January 23, 2015

The Honorable Eric Lipman
Administrative Law Judge
600 North Robert Street
P.O. Box 64620
St. Paul, MN 55164-0620

Re: Certificate of Need for the Sandpiper Pipeline Project
   Office of Administrative Hearings (OAH) Docket Number: 8-2500-31260

Dear Judge Lipman:

The Minnesota Department of Natural Resources (DNR) has reviewed the Sandpiper Pipeline Comparison of Environmental Effects of Reasonable Alternatives submitted by the Department of Commerce Energy Environmental Review and Analysis (EERA) unit in December 2014. The DNR has also reviewed the Rebuttal Testimony of Adam J. Heinen submitted by the Minnesota Department of Commerce Division of Energy Resources (DER) January 6, 2015 and the conclusions of the Surrebuttal Testimony submitted by Adam J. Heinen January 21, 2015. The following comments are submitted regarding these documents and DNR review of the possible natural resource impacts of System Alternatives for the Sandpiper Pipeline Project. A comment summary is given followed by additional supporting information.

**Comment Summary**

- The EERA prepared the Comparison of Environmental Effects of Reasonable Alternatives, covering a multi-state geographic area, addressing complicated questions with a limited amount of preparation time. The EERA also carefully followed the direction of the Public Utilities Commission (PUC) Order requesting the document. The DNR recognizes that the current comparison of System Alternatives is a somewhat unique situation and that the PUC requested analysis of environmental impacts through this Certificate of Need process to further inform the record. Further analysis of System Alternatives helped address DNR comments regarding System Alternatives. The DNR also met with EERA and submitted data sources to provide assistance with preparation. We appreciate the opportunity to provide data and input.

- In general, due to the limited scope requested for this document, the broad geographic area, and challenges related to the type of data and analysis used, DNR was not able to use this document alone to identify the least environmentally impacting System Alternatives. Examples will be provided below of the type of information that would further inform the Certificate of Need decision for context when considering the most reasonable and prudent System Alternative.
• Using the report in combination with DNR resources and professional judgment, with a limited amount of review time, the DNR is able to provide input regarding the least environmentally impacting System Alternatives.

• Within Minnesota, more southern routes (south of I-94 corridor) have less concentration of natural resources (regardless of length) within the 2-mile corridor. Therefore, there is a greater opportunity for avoidance of resources with the more southern System Alternatives. While the DNR lacks the expertise to undertake a market or economic analysis of the southern routes. From a natural resource perspective, the more southern routes appear to be feasible and prudent System Alternatives that merit consideration.

• MN Rules 7853.0130, Subpart B requires consideration of reasonable and prudent alternatives to proposed facilities as part of certificate of need decisions. Testimony of Adam J. Heinen submitted by the Minnesota Department of Commerce Division of Energy Resources (DER) January 6, 2015 and January 21, 2015 state that only System Alternative – 03 (SA-03) and System Alternative – Applicant (SA-Applicant) are reasonable based on the focus of the DER review. Note that Modified System Alternative – 03 is also discussed, but is understood to be addressed in the routing docket and will not be further discussed in this comment letter.

• The DNR conducted a focused review of SA-03 and SA-Applicant. When only comparing the two routes found reasonable by DER, SA-03 and SA-Applicant, SA-03 appears to impact less natural resources than SA-Applicant. SA-Applicant features that would incur impacts greater than those identified for SA-03 are: forest and wetland acreage, river and stream segment crossings, and crossings of public lands. Cultivated lands and occurrence of already-impaired waters are greater along SA-03, indicating the developed state of lands along this route. Our analysis is described further in the Supporting Information section of this letter.

• Minnesota Statutes 116D.04, Subdivision 6 prohibits state actions that are likely to cause pollution, impairment or destruction of natural resources as long as there is a feasible and prudent alternative. The statute also clarifies that economic considerations along shall not justify such an action. As SA-Applicant and SA-03 are both considered reasonable, environmental impacts of routing from a natural resource perspective would be a key criterion in the decision regarding the most reasonable and prudent System Alternative.

