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## 4. Cumulative Effects

This section identifies existing and proposed projects within the vicinity of the Study Area that, along with the Project build alternatives, may result in cumulative effects on existing resources. Projects identified and discussed herein were identified through public comments received during the scoping period for this Project and through information submitted by the Minnesota Department of Transportation (MnDOT) and Chippewa National Forest (CNF).

The Council on Environmental Quality (CEQ) defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions” (40 CFR § 1508.7). In 1997, the CEQ published *Considering Cumulative Effects under the National Environmental Policy Act* as a comprehensive guidance document for cumulative analyses. The methodologies recommended in this guidance document were used by the EPA in their *Final Protocol to Assess Expanded Cumulative Effects on Native Americans* (2007) and were recommended by the Minnesota Environmental Quality Board (MEQB) as providing “the best source of guidance on cumulative impacts.” Therefore, the 1997 CEQ guidance document was used in this EIS to assess the potential cumulative effects of the Project in combination with other past, present, and reasonably foreseeable future actions in the vicinity of the Study Area.

This section is intended to provide an overall, synergistic analysis of the system-level cumulative effects resulting from the combined influence of the resource-specific effects to the Study Area.

### 4.1. *Projects Evaluated*

The following projects were evaluated for the potential to result in cumulative effects with the Project build alternatives: Enbridge Energy pipeline expansions; MnDOT roadway expansions; St. Regis Superfund Site; electric generation projects; and U.S. Forest Service projects. Table 4-1 provides a summary of the characteristics for each project considered in this cumulative analysis, to the extent that the information was readily available from existing sources, which is then followed by a brief narrative description about each project.

**Table 4-1: Project Characteristics for Cumulative Effects Analysis**

<b>Project Characteristics</b>	<b>Bemidji-Grand Rapids Transmission Line</b>	<b>Enbridge – Alberta Clipper Pipeline</b>	<b>Enbridge – Southern Lights Pipeline</b>	<b>MnDOT – MN 197/U.S. 71 Widening</b>	<b>MnDOT – US2 Bypass Lanes</b>	<b>USFS - Various Activities</b>	<b>St. Regis Superfund Site</b>
Location (counties)	Beltrami, Hubbard, Cass, and Itasca	Through northern ND, MN, and WI: within the B-GR Project area only - Beltrami, Hubbard, and Cass	From Clearbrook, MN to Superior, WI; within the B-GR Project area only - Beltrami, Hubbard, and Cass	Beltrami	Cass and Itasca	Beltrami, Cass, and Itasca	Cass, southern part of the city of Cass Lake
Length/Area	68-112 miles	327 miles (68-75 miles near B-GR ROW)	175 miles (68-75 miles near B-GR ROW)	East side of existing ROW, crosses B-GR Project at MP1-7 under Alternative 1 and MP 2-6 under Alternative 2	At various sites between Cass Lake and Deer River	1.6 million acres, with 666,000 managed by the USFS	125 acres (Alternative 2 ROW within or adjacent to southern part of the site)
ROW Width/Area	125 feet wide	75 feet wide of new ROW (140 feet temporary for construction), existing ROW up to 125 feet wide	(part of Alberta Clipper)	70 feet wide of new road area, 50 feet wide of new ROW, reconstruct as a 4-lane divided highway	Possibly no new ROW required, existing ROW is 66 to 200 feet wide	n/a	n/a
Construction Period	2010	8 to 10 months total, 2 to 3 months per segment, begin summer 2009 (4 spreads) and completed in early 2010 (2 spreads)	8 to 10 months total, 2 to 3 months per segment, begin summer 2009 (4 spreads) and completed in early 2010 (2 spreads)	2010 or 2011	Long-term plan, date unknown	unknown	Ongoing, as testing indicates; cleanup started in 1984
Construction Workforce	75	300	(part of Alberta Clipper)	unknown	unknown	unknown	unknown

#### **4.1.1. Enbridge Energy Pipeline Expansions**

Enbridge Energy is proposing two new pipelines within the Study Area. The projects, referred to as the Alberta Clipper Project and Southern Lights Diluent Project, are expected to be co-located or adjacent to the existing Enbridge pipeline.

The proposed Alberta Clipper Project is an approximately 326.9-mile pipeline that would transport crude oil from the US-Canada border through 15 counties in North Dakota, Minnesota, and Wisconsin (USDS, 2009). Approximately 68 to 74.8 miles of the proposed Alberta Clipper pipeline would be located in proximity to Alternatives 1 and 2 of the Bemidji-Grand Rapids Line. The proposed Southern Lights Diluent Project is a 175-mile long, 20-inch diameter underground pipeline proposed for co-construction with the Alberta Clipper Project.

Enbridge estimates that it would have a lay rate for the pipeline of 3,000 to 7,500 feet per day, dependent on conditions along the alignment. No more than 14,000 feet of the alignment would be open trench at any one time on each pipeline construction spread. As a result, the trench typically would be open no more than 2 days at a specific location, weather permitting. The pipelines would be buried at least 36 inches deep (depth of soil over the pipelines) and could be as much as 54 inches deep, depending upon agreements with the agencies involved.

The proposed Alberta Clipper and Southern Lights Diluent pipeline routes would closely follow the existing Enbridge pipeline right-of-way (ROW). As such, the affected environment and potential effects would be consistent with those described throughout the Final EIS for the existing Enbridge pipeline. Required mitigation measures would be consistent with those required for located the Project near the existing Enbridge pipeline, including maintaining minimum distances from the pipelines to avoid electrical interference and allow for maintenance of the pipeline or transmission line if needed.

Project Route Alternative 2 generally follows the existing U.S. Highway 2 ROW, much of which parallels the ROWs for four existing and two permitted Enbridge pipelines from Cass Lake to the Boswell Substation for a total of 48.1 miles. The existing Enbridge ROWs vary in width up to 125 feet. The new ROW required by Enbridge would be up to 75 feet wide, which would result in a total Enbridge ROW of 200 feet. If the Project is located adjacent to the Enbridge ROWs, total combined ROW width for the Project and pipelines would be 325 feet.

