impacts should be considered for the life of the project, including decommissioning plans, impacts, and mitigation measures.

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

Section Specific Comments

1.6.1 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.

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.

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.

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.

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.

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).

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.

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.

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.

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.

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 1.6.1 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.

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.

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.

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.

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.

Figures 16 and 17 – It should be made clear that the brown stippled area in the channel indicates dewatered and not fill.

Figure 18 – Trees depicted on the bank are misleading. Even with HDD, those will still be removed in the permanent right-of-way.

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.

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.

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.

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.

Sincerely,



Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

Enclosures: 8

cc: Scott Ek, Minnesota Public Utilities Commission
Sara Ploetz, Enbridge
Patrice Jensen, Minnesota Pollution Control Agency
Bill Baer, United States Army Corps of Engineers

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40



May 30, 2014 (Replacement Letter June 10, 2014)

Larry Hartman
Environmental Review Manager
Minnesota Department of Commerce
85 7th Place East, Suite 500
St. Paul MN 55101

Re: Extended Comment Period - Application of North Dakota Pipeline Company, LLC for a Pipeline Routing Permit for the Sandpiper Pipeline Project in Minnesota
PUC Docket Number: PL-6668/PPL-13-474
ERDB: 20130269

Dear Mr. Hartman:

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.

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.

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.

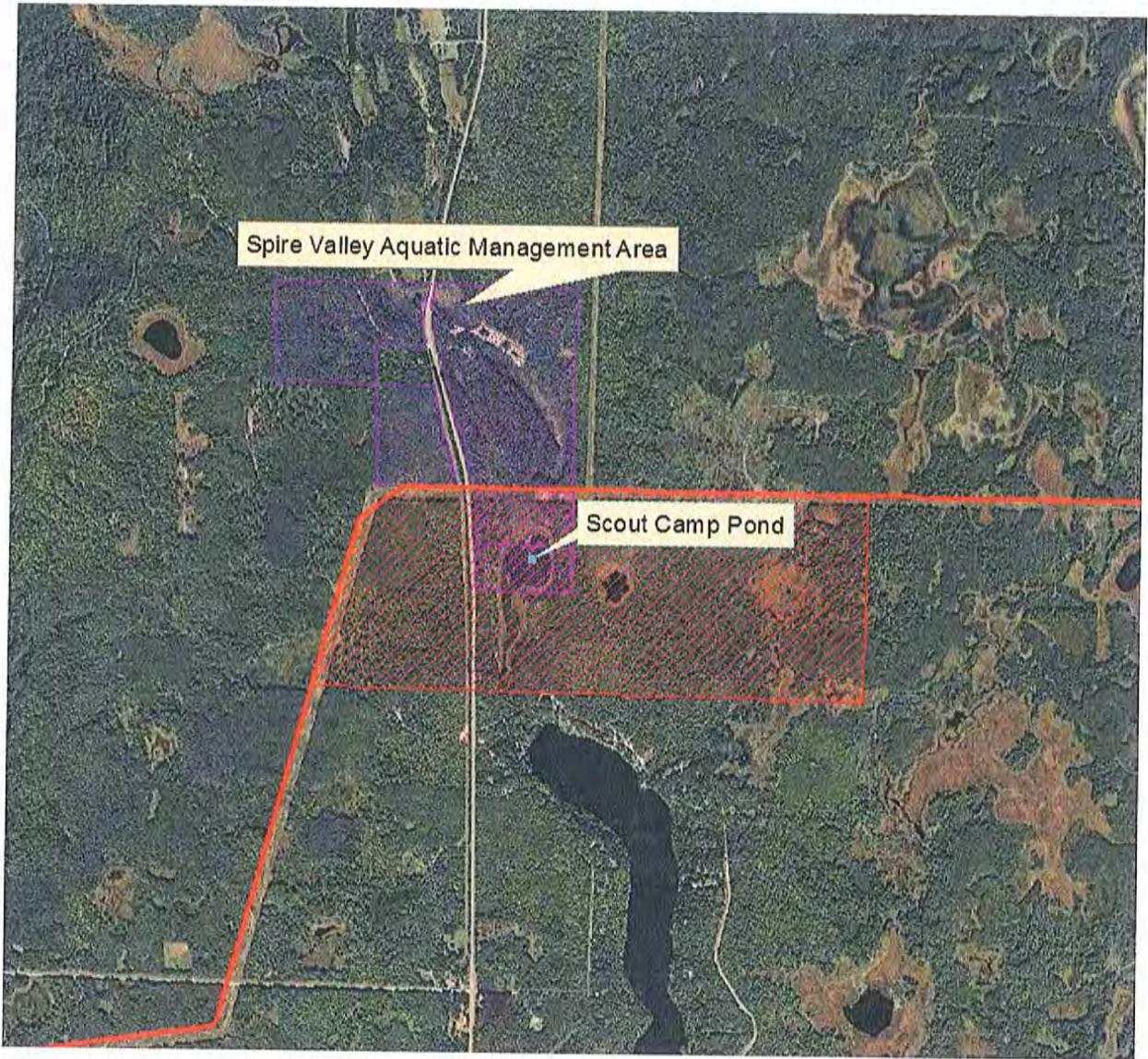
Until more investigation is completed and more engineering options are considered, there is uncertainty about the feasibility of constructing through this area. Therefore, the DNR recommends including the additional routing options described below in the CEA. Routing through this Lake Country region 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.

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.



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 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.



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.

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
T 139 R33 S 32 SWNE -also The Nature Conservancy (TNC) easement
T 139 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

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.

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.

Sincerely,



Jamie Schrenzel
Principal Planner
Environmental Review Unit
(651) 259-5115

cc: Scott Ek, Minnesota Public Utilities Commission
Patrice Jensen, Minnesota Pollution Control Agency
Bill Baer, US Army Corps of Engineers
Jeff Gosse, US Fish and Wildlife Service
Sara Ploetz, Enbridge