• Testimony submitted by Adam J. Heinen with the DER January 21, 2015 suggests analysis of SA-03 and SA-Applicant in the routing docket. The routing docket would include a level of environmental data helpful in comparing these two routes, along with Route Alternatives already scoped into the routing process such as Modified SA-03. For example, a Comparative Environmental Analysis (CEA) would likely include an estimated alignment within a larger route. If further analysis is completed, the DNR requests the opportunity to provide input and review a draft of the environmental analysis document.
• The DNR suggests that the Sandpiper Pipeline Project Certificate of Need and/or Routing dockets include consideration of financial assurance. The state requires financial assurance for large projects to mitigate impacts to the state and environment in the event of an accident, unplanned closure, or at the end of life of the project. Projects such as large mines and landfills must provide financial assurance to protect against the potential for expenditure of public funds. Large crude oil pipelines may arguably have some of the same environmental and financial risks and may benefit from some form of financial assurance for pipeline construction, operation and maintenance, spill response and decommissioning. The DNR can provide additional background regarding examples from regulation of mines in Minnesota.

Supporting Information

The following section provides these categories of supporting information:

- Additional Natural Resource Topics for Consideration
- Comparison of Environmental Effects of Reasonable Alternatives Section Specific Comments
- Full Length Comparison of SA-03 and SA-Applicant
- Minnesota-Specific Comparison of SA-03 and SA-Applicant

Additional Natural Resource Topics for Consideration

The DNR’s review indicates that there are additional natural resource topics that have not yet been addressed but should be to provide a more thorough comparative analysis of System Alternatives. The discussion below provides input and context for the Certificate of Need in addition to the Comparison of Environmental Effects of Reasonable Alternatives record regarding natural resource impacts and System Alternatives:

Impacts of Previously Disturbed vs. Undisturbed Areas

The amount of impacts to undisturbed lands was not reviewed in the Comparison of Environmental Effects of Reasonable Alternatives. Natural resource impacts in existing corridors and cultivated lands will be significantly less than impacts to intact forests, grasslands and wetlands. Existing corridors and cultivated lands are already disturbed by the mixing and compaction of soils, application of pesticide treatments, removal of natural vegetation, and introduction of invasive species. New pipeline corridors through intact landscapes will introduce negative impacts to the existing hydrology, plant communities, and wildlife.

Forests are especially susceptible to fragmentation. A pipeline corridor would create a long, linear break in the forest canopy. Fragmentation results in changes to environmental conditions (light, wind, moisture) that alter the plants and animals using the area. The new plant communities of grass and shrubs will alter the species composition and population of birds, small mammals and large mammals.
Area sensitive avian species that require large un-fragmented blocks of forest for nesting will avoid the deforested corridors. The end result is a loss of nesting habitat that, depending on species, includes the direct forest loss and adjacent habitat that extends a considerable distance from the deforested corridor. Construction corridors also create paths for the introduction of invasive species that reach far into formerly protected forest and wetland interiors.

The Comparison of Environmental Effects of Reasonable Alternatives does not acknowledge that construction through undisturbed areas will result in habitat loss, conversion, degradation, and fragmentation. Rather, the document focuses more on construction impacts to agriculture than on impacts to undisturbed or less-disturbed habitat. The document suggests that, while agricultural activities can resume after pipeline construction, impacts (e.g., soil compaction, soil mixing, impact to prime and unique farmland) can be long lasting and permanent in those areas. This is an important consideration, particularly for social and economic reasons. However, the report should also recognize that agricultural use - by its very nature- has already introduced soil impacts. Further, the report should acknowledge that these impacts are even more environmentally significant when introduced in previously undisturbed natural areas. Best management practices (BMPs) such as topsoil stripping and soil ripping to loosen compaction are measures commonly used in disturbed areas. However, these BMPs are not considered standard, and often are not practical, in undisturbed areas. If these practices are not applied with equal diligence in natural areas, the natural areas become more susceptible to degradation such as compaction, erosion, and colonization by invasive plants.