Construction of the Enbridge pipelines during construction of the Project would result in compounding effects on a number of resource areas, as described in Table 5-2. Where the Enbridge projects require new ROW in addition to the existing cleared Enbridge ROW, the project would result in additional loss of wetlands, agricultural land and prime farmlands, forests, vegetation, and wildlife habitat in or near the Project Study Area.

#### **4.1.2. MnDOT Roadway Expansions**

MnDOT has indicated that it plans to reconstruct MN Highway 197/US Highway 71 as a four-lane divided highway on the south side of Bemidji (State Project 0409-12). This highway improvement project is planned to occur in 2010 or 2011, and would involve expansion of an estimated 70 feet of new road area and approximately 40 feet of new ROW along the east side of existing MN Highway 197/US Highway 71 (Frisco, 2008). Project Alternatives 1, 1B, and 1C cross MN Highway 197 at milepost (MP) 1-7. Project Alternatives 2, 2A, and 2C cross MN Highway 197 at MP 2-6. All other Project alternatives avoid the section of MN Highway 197/US Highway 71 included in the highway expansion plans.

MnDOT also has long-term plans to add bypass lanes to U.S. Highway 2, between the cities of Cass Lake and Deer River. However, a specific timeline for this highway improvement project has not been developed because funding has not become available. The proposed improvement is not part of the MnDOT 2003-2023 Statewide Transportation Plan (Bittman, 2008). If the project does receive funding, MnDOT has indicated that it hopes to design the project without having to acquire additional ROW. The ROW width varies in this area from 66 to 200 feet (MnDOT, 2009a). MnDOT has also indicated that it would likely design the U.S. Highway 2 bypass lanes according to current freeway standards (Frisco, 2008).

Portions of Project Alternatives 1 and 2 parallel roadways that are included on MnDOT expansion plants. Construction of the Project during roadway expansion would result in compounding effects on a number of resource areas, as described in Table 5-2. Similar to the Enbridge projects, if the roadway expansion projects required new easements, the project could result in additional loss of wetlands, agricultural land and prime farmlands, forests, vegetation, and wildlife habitat. Although typical, these effects would be greater in non-developed areas not already developed with a highway.

#### **4.1.3. U.S. Forest Service Projects**

A number of existing and proposed U.S. Forest Service projects are located within the Project Study Area, as shown in Figure 5.1-1 (USFS, 2009). The following provides a brief summary of the management area directions, as specified in the U.S. Forest Service Plan (2004):

- Candidate Research Natural Areas (CRNA) –
  - comprises 1,699 acres, with 0 acres suitable for timber management; and
  - managed similar to Research Natural Areas (see below), with the exception that the interim ROS class objective is semi-primitive non-motorized, until they are formally designated RNAs.
- Experimental Forest (EF) -

- comprises 8,184 acres, with 0 acres suitable for timber management;
  - managed for silvicultural or other treatment research and experimentation conducted by the North Central Forest Experiment Station; and
  - includes management of the Cut Foot, Marcell, and Pike Bay EFs.
- General Forest (GF) –
  - comprises 347,319 acres, with 257,213 acres suitable for timber management;
  - emphasizes land and resource conditions that provide a wide variety of goods, uses, and services; and
  - has the most young-forest and the largest sized timber harvest units.
- General Forest, Longer Rotation (LR) –
  - comprises 191,829 acres, with 149,899 acres suitable for timber management;
  - emphasizes land and resource conditions that provide a wide variety of goods, uses, and services; and
  - while still having timber production as a key emphasis, generally has longer rotations and more uneven-aged and partial cut harvests.
- Riparian Emphasis (RE) –
  - comprises 52,883 acres, with 25,550 acres suitable for timber management;
  - riparian ecological functions are actively restored, protected, and enhanced in areas where ecosystem processes are sensitive to degradation, restoration focuses on parts of the ecosystem that are not functioning at or within the range of desired conditions; and
  - located along major rivers and lakes that receive varying levels of public use for recreational purposes and also selected large areas of relatively contiguous wetlands, development ranges from some of the most heavily used recreational areas to some of the remote areas of the forest.
- Research Natural Area (RNA) –
  - comprises 2,140 acres, with 0 suitable for timber management;
  - focus on preserving and maintaining unique or high quality native plant community areas for ecological research, observation, genetic conservation, monitoring, and educational activities; and
  - provide opportunities for low impact activities designed to educate people about ecological processes, and dispersed recreational use occurs but is generally discouraged.
- Recreation Use in a Scenic Landscape (RU) –
  - comprises 12,469 acres, with 7,448 suitable for timber management;
  - emphasizes land and resource conditions that provide scenic landscape for recreational activities in natural-appearing surroundings; and
  - often near high standard roads where developed recreation activities may already be provided.
- Semi-primitive Non-motorized Recreation (SPNM) –
  - comprises 21,937 acres, with 18,091 suitable for timber management;

- emphasizes land and resource conditions that provide recreational opportunities in nearly primitive surroundings where motorized use is not permitted; and
- located in parts of the forest with few low-standard roads and trails, management activities are not very noticeable, visitors may occasionally see stands that have been regenerated, low-standard timber access roads, and non-motorized trails.
- Unique Biological, Aquatic, Geological, or Historical (UB) –
  - comprises 18,026 acres, with 0 suitable for timber management;
  - areas with outstanding biological, aquatic, geological, historical, and other special values; and
  - primarily managed for interpretive purposes, exhibit plant communities and individual species of particular interest, unique historical and recreational areas are located in a number of areas and where traditional uses occur.
- Water
- Eligible Scenic Rivers (WSR) –
  - comprises 1,537 acres, with 1,111 suitable for timber management;
  - emphasizes land and resource conditions that provide interim protection of the Big Fork River corridor which is identified as scenic; and
  - settings range from semi-primitive to developed recreational areas.

The area surrounding Project Alternatives 1 and 2 and along Segments N and O (see Figure 5.1-1), show that the areas are now mainly used for timber production. There are a number of undefined future projects identified along Segment N and north of Project Alternative 2, and also a few unaccomplished projects. Many of the remaining undefined future projects are located north of Project Alternative 2, east of Segment O and just past Lake Winnibigoshish. Project Alternative 3 has a number of undefined, unaccomplished projects along the route located north of the Spring Lake area.