System Alternative Length and Scope of Analysis

Readers may misunderstand the relationship between the System Alternatives’ total length of the pipeline and total impacts. For example, readers may mistakenly conclude that more length of pipeline necessarily means more potential impact. If oil is transported to Joliet, Illinois, there is a greater System Alternative distance than transporting oil to Superior, Wisconsin. Routing to Joliet could be understood as therefore resulting in more natural resource impact. However, it would be reasonable to assume that there is potential for other environmental impacts (leak risk) or cumulative impacts resulting from transportation of oil from Superior, Wisconsin on to other locations from the increased delivery of oil.

Recently the DNR has participated in a comment period to the Great Lakes Commission regarding the potential delivery of oil resources through the Great Lakes and St. Lawrence River Region. Consideration of how oil is transported (currently and in the future) out of Superior, Wisconsin is important context for review of the Comparison of Environmental Effects of Reasonable Alternatives document. The DNR recognizes that quantifying this analysis would likely be challenging.

Changes in Topography

Topographic relief comparisons have not been completed. Topographic relief comparisons between the various system alternatives are important to understating potential impacts between systems alternatives for the following reasons:
1. In hilly terrain, groundwater generally travels laterally more than on flat terrain, has higher potential for surface discharge sites/springs, and creates more soil texture stratification. Changes in topography are also commonly associated with river/stream valleys. Under these conditions, oil spills can spread faster than on flatter terrain and have a high risk of affecting streams, rivers, wetland, terrestrial habitats and associated landscape functions.

2. Areas with more relief/topography will involve additional disturbances. Construction of one or more pipelines through these areas will require rights-of-way (ROWs) and workspaces that are much wider than those used in other areas. Erosion concerns, maintenance needs, and risk of invasive species introduction would also be greater.

**Water Resources**

SA-Applicant parallels and crosses many streams, rivers, flowages, lakes and wetlands within the northern lakes and forested ecoregions. These are generally some of the highest quality recreational and habitat water resources in the state. The DNR has a number of concerns regarding pipeline impacts and would prefer alternative routes or system alternatives that avoid these valuable waters.

The unimpaired waters along the more northern routes are highly vulnerable to degradation by impacts of construction and potential spills. This becomes a greater concern if additional emergency shut-off valves are not located near these sensitive resources. It is also noted in the document that the most sensitive locations for potential spills include those areas that are proximate to surface waters such as lakes, wetlands or streams or where groundwater is near the surface. The remoteness of the pipeline route in some areas in northern Minnesota exacerbates this problem, should a spill or leak occur.

Though more streams are crossed in southern areas, the analysis does not consider the quality of the streams crossed as compared to the other alternatives. SA-Applicant crosses a large number of lakes, streams and wetlands within the northern lakes and forested ecoregions. These are generally some of the highest quality recreational water resources in the state. This can be observed within MPCA’s ecoregion concept for evaluating nutrient and trophic condition criteria for surface waters as well as other aquatic habitats that have been evaluated by the MPCA and DNR statewide for transparency, floristic quality, aquatic plant richness and fish (index of biological integrity) IBI scores (see Figures 1-5).

SA-Applicant parallels and crosses significantly important habitat of the several important smaller streams, rivers, flowages, lakes and wetlands. Because of these concerns, The DNR would prefer alternative routes or system alternatives to avoid these areas.

**Minerals**

SA-Applicant presents a concern regarding mineral resources in the Tamarack area, near the Aitkin-Carlton County border due to significant potential for metallic mineral resources. However, several Route Alternatives being carried forward by PUC for comparative analysis in the routing process could alleviate risk associated with metallic mineral resource/pipeline conflict. Over the rest of the SA-Applicant preferred route and other System Alternatives, presence of metallic mineral resources is highly uncertain and mineral resource information is insufficiently detailed to suggest that one of the System alternatives has more or less merit from a metallic mineral resource perspective.
For aggregate, crushed stone and peat resources, compensation would be required for any encumbrance that precludes extraction activities due to the presence of the pipeline. For comparative purposes, the value of metallic minerals is potentially order(s) of magnitude greater than nonmetallic resources.

In accordance with MN Rules 6125.07, the state and county may grant surface leases, permits and licensed 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.

In addition, in selecting a route for the pipeline, the PUC 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 in the Tamarack area was in effect prior to this Project application and must be considered in any route determination.