#### **4.1.4. St. Regis Superfund Site**

The St. Regis Paper Company Superfund Site is located on approximately 125 acres in the city of Cass Lake, within the boundaries of the Leech Lake Reservation and adjacent to Chippewa National Forest lands. A portion of the site is located within the 1,000-foot-wide route identified for Project Alternative 2. The Applicants have proposed an expanded route width (Segment F) in the Cass Lake area, which would allow placement of the 125-foot ROW to the south of the St. Regis Site, avoiding potential cumulative effects.

The St. Regis Site was used for wood treatment between the 1950s and 1980s. Historic operations included the pretreatment of lumber with creosote, pentachlorophenol (PCP), and copper chromium arsenate. Wastewater generated from the process was discharged to on-site disposal ponds. Starting in 1957, wastewater and sludge from the disposal ponds was removed from the site and burned at the city dump. The site was placed on

the National Priorities List (NPL) for contamination of soil and groundwater with dioxin, pentachlorophenol, and polycyclic aromatic hydrocarbons.

Remediation at the St. Regis Site has been ongoing since 1984. Remedial actions completed in the 1980s and 1990s included the excavation of soil and sludge that was placed in an on-site vault, and operation of a groundwater extraction and treatment system. In 2001 and 2003, soil sampling revealed dioxin contamination that had not been addressed during earlier remediation activities. Over 4,000 tons of contaminated soils were removed from the site between 2004 and 2006. Additional monitoring wells were installed at the site in 2008 to investigate the discovery of a tail plume. Current contaminants of concern are arsenic, benzo(a)pyrene equivalents, and polycyclic aromatic hydrocarbons (PAHs) present as dust in residential houses surrounding the area. A feasibility study was completed for the site in 2009. A public hearing on the study is expected for early 2010, after which the EPA would determine the remedial action plan for additional cleanup of the site.

Project Alternative 2 could potentially be located within or adjacent to the St. Regis Superfund Site. Alternatives 1 and 3 are not located near the St. Regis Site. The Applicants have proposed an expanded route width (Segment F) in the Cass Lake area, which would allow placement of the 125-foot ROW to the south of the St. Regis Site. If the ROW is located within the St. Regis Site, construction may interfere with remediation activities. Disruption of soil or groundwater during pole placement could result in new contamination or health and safety concerns at the site. If the project ROW is located outside the St. Regis Site, no cumulative effects are expected.

#### **4.1.5. Electrical Generation Projects**

Development of the Project would create the infrastructure to support increased electrical generating capacity. Specifically, the transmission line would allow for the increased development of renewable energy in the Red River Valley and eastern North Dakota. These areas have significant potential for energy generation to be derived from renewable energy sources such as wind. With increased reliance on renewable or “emission free” power generation, there would be a potential for reduced carbon emissions resulting from the decreased or displaced necessity to combust coal or other more significant criteria pollutant emitting fuels. This positive effect on air emissions would be realized under each of the Project build alternatives.

#### **4.2. Cumulative Effects Methodology and Analysis**

The 1997 CEQ guidelines recommend analyzing cumulative effects according to a tiered approach among specific resources, interconnected systems, and human communities. This hierarchical approach allows for a quantitative, resource-specific analysis as well as a synergistic, additive discussion of the system-level influence of regional actions.

The temporary boundary for the analysis is defined as the life of the Project, estimated at over 50 years. The spatial boundary for the analysis is the Study Area, defined as the 1,000-foot-wide route identified for each alternative, and neighboring cities/communities. Under the resource-specific lens, the resources considered were identified as those having the potential for cumulative effects by the Project build alternatives. If the Project did not result in direct or indirect impacts on a resource, then that resource was eliminated from the cumulative effects evaluation. Table 4-2 provides a summary of the resource-specific effects analysis.

**Table 4-2: Resource-Specific Cumulative Effects Analysis**

<b>Resource</b>	<b>Cumulative Effects Summary</b>
Aesthetics	Co-location of the Project with pipeline expansion projects would result in compounding effects on the viewshed in the Study Area where tree clearing is required for the pipeline expansion projects.
Air Emissions	Construction of the Project at the same time as roadway or pipeline expansion projects, if construction is delayed, in the Study Area may result in compounding effects from fugitive dust and air emissions from construction vehicles.  The Project may indirectly affect alternative energy projects in the region by creating infrastructure to support increased electric generating capacity.
Soils and Geology	Construction of the Project at the same time as roadway or pipeline expansion projects may result in increased temporary disruption to surface soils and the increased potential for soil erosion or compaction.  Disruption of soil at the St. Regis Superfund Site for the construction of Alternative 2 may result in increased health concerns and interfere with ongoing soil remediation at the site.
Water	No direct cumulative effects are expected. The Project is expected to span water bodies. Water resources in the Study Area may be indirectly affected by the compounding effects of soil erosion.
Floodplains	No direct cumulative effects are expected. Floodplains in the Study Area may be indirectly affected by the compounding effects of soil erosion.
Wetlands	Co-location of the Project and roadway or pipeline expansions may result in compounding effects to wetlands, including changes in sedimentation, turbidity, and runoff; changes in wetland fill and long-term loss of wetlands; and wetland type conversion.
Biological Resources	Co-location of the Project and roadway or pipeline expansions may result in temporary displacement of wildlife and long-term habitat fragmentation.  Removal of vegetation from co-located easements would increase acreage converted from forest to grass or shrub land, resulting in compounding conversion of existing vegetation communities and potential for the spread of noxious weeds in ROWs.
Species of Special Concern	Same as Biological Resources
Cultural Resources and Values	None expected
Land Use	Co-location of the Project and roadway or pipeline expansions on a single property owner's land would result in compounding temporary and long-term loss of land use.  Placement of the Project within the St. Regis Superfund Site could interfere with remediation of the site and limit future redevelopment of the site.

Socioeconomics	<p>Multiple easements located on a single land-owner's property could affect the property value and affect the land use through fragmentation of the property. Construction of the Project easement adjacent to roadway or pipeline expansion projects could result in compounding negative effects to property values, although it is noted that the anticipated negative effect on property value for a property with an existing easement is less than for a property with no existing easement.</p> <p>Construction of the Project at the same time as other construction projects in the vicinity of the Study Area would result in compounding effects on the short-term influx of income to surrounding communities during construction.</p>
Environmental Justice	<p>Construction of the Project at the same time as other construction projects in the Study Area may result in compounding temporary effects to hunting and gathering, which could be disrupted during construction activities.</p>
Recreation	<p>Co-location of the Project with roadway or pipeline expansion easements may result in compounding effects on forested land, resulting in the removal of forested areas used for recreational activities.</p> <p>Adjacent easements would create a wider cleared width that would allow for increased recreational traffic: hiking, snowmobiling, riding ATVs. Creation of wide co-located easements would allow for the development of new recreational trails on public land, although create the potential increase for trespassing on private land.</p>
Agriculture	<p>Co-location of the Project and roadway or pipeline expansions on adjacent easements may result in compounding loss of agricultural land or prime farmland. Adjacent easements may also result in fragmentation of agricultural land or prime farmland, affecting agricultural activities.</p>
Forestry	<p>Co-location of the Project and roadway or pipeline expansions on adjacent easements may result in compounding loss of forest, which could affect potential for future timber production and fragment wildlife or vegetation populations. Similar compounding effects may occur if the Project is located adjacent to existing or future CNF forest projects, some of which require a certain amount of forested acreage to study wildlife, vegetation, and fire suppression.</p>
Mining	None expected
Community Services	None expected
Utility Systems	None expected
Traffic and Transportation	<p>Construction of the Project at the same time as roadway or pipeline expansions could result in compounding effects to road closures and traffic delays. Staggered construction of projects in the Study Area could result in prolonged road closures and delays.</p>
Safety and Health	<p>Construction of Alternative 2 within the St. Regis Superfund Site could disrupt contaminated soils, increasing the risk of worker exposure to potential hazardous contaminants.</p>
Noise	<p>Construction of the Project at the same time as roadway or pipeline expansions could result in compounding effects on noise levels in the Study Area from construction equipment.</p> <p>Staggered construction schedules of projects in the vicinity of the Study Area would result in an increase in the duration of noise, but not the level of noise.</p>

#### 4.2.1. Aesthetics

Cumulative aesthetic impacts would include disruption to the existing landscape from the addition of transmission lines and the expansion of the substations, loss of trees, and

devaluation of high-value or sensitive scenic resources. As projects are added to landscapes, there tends to be a gradual decline in the overall visual quality. However, unlike other types of resources, there is no quantifiable visual measurement of what is deemed good or bad. Most measurements for visual resources are subjective and dependent on individual viewers. In other words, there is no precise point at which one additional project is “too much.”

That being stated, the Project likely would be visible to many residents located near it, as well as those traveling on highways and county, township, and forest roads. As indicated in Section 3.1, Aesthetics, the direct and indirect impacts were evaluated on the basis of whether or not the transmission line could be seen from a particular vantage point, either a named resource, such as the Mississippi River, or a general setting, such as the location of an existing transmission line or the frontage road near U.S. Highway 2. Cumulative effects primarily concern whether or not the visual setting would be degraded with the addition of another built component, such as the transmission lines and poles.

For example, co-location of the Project with Enbridge pipeline expansion projects would result in compounding effects to the viewshed in the overlapping 68 to 75-mile long Study Area, with tree clearing to widen the existing 125-foot Enbridge ROW to the combined existing and new ROWs totaling 325 feet. In this type of environment, the construction of the 230 kV H-frame is a departure from the existing, cleared setting. The poles would be clearly visible and would add a vertical component to the landscape. This would compound the existing effect by creating an additional break within the landscape, especially in forested areas, where additional trees would need to be removed. Viewers’ attention would be drawn both to the clearing, as well as the transmission lines and poles.

Cumulative effects associated with the addition of the transmission line to areas adjacent to the pipeline ROW, however, would not further impact the SIO ratings of high, moderate, and low for a particular resource. As previously indicated, the SIO rating is based on the overall quality and characteristics associated with a resource. For this reason, the cumulative effects would be localized and would not alter the overall rating of a resource.

Two Mississippi River crossings would likely be visible, one as the Project leaves the Bemidji area and another as the Project approaches the Boswell Substation. Visual simulations were not created for these locations. Specific projects and existing infrastructure are not noted; thus, cumulative impacts associated with the visual setting are not anticipated at the river crossings.

Selected additional site-specific impacts could occur at Project mileposts (MPs) 1-7 and 2-6 if the MN Highway/US Highway 71 widening occurs. It does not appear that work at the St. Regis Superfund site and the addition of bypass lanes to U.S. Highway 2 would contribute to the cumulative aesthetic impacts because it appears that the existing site and the highway ROW for intermittent lanes may be large enough to accommodate

these projects. In addition, the Applicants have widened the route in the area of the Superfund site in order to avoid it.

As indicated within section 3.1, Aesthetics, in locations where existing transmission lines are present, the addition of a new line would further impact the visual experience of visitors and residents. The combination of the parallel utility lines and repeated pattern of pole placement increases the visual dominance of the transmission structures against the sky and their contrast with the horizontal line of the background trees and other low-lying vegetation. Cumulative effects associated with the addition of the transmission line to areas with an existing transmission line would not further impact the SIO ratings of high, moderate, and low for a particular resource, since the SIO rating is based on the overall quality and characteristics associated with a resource.

#### **4.2.2. Air Quality**

Potential impacts to air quality from construction of the Project could include temporary degradation of air quality from the emission of air pollutants during the operation of construction equipment and vehicles. Construction of the Enbridge pipeline projects began in 2009 and is scheduled to conclude prior to the start of construction of the transmission line project. Thus, cumulative impacts to air quality from increased particulate matter or heavy equipment and other vehicular exhaust emissions are not likely to increase, but would occur over a longer period of time.

#### **4.2.3. Geology and Soils**

Surface soils would be disturbed by site clearing, grading, and excavation activities at structure locations, pulling and tensioning sites, setup areas, and during the transport of crews, machinery, materials, and equipment over access routes (primarily along the transmission ROW).