The Department also has safety concerns with the possibility of having both future crude oil pipeline and mining operations on the same state-owned lands.

Co-location and “Corridor Fatigue”

Generally, there is an opportunity for reduction of many natural resource impacts, such as habitat clearing, fragmentation, and introduction of invasive species when utility corridors are co-located. The DNR often recommends co-location rather than routing through a less disturbed “greenfield” area. However, it is also important to consider the possible drawbacks related to co-location in an environmental analysis. New pipelines within existing pipeline corridors can exacerbate or introduce the following symptoms of “corridor fatigue”: cumulative environmental impacts of multiple pipelines, increased numbers of cross-over’s and route deviations, as well as creation of “pinch points” when there are conflicting land uses. Some existing pipelines were constructed prior to more modern regulations (which provide greater consideration of impacts associated with construction, operation, and maintenance) which increases cumulative environmental impacts associated with multiple pipelines. An example of cumulative impacts with Sandpiper would be the intended co-location of Sandpiper and the Line 3 Re-build/Maintenance project also currently proposed by Enbridge.

Pipeline Leak Risk

The Comparison of Environmental Effects of Reasonable Alternatives focuses primarily on construction related impacts and less on potential environmental damage as a result of leaks or ruptures. This is in contrast to the Exponent study of the Keystone XL Project Risk Assessment, which concluded that the potential damage as a result of an oil leak was the single most important consideration when conducting a risk assessment for oil pipelines.
Corridor Width

A 2-mile wide corridor was used for analysis of System Alternatives. Use of wider or narrower corridor widths affects the assessment as the ability to avoid sensitive areas within a specific zone is dependent upon the density of resources within that zone as well as acreage or number of sensitive areas. The existence of resources at low densities may not necessarily indicate that the route has more potential for impact if more avoidance opportunities are present. Conversely, there may be resources at high densities that are harder to avoid within a 2-mile corridor. The LaSalle Creek area north of Itasca is a good example: a 2 mile wide corridor still restricts alignment choices to areas with high resource densities.

State-Listed Rare Species and Sites of Biodiversity Significance

It is notable that Minnesota state-listed threatened and endangered species and Minnesota Sites of Biodiversity Significance were not addressed in the comparative section of the Comparison of Environmental Effects of Reasonable Alternatives. At this scale of analysis, one could consider Minnesota Sites of Biodiversity Significance as areas tending to concentrate rare species. See the DNR comparison of these sites specifically for SA-03 and SA-Applicant below.

Contaminated Sites

It should be noted that using contaminated sites as a comparison factor is debatable. It could be argued that contaminated sites are either more or less suitable for development, depending on the specifics of a site and measures used to lessen or avoid impacts.

Comparison of Environmental Effects of Reasonable Alternatives Section Specific Comments

Section 4.1.2 Geology/Soils/Groundwater

Soils: This section (page 49) indicates that impacts to soils are of particular concern to agricultural areas. It is important to point out that standard measures commonly used to prevent mixing of topsoil with subsoil and other impacts such as compaction and rolling topography can be effective in addressing the concerns raised for agricultural areas. This section should indicate that soil related impacts are an important concern in undisturbed or less disturbed areas, where fewer best management practices are typically available.

Hydraulic Conductivity: This section of the report is correct in stating that hydraulic conductivity information is important to assess because it is a measure of how quickly oil can move through the soil. Unfortunately the methods used in the assessment are best suited as a screening tool only as they use surficial hydraulic conductivity values rather than at depth values. Since pipelines are constructed at a fairly consistent depth, inclusion of hydraulic conductivity ratings at or below those depths will need to be used to determine potential risk to contaminant migration.
Section 4.1.6 Public Resource and Recreation Lands (Map A-14 and 15)

Upon review of these maps it is clear that they do not include all public lands. Specifically, state lands administered by DNR Division of Forestry outside of state forests and county administered state lands are not included. These lands are important to the impact assessment as they provide various services to the public, animal, plants, and industry. These areas also occupy a significant part of the landholdings in the northern part of the state and omitting them from the assessment would likely result in inaccurate assessment of impacts on public lands.