The vast majority of impacted acreage, from 876 acres for Project Alternative 1 to 1,070 acres for Alternative 3, would be temporary in nature primarily due to equipment access. Depending upon the alternative, approximately 3 to 5 acres would undergo long-term impacts due to the installation of pole structures. Construction of the Enbridge pipelines would also disturb soils, resulting in increased potential for erosion, compaction, and mixing of topsoil; damage to agricultural drainage tiles; and introduction of rock to the soil. Agricultural production on approximately 2,528.8 acres would be temporarily lost from production for the construction season. Sixteen contaminated waste sites were identified within 0.5 mile of the Enbridge pipelines route in Minnesota, including five sites identified in Itasca County. Eight unpermitted dumps were identified in or near the ROW in several counties in Minnesota, including Itasca County. Cumulative soil impacts from ongoing cleanup activities at the St. Regis Superfund site are unclear until potential additional contamination issues and

resolutions are identified. Impacts to soils are likely to be temporary, minimal and localized for the highway projects and the future U.S. Forest Service projects.

#### **4.2.4. Water Resources and Floodplains**

Temporary or long-term direct impacts to surface water resources are unlikely to occur to PWI basins or watercourses. Project alternatives have been located to avoid surface water features to the extent practicable. In areas where surface water features are present, it is anticipated that ROW alignments could be directed to avoid surface water or that water bodies could be spanned. All water crossings under all of the alternatives, including the Mississippi River crossing west of Deer River, would be spanned by poles placed from 800 to 1,000 feet apart. There are no water bodies that are wider than the maximum span along the alternatives, such that complete avoidance would not be feasible.

If pole placement were to occur within a water basin or watercourse, temporary direct impacts may include soil erosion along the shoreline and sedimentation caused by construction. Fuel or chemical spills from construction equipment could degrade storm water runoff quality. Impacts to surface water quality could result from the use of herbicides or pesticides in maintaining the transmission line ROW during operation. However, conditions in the High Voltage Transmission Line (HVTL) and Storm Water permit would reduce the likelihood and include mitigation measures for these potential impacts.

Potential cumulative impacts to water resources would be greater for the Enbridge pipeline construction, and would occur prior to the initiation of construction of the Project transmission line. The proposed Enbridge pipelines would involve a total of 76 perennial and 86 intermittent crossings in Minnesota (15 additional crossings were not surveyed). Construction of the pipelines could result in temporary or short-term impacts due to increased sedimentation, degradation of aquatic habitat from instream construction activities, increased runoff and erosion, changes in channel morphology and stability, temporary reductions in flow during hydrostatic testing activities, alteration of aquatic habitat, and temporary to short-term surface water quality degradation during or after construction from disposal of materials and equipment or vehicle spills and leaks. But, overall, it is not anticipated that groundwater or surface water quality would be greatly affected during pipeline construction or operation.

Cumulative impacts to water resources from the Project transmission line and the highway projects are likely to be minimal or non-existent, and impacts from the St. Regis Superfund site continue to be studied and addressed as needed.

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### **4.2.5. Wetlands**

Potential impacts resulting from construction and maintenance of the Project could include a loss of wetlands and/or wetland functions, conversion of wetlands, change in water quality and water recharge, loss of habitat, and impacts from construction and maintenance access. Conversion of wetland type would occur where the clearing of forested wetland areas would be required within the ROW. Approximately 15 acres of wetland would be affected for each mile of ROW crossing through a wetland or wetland complex.

The greatest potential impacts to wetlands would result from conversion of wetlands, ranging from 166 acres of wetland conversion for Route Alternative 2 to 269 acres of wetland conversion for Route Alternative 3. Approximately 1,346.16 acres of wetlands would be impacted during construction of the Enbridge pipelines, 820.64 acres of which would be maintained in an herbaceous state during operations. These impacts could result in wetland type conversion. The predominant wetland types that would be crossed by the Enbridge pipelines are forested and scrub-shrub communities.

In addition to standard construction efforts to minimize or mitigate wetland impacts, winter construction has been proposed for up to 25 miles of expansive wetlands. Overall, temporary and long-term impacts to wetlands, mitigated according to Enbridge plans and agency requirements, would result in minor impacts to wetland resources, as would impacts from highway projects and the St. Regis Superfund site.

### **4.2.6. Biological Resources**

This section identifies potential cumulative impacts to general vegetation and fauna in the Project Study Area.

#### **4.2.6.1. Vegetation**

The primary impacts to vegetation from construction would be cutting, clearing, or removing the existing vegetation within the construction work area, and the potential introduction of noxious weeds. The primary long-term impact of the alternatives on vegetation is the conversion of existing vegetation communities to managed grassland or shrubland within the transmission line ROW. Maintenance of these areas would preclude recovery of natural vegetation for the lifetime of the Project. The magnitude of impacts relates to the type of vegetation that would be converted: conversion of unmanaged upland shrub and grassland communities is much less than impacts to forest communities because of the magnitude of change that occurs. The Applicant routed the alternatives to take advantage of adjacent utility corridors and existing access roads to the extent practicable, which has reduced the area of natural vegetation that would be lost as a result of the Project and minimized fragmentation of natural habitats adjacent to the ROW.

Project Alternatives 1 and 2 would result in approximately 1,000 to 1,100 acres of impacts to native vegetation cover, with the aspen/white birch communities receiving the greatest impacts. Alternative 3 and 3E would each result in approximately 1,800 acres of impacts to existing vegetation communities. Vegetation classes potentially affected by the Enbridge pipelines during construction include upland forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetlands (1,346.2 acres). Impacts to herbaceous habitats generally would be shorter term than those to woody communities, with herbaceous vegetation typically becoming reestablished within 3 years, shrubland taking 5 to 10 years and forestlands taking 50 years or more. Vegetation within the Enbridge ROW would be maintained in an herbaceous state during operations, including areas currently composed of forested lands (622.2 acres), agricultural lands (569.4 acres), developed lands (36.7 acres), open lands (195.2 acres), and wetlands (820.7 acres). Overall, cumulative impacts from the Enbridge pipelines and Project transmission line to vegetation would be minor and generally short term, although impacts to forested lands would be long term. The ROWs for the highway projects and the St. Regis Superfund site are already cleared and so the cumulative impacts to forested lands are expected to be minimal and more localized.

#### **4.2.6.2. Fauna**

Potential wildlife impacts from the Project include the direct or indirect loss or conversion of habitats, increased habitat fragmentation, and the potential risk of avian collisions with transmission conductors and equipment. The Project would expand the existing ROWs or create new ROWs that would convert woodlands to maintained grass/shrub. Species that rely upon forested habitat would generally be displaced in favor of grass or shrubland adapted species.

Overall, the Project routes would convert approximately 430 to 815 acres (Alternatives 2 and 3, respectively) of woodland to grasslands and shrublands. Construction and operation of the Enbridge pipelines would result in both short-term disturbance and long-term modification to wildlife habitats (see above), including impacts from habitat fragmentation and widening of the existing ROW. To limit potential construction and operation impacts to wildlife, Enbridge has identified a number of mitigation measures and, consequently, overall impacts to wildlife are expected to be minor.

Unlike the Project transmission line that would span water bodies and thereby avoid impacts to fisheries resources, the Enbridge pipelines primarily could affect fisheries resources by loss or alteration of habitat, reduced spawning success, direct and indirect mortality, adverse health effects, and loss of individuals and habitats due to hydrostatic testing and exposure to toxic materials. Enbridge would adhere to agency recommendations on timing windows for instream work and proposes to modify the proposed crossing method based upon flow conditions at the time of construction.

Consequently, the open-cut method would be used for water bodies planned as a dry crossing, if the water body is dry or has no perceptible flow at the time of construction. Alternatively, a dry crossing method would be used for water bodies planned as an open cut but with perceptible flow at the time of construction. To minimize the impacts of construction activities on fish and their habitats, Enbridge generally would complete all open-cut instream activity for minor water body crossings (less than 10 feet wide) within 24 hours and all activity for intermediate (10 to 99 feet wide) and major (100 feet wide or greater) water bodies would be crossed in less than 48 hours, not including those crossed by horizontal directional drill (HDD) methods. Thus, with the proposed mitigation the Enbridge pipelines would have overall minor construction impacts to aquatic habitat and organisms.

Because the ROWs for the highway projects and the St. Regis Superfund site are already cleared and, thus there would be no cumulative effects on forest lands in the associated localized habitats, impacts to fauna are expected to be minimal and more localized.

#### **4.2.7. Species of Concern**

This section identifies potential cumulative impacts to federal, state, and tribal threatened, endangered, and sensitive (TES) vegetation and fauna in the Project Study Area.

##### **4.2.7.1. Vegetation**

Non-motile plant species could potentially be impacted if Project transmission structures and the Enbridge pipelines were sited on top of, or immediately adjacent to, the known locations of these species or if individuals or populations would be destroyed during clearing and/or long-term maintenance of the ROW. To the extent practicable, the ROWs could be sited to avoid known locations of these species or, in the event that known occurrences of species cannot be avoided, to ensure that project features (i.e., transmission line poles and support structures) are not located on top of, or immediately adjacent to, these species.

Because the ROWs for the highway projects and the St. Regis Superfund site are already cleared and, thus there would be no cumulative effects on localized vegetation, impacts to these species are expected to be minimal.

##### **4.2.7.2. Fauna**

More motile species, such as birds and mammals, would likely avoid the Project and Enbridge pipeline ROWs during the construction periods and move into surrounding, undisturbed habitats. The habitats impacted are relatively common within the region and that State; therefore, compatible habitat is likely located near the ROWs. While this

migration may increase short-term competition for resources, it is unlikely that the region is overpopulated with these species such that short-term migration would lead to adverse effects on state-wide populations.

Long-term impacts from habitat conversion within the ROWs could cause localized impacts to bird and mammal species dependent upon mature forests for foraging or nesting such as the Bald Eagle, Great Blue Heron, Osprey, Connecticut Warbler, and Black-backed Woodpecker, Canada Lynx, and Gray Wolf. However, impacts to bird species can be minimized by avoiding known nesting sites during the breeding season by approximately one-eighth of a mile (660 feet) for large raptors and colonial waterbirds (e.g., Bald Eagles, Great Blue Herons, and Osprey) and maintaining approximately 200 feet around known nesting sites for smaller species such as Connecticut Warbler, Black-backed Woodpecker, and Olive-sided Flycatcher.

The Projects are not located within the Federally-designated critical habitat for the Canada Lynx. Canada Lynx are uncommon in the Study Areas and Snowshoe Hare habitat is also relatively uncommon (less than 5 percent of each alternative). Therefore, the Study Areas are not likely to become common foraging habitat for Canada Lynx and no adverse effects would be anticipated.

Because the ROWs for the highway projects and the St. Regis Superfund site are already cleared and, thus there would be no cumulative effects on localized habitat, impacts to these species are expected to be minimal.

#### **4.2.8. Cultural Resources**

The construction of Project transmission line facilities could affect recorded and currently unknown cultural resources. The transmission line, with its pole installation and substation modification, has the potential to disturb archaeological sites. The Project could alter the setting and viewsheds of historic structures or landscapes, or the setting of and access to Traditional Cultural Properties. In areas not previously disturbed and where archaeological potential is assessed to be high, such as near large lakes and river crossings, unrecorded archaeological sites or traditional cultural properties may be affected during construction of transmission structures, substations and substation modifications, or access roads. Historic buildings or other sites may be impacted, as well, in that construction of modern transmission structures may impact the historic viewshed in which above-ground archaeological and historic resources are located. Impacts to cultural resources, including historic structures, archaeological sites, and traditional cultural properties, would be considered significant if they result in adverse effects to historic properties that are eligible for listing on the NRHP.

Impacts to natural resource use, such as wild rice harvesting, maple sugaring, sweet grass harvesting, or berry picking, would depend upon the requirements of the resource, and the Project alternative. Game animal populations are not anticipated to be

affected by the Project and no indirect effects to natural resource appreciation and use are anticipated.

In addition to the potential Project impacts, the principal types of impacts the Enbridge pipelines could have on cultural resources include physical destruction or damage caused by pipeline trenching, related excavations, or boring; introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features by short-term pipeline construction or construction of aboveground appurtenant facilities and roads; and change of the character of the property's use or of physical features within the property's setting that contribute to its significance. Enbridge's main method of mitigation for potential impacts to cultural resources is avoidance and no impacts to cultural resources are anticipated.