Also, from reviewing the comparison document and table 4-9 there is no distinction between State Forests and State Lands Administered by DNR Forestry, other DNR Divisions or County tax forfeit. The text makes note to only named State Forests. Therefore the analysis does not appear to compare the total amount of public forest lands. The DNR is aware that there is a higher occurrence of state public owned lands in the applicants preferred route than in all other alternatives.

Without knowing the final centerline of the proposed pipeline route, fully accessing forestry concerns is difficult. However, in general with more acres and crossings, one can reasonably conclude that there would be more potential impacts to forestry from the applicant’s preferred route than from the other southern alternatives. Routes in the forested region of the state will permanently convert forested uplands and wetlands to open habitats. Impacts of new or wider fragmented areas include: decreased habitat value for wildlife and fisheries, reduction of core habitat in adjacent forests due to edge effects, conversion of habitat (i.e., changes from forested wetlands to open or shrub wetlands), and increased risk of invasive species. The pipeline will result in the permanent loss of income from timber harvests or other income producing activities on the parcels. Compensation is required for impacts to both School Trust and Acquired lands.

There are concerns regarding the potential for severing access to state parcels for land management activities. This concern would apply to both legal access across licensed/leased (or purchased) lands and the ability to run fully loaded semi-trucks carrying logs across the pipeline. This is a concern even if the pipeline runs across private property. DNR works with private owners to gain the shortest and most efficient access to state land across private land. The main concerns are Forestry lands in several sections in the Applicant’s preferred route. There is also a concern for fire suppression activities anywhere the pipeline might be constructed.

Section 4.1.4 Water Resources (Maps A-10, 11 and 12)

We agree with the types of impacts that could occur as described in the report however the methods used do not allow for a comparison of those potential environmental effects among the system alternatives. Two considerations missing from the assessment are:

1. Water sensitivity – Water quality and functions of water resources vary across the state and so will potential impacts.
2. Downstream river miles and connectivity to resources and other sensitive receptors vary across the state and so will potential impacts. An analysis of flow paths for significant releases would add to this type of assessment.
Full Length Comparison of SA-03 and SA-Applicant

While the high level of analysis presented in the Comparison of Environmental Effects of Reasonable Alternatives did not provide the DNR enough information for a full comparison of system alternative impacts, we believe it provides valuable screening information in combination with professional judgment for the DNR to provide input regarding SA-03 and SA-Applicant. After a review of the data and consideration of factors and context described above, it is the opinion of the DNR that route Sa-03 has fewer natural resource impacts when compared to SA-Applicant.

SA-Applicant features that would incur impacts greater than those identified for SA-03 are: forest and wetland acreage, river and stream segment crossings, and crossings of public lands. Cultivated lands and occurrence of already-impaired waters are greater along SA-03, indicating the developed state of lands along this route. The following table represents a preliminary comparison of natural resource impacts between SA-Applicant and SA-03, using information from the Comparison of Environmental Effects of Reasonable Alternatives. These are full route comparisons, encompassing the states of North Dakota, Minnesota, and Wisconsin.