A Programmatic Agreement would be used to conclude Section 106 review, to ensure that an appropriate formal process is followed for the outstanding cultural resources surveys that result from Project adjustments or from current denial of survey permissions by affected landowners.

Because the ROWs for the highway projects and the St. Regis Superfund site were previously highly disturbed and developed, there likely would be no additional cumulative effects on cultural resources where these projects are in proximity to the Project and Enbridge ROWs.

#### **4.2.9. Land Use**

Potential Project impacts include the incompatibility with local land use and zoning, incompatibility with planned development, and loss of use to landowners. Due to the small amount of land required, the Project alternatives would not directly or indirectly impact local land use and zoning categorizations, because these designations would not be altered. Land uses might be affected long-term only in areas where trees need to be cleared (i.e., outside of existing ROWs and utility lines). In these instances, a portion of land would be cleared for access and maintenance; the overall use of the parcel, and hence the land use designation, would not typically be altered.

Landowners may experience both a temporary and long-term loss of use in areas where new Project land would be needed. The temporary loss of use for landowners would occur during construction. During this time, machinery would be placed on individual property owners' lands to allow for the placement of poles and wires. Indirect effects may include noise, dust, and additional traffic not typically associated with the existing land use, especially in rural or forested areas. The overall land use outside of the defined easement, however, would not be altered during construction. Creation of the Project ROW and construction access roads may increase public access to private lands, creating the potential for increased trespassing and unauthorized use of such lands. Enforcement of private land use and trespassing laws would be the responsibility of local law enforcement.

The long-term loss of use outside of existing ROWs and utility lines would be minimal due to the small footprint required by each transmission line pole and the 125-foot ROW. Long-term Project impacts to forest land would range from 432.3 acres for Alternative 2A to 825.0 acres for Alternative 3. It is likely that long-term impacts to land use would also occur as a result of the proposed substation configurations in the Cass Lake area. In Project Alternative 1, a new substation would be constructed in Section 30 of Pike Bay Township (T145 N, R 31 E); in Alternative 2, the existing Cass Lake Substation, located in Section 17 of Pike Bay Township (T145 N, R31W) would be expanded. In either case, approximately 4 acres of forested land would be impacted. Alternative 3 does not include any substation construction or improvements.

Construction of the Enbridge pipelines would affect the following land use categories: forested lands (1,254.5 acres), agricultural lands (2,528.8 acres), developed lands (617.2 acres), open lands (655.4 acres), and wetland/open water (1,346.2 acres). Total acres that would be affected by the Enbridge pipelines are 6,402.1 acres. Enbridge would compensate all landowners for lost crops and any documented damage caused by construction activities. Enbridge routed the pipelines in an effort to minimize the number of residences impacted. As a result, Enbridge has been involved in easement negotiations with the owners of 21 residences that would be within 50 feet of the construction ROW along the 326.9-mile pipeline. Enbridge has committed to implementing a comprehensive inspection, monitoring, and compliance control plan to ensure that multiple contractors comply with the conditions of permits. Implementation of the Enbridge proposed plans and mitigation would result in overall minor impacts to land use.

Because the ROWs for the highway projects and the St. Regis Superfund site were previously developed, there likely would be no additional cumulative effects on land use and zoning where these projects are in proximity to the Project and Enbridge ROWs.

#### **4.2.10. Socioeconomics**

Subsistence use and subsistence patterns have been affected in the past by settlement patterns, highways, snowmobiles, pipeline and transmission rights-of-way and introduction of invasive species. Affects within the LLR are primarily concentrated along the Hwy 2 corridor.

Cumulative effects to subsistence land uses for lands within the Refuge boundary would include expanded areas of utility rights of way; continued exchanges of land from individual and Forest Service use to utility use, increased access to formerly remote areas; and increased fragmentation of forest areas that may require further changes to traditional subsistence patterns and knowledge; and alienation of users from their traditional use areas.

The net effects of new transmission rights-of-way within subsistence use areas involve

changes in management that could affect subsistence users and the possibility for future co-location of utility rights-of-way.

The following sections describe the potential cumulative socioeconomic (e.g., employment, income, and business) impacts during construction and operation of the projects.

#### **4.2.10.1. Construction**

Potential cumulative socioeconomic impacts include impacts to homes and businesses from residential and business losses, landowner compensation, and property values, and also from impacts to local, regional, and subsistence-based economies during construction of the Project.

Construction of the Project would require approximately 75 temporary but full-time employees to construct the transmission line and additional workers would be required for the substation modifications. Other projects under construction during the present or reasonably foreseeable future include the construction of the Enbridge pipelines, which would require 300 people over its entire 327 miles, and construction of the highway projects and ongoing cleanup at the St. Regis Superfund site. These construction jobs would not create new long-term jobs in the Study Area. Opportunities for part-time personnel also may be available during the construction of the transmission line and pipelines.

To the extent that local contractors are used for portions of the construction, total direct wages and salaries paid to contractors and workers in surrounding counties would contribute to the total personal income of the region. These construction jobs would provide a short-term influx of income to the area. Construction expenditures made for equipment, energy, fuel, operating supplies, and other products and services would benefit businesses in the local communities to the extent that the products and services are purchased locally. Additional personal income would be generated for residents in the region and the State by circulation and recirculation of dollars paid out by the Applicants as business expenditures and State and local taxes.

Short-term indirect positive economic impacts would result from these construction activities. Revenue likely would increase for some local businesses, such as hotels, restaurants, gas stations, and grocery stores, due to increased spending from workers associated with construction of the Project, the Enbridge pipelines, the highway projects, and at the St. Regis Superfund site in Cass Lake.

Potential negative cumulative effects to local, regional and subsistence-based economies could result from construction of the Project and other projects in the Study Area (Enbridge, highway projects, and St. Regis). Loss of income could result from a decrease in recreational users of the area during construction. Impacts to the subsistence-based economy could result from loss of acreage for subsistence activities, fragmentation of

habitat, and introduction/spread of invasive species due to increased disturbance/new corridors. These impacts would primarily be limited to projects located on the LLR where LLBO tribal members have hunting and gathering rights.