### Full length System Alternative Analysis (ND, MN, WI):
#### Comparison of SA-Applicant and SA-03

<table>
<thead>
<tr>
<th>Feature</th>
<th>SA-Applicant</th>
<th>SA-03</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total miles</strong></td>
<td>615 miles</td>
<td>700 miles</td>
<td>SA-App is shorter</td>
</tr>
<tr>
<td><strong>Acres</strong> (from landcover)</td>
<td>769,145</td>
<td>862,053</td>
<td>SA-App covers fewer acres</td>
</tr>
<tr>
<td><strong>Landcover (acres)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest</td>
<td>144,315 (18.8%)</td>
<td>86,195 (10%)</td>
<td>SA-03 covers fewer forested acres, and less by percent. This represents a reduction in forest fragmentation.</td>
</tr>
<tr>
<td>Herbaceous/grassland</td>
<td>86,505 (11.2%)</td>
<td>90,945 (10.5%)</td>
<td>SA-App covers fewer grassland acres, and less by percent. This is a reduction in grassland impacts.</td>
</tr>
<tr>
<td>Cultivated</td>
<td>363,381 (47.20%)</td>
<td>512,407 (59.4%)</td>
<td>SA-03 covers more cultivated acres and more by percent. This represents re-working of already disturbed lands.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>107,367 (13.9%)</td>
<td>90,832 (10.5%)</td>
<td>SA-03 covers fewer wetland acres and less by percent. This is a reduction of wetland impacts.</td>
</tr>
<tr>
<td><strong>Water Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>River + stream crossings</td>
<td>2,049 segments</td>
<td>895 segments</td>
<td>SA-03 crosses fewer water segments</td>
</tr>
<tr>
<td>Crossings with water impairments</td>
<td>50</td>
<td>98</td>
<td>SA-03 has a greater number of crossings over impaired waters.</td>
</tr>
</tbody>
</table>
|                | Miss R crossings | Lakes | Wetlands (acres) | Fewer crossings of non-impaired waters is desirable.
|----------------|------------------|-------|-----------------|-------------------------------------------------------------
|                | 2: 30' + 250'    | 1:1,000' | No advantage: both represent dangers specific to flow volume and local river and bankside conditions. |
| Lakes          | 3,397            | 3,777 | SA-App has fewer lake crossings. A more accurate comparison would take into account the existing water quality conditions and impairments of these lakes. |
| Forested/shrub | 57,769 (7.3%)    | 60,210 (6.8%) | These are similar. A more accurate comparison would take into account the biological quality ranking of these communities, taking into account such things as hydrologic continuity, species diversity, disease, regeneration, and presence of invasives. |
| Emergent       | 47,010 (6%)      | 39,415 (4.5%) | See above |

**Public Resource Lands**

<table>
<thead>
<tr>
<th></th>
<th>Acres</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47,691</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>11,885</td>
<td>148</td>
</tr>
</tbody>
</table>

SA-03 crosses fewer acres of public lands. While SA-App encounters fewer public lands, this is due to the larger size of public lands along the northern route. A better comparison is made by the acres crossed.

Note that the EERA analysis of SA-Applicant and SA-03 did not compare the acreage of developed lands (existing corridors to be followed, acres under cultivation) to new land disturbance (forests, grasslands and wetlands). The analysis also did not include water quality indicators for the water bodies to be crossed by both system alternatives (rivers, streams and lakes).

**Minnesota-Specific Comparison of SA-03 and SA-Applicant**

The environmental analysis document also presented Appendix B – Tables and Maps for Minnesota. The DNR interprets this data to show that while SA-applicant covers less total acreage, it has the potential to adversely impact natural resources to a greater extent.

SA-Applicant encounters greater acreage and/or numbers for Sites of Biodiversity Significance (SBS), School Trust Lands, public water bodies, NWI wetlands, wild rice lakes, and trout streams. SA-03
contains a higher number of karst features and calcareous fens, more crossings of public waters (streams and rivers) and public water wetlands, and significantly more acres of native prairie than SA-Applicant.

These features reflect the difference in route lengths, as well as the changing nature of the landscape between ecoregions of the state. SA-Applicant follows the northern-most route, the majority of which passes through the Laurentian Mixed Forest ecoregion, the Northern Minnesota Drift and Lake Plains section with expanses of intact forests and wetlands. SA-03 follows a route farther to the south through the Prairie Parkland and Eastern Broadleaf Forest ecoregions, where agriculture and urban centers have become established.

Following are a few points of discussion regarding these comparisons:

- SA-Applicant crosses greater acreage of Sites of Biodiversity Significance (SBS). SBS indicate areas of intact functional landscapes that provide natural resource values such as hydrologic continuity, habitat connectivity, native plant communities, and rare plant and animal species. Not all counties crossed by SA-Applicant have been evaluated for SBS. However, those that have been evaluated contain the largest areas of SBS to be found in the state.
- SA-Applicant crosses a higher amount of state lands, particularly state forests and state wildlife management areas. The route passes through a significant amount of the forest stand inventory of the state of Minnesota.
- SA-03 crosses fewer state lands, smaller SBS due to fragmentation of natural landscapes, and a higher number of the waters crossed (rivers, streams, wetlands and lakes) are already impaired due to agricultural and urban development.
- Fragmentation of natural landscapes due to farming and urban development is significantly higher in SA-03. It would be easier to avoid important natural resources within a two mile corridor in this route.

Following is a table comparison of the two system alternatives under review within Minnesota using data from the Comparison of Environmental Effects of Reasonable Alternatives:
Minnesota System Alternative Analysis: Comparison of SA-App and SA-03

<table>
<thead>
<tr>
<th>Feature</th>
<th>SA-Applicant</th>
<th>SA-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total acres</td>
<td>382,670</td>
<td>476,346</td>
</tr>
<tr>
<td>Karst features</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Calcareous fen</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sites of Biological Diversity*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below</td>
<td>7,291</td>
<td>13,891</td>
</tr>
<tr>
<td>Moderate</td>
<td>52,117</td>
<td>26,320</td>
</tr>
<tr>
<td>High</td>
<td>6,883</td>
<td>5,828</td>
</tr>
<tr>
<td>Outstanding</td>
<td>2,459</td>
<td>1,914</td>
</tr>
<tr>
<td>Total</td>
<td>68,750</td>
<td>47,954</td>
</tr>
<tr>
<td>Native Prairie</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex</td>
<td>440 (57%)</td>
<td>279 (13.1%)</td>
</tr>
<tr>
<td>Upland</td>
<td>118 (15.3%)</td>
<td>882 (41.3%)</td>
</tr>
<tr>
<td>Wetland</td>
<td>213 (27.6%)</td>
<td>973 (45.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>772</td>
<td>2,135</td>
</tr>
<tr>
<td>School Trust Land (acres)</td>
<td>7,880</td>
<td>2,004</td>
</tr>
<tr>
<td>State Trails</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>NWI (acres)</td>
<td>76,597</td>
<td>67,541</td>
</tr>
<tr>
<td>Public water wetland</td>
<td>2,372</td>
<td>2,792</td>
</tr>
<tr>
<td>Water Basins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public water basin</td>
<td>10,220</td>
<td>10,047</td>
</tr>
<tr>
<td>Water Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>112</td>
<td>240</td>
</tr>
<tr>
<td>Miles</td>
<td>197</td>
<td>407</td>
</tr>
<tr>
<td>Trout Streams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>46</td>
<td>32</td>
</tr>
<tr>
<td>Miles</td>
<td>54</td>
<td>42</td>
</tr>
<tr>
<td>Wild Rice Lakes</td>
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<td></td>
</tr>
<tr>
<td>Count</td>
<td>29</td>
<td>11</td>
</tr>
<tr>
<td>Acres</td>
<td>3,621</td>
<td>1,182</td>
</tr>
</tbody>
</table>

*The DNR assumes values provided by EERA for Sites of Biological Diversity are acres of Sites of Biodiversity Significance (SBS).
Thank you for the opportunity to provide comments regarding the Certificate of Need for the Sandpiper Pipeline Project. Please contact me with any questions.

Sincerely,

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

Enclosures: 5

cc: Larry Hartman, Minnesota Department of Commerce
    Scott Ek, Minnesota Public Utilities Commission
    Sara Ploetz, Enbridge
Figure 1.
MPCA Citizen Lake Monitoring Program
Water Clarity
Figure 2. MPCA Stream Transparency

Mean Summer Transparency (cm)
- EXCELLENT, >92
- VERY GOOD, 61-92
- GOOD, 41-60
- FAIR, 21-40
- POOR, <20
- counties_mndot
Figure 3. DNR Floristic Quality Index

FQI (Floristic Quality Index)
- 0.000000 - 7.500000
- 7.500001 - 15.000000
- 15.000001 - 25.000000
- 25.000001 - 35.000000
- 35.000001 - 48.507915
Figure 4.
DNR Aquatic
Plant
Richness

Richness
(number of plant taxa)

- 0.000000 - 5.000000
- 5.000001 - 10.000000
- 10.000001 - 18.000000
- 18.000001 - 25.000000
- 25.000001 - 56.000000