Impacts to the subsistence-based economy will be further assessed by LLR and federal agencies for inclusion in the Final EIS.

#### **4.2.10.2. Operation**

Potential cumulative socioeconomic impacts include impacts to homes and businesses from residential and business losses, landowner compensation, and property values, and also from impacts to local, regional and subsistence-based economies during operation of the Project.

Operation of the Project would not require an increase in full-time or part-time employees. Other projects under operation during the present or reasonably foreseeable future are not anticipated to require an increase in employees during operation.

The increase in transmission capacity and reliability would be an economic benefit to the surrounding communities and businesses. Additional capacity would not only provide electricity for economic growth from new or enlarged industry and businesses, it would help to assure that income was not lost as a result of a potential brownout or temporary blackout of power from severe weather events. This could have a long-term positive economic impact to the Project Study Area. The availability of reliable power also could have a positive effect on the quality of services provided to the public. An additional benefit would include an increase to the each county's tax base, resulting in an incremental increase in revenue from utility property taxes.

The Project, the Enbridge pipelines, the highway projects, and at the St. Regis Superfund site are not anticipated to have a direct negative impact on any businesses and is not expected to have negative economic impacts. The operation and maintenance of the transmission line would not negatively impact the socioeconomic resources related to industry in the four-county area.

The Project would not cause the displacement of any individuals from their homes or businesses where property or easement acquisition is necessary. Federal, state, and local regulations dictate property acquisition requirements. Affected landowners would be compensated for their property at fair market value. Residents and local business owners and customers in the Study Area primarily would be affected by temporary construction activities and long-term aesthetic changes.

Agricultural land that is located within the ROW would be temporarily removed from production during construction. Project Alternative 1A affects the most prime farmland within the ROW as compared to the other alternatives. Landowner compensation would be established by individual easements for the Project and the Enbridge

pipelines. Because the existing ROWs appear to be large enough for the highway projects and the St. Regis Superfund site is not expanding, purchase of easements would not likely occur for those projects.

Negative impacts to subsistence-based economies may occur from the operation and maintenance of the Project as a result of loss of acreage for subsistence activities, fragmentation of habitat, and introduction/spread of invasive species due to increased disturbance/new corridors. These impacts would primarily be limited to projects located on the LLR where LLBO tribal members have hunting and gathering rights.

Impacts to subsistence-based economies will be further assessed by LLR and the federal Cooperating Agencies for inclusion in the Final EIS.

#### **4.2.11. Environmental Justice**

The proposed activities also would not result in an economic hardship due to taxes (which would not be increased). If approved, the Project and the Enbridge pipelines may increase the amount of tax revenue available to the four counties. Both projects could provide increased opportunities for firewood gathering or employment. During construction, the projects likely would provide an opportunity for temporary employment for members of the minority and low-income communities in the area.

The Project, Enbridge pipelines, and highway projects would, however, impact food resources used by those conducting subsistence hunting, fishing, and gathering activities, potentially resulting in no cumulative impacts. Some temporary disruptions may occur if access is limited, for safety purposes, to areas typically used for hunting and gathering. Animal communities also may be temporarily disturbed during construction due to the movement of equipment, noise, and dust. Additionally, any offsite contamination from the St. Regis Superfund site could make some subsistence resources unfit for consumption.

Negative impacts to subsistence-based economies may occur from the operation and maintenance of the Project as a result of loss of acreage for subsistence activities, fragmentation of habitat, and introduction/spread of invasive species due to increased disturbance/new corridors. These impacts would primarily be limited to projects located on the LLR where LLBO tribal members have hunting and gathering rights.

Impacts to subsistence-based economies will be further assessed by LLR and the federal Cooperating Agencies for inclusion in the Final EIS.

#### **4.2.12. Recreation and Tourism**

Constructing of the Project transmission line and Enbridge pipelines adjacent to an existing linear utility corridor would not significantly change the recreational uses of the area, because the corridor was previously disturbed and the existing visual spectrum

includes a linear type feature. However, these projects would change the vegetated state of the ROW in some areas from forest land to shrub land or grassland. The widened or new Project ROW would eliminate approximately 433 to 813 acres of forestland, depending upon the alternative selected.

The Project generally would span trails such that a direct impact to the individual trail would be minimal. Trails, especially those for OHV use, are often located within existing ROWs. The existing ROW could be used by OHVs, as long as the vehicles are not operated on the inside slope of the ditch, shoulder, or roadway of state or county roads (MnDNR, 2008b and 2008c). Another potential indirect impact would be the encouragement of OHV use by opening up a new ROW that people may use for all terrain vehicle traffic. The use of the ROWs would be a negative impact in sensitive areas, while it would be a positive impact in areas where this type of use is allowed. The addition of the new ROW would allow for the possibility of creating more connections between existing trails, as well as providing new trails for users.

A visual impact, or indirect effect, would result from the inclusion of the poles and conductors, cleared ROW, or widened existing ROW within the viewshed of recreational users, and in particular trail users, during construction and operation. Generally, this impact would be brief because the conductors would be perpendicular to trails and, therefore, observed for only a short time.

Clearing vegetation in the ROWs would indirectly alter the wildlife habitat within the immediate vicinity, potentially affecting viewing and hunting opportunities. Interior forest dependent wildlife may move to a different area of the forest or utilize other existing habitat. Likewise, shrub- or grassland dependent species may become more available for viewing within an opened corridor.

During construction, increased levels of noise and dust may also occur as machinery is moved throughout the overall cumulative Project areas. Worker conversations and movement also would contribute to this impact, although the noise associated with these activities would dissipate after the completion of construction. Dust may be stirred from the ground as machinery is used to raise the poles and to string the conductors, to dig the trench for and recover the pipeline ROWs, construction of the highway road beds, and to perform cleanup activities at the St. Regis Superfund site. Impacts to recreation use from dust generation are expected to be minor and temporary.

Recreational activities also have a passive use value, through observation of wildlife and birds, and attendance at outdoor or forest-related events. These areas primarily include forested lands contained within the CNF. In these instances, people anticipate an uninterrupted view of forest cover or other natural setting and not the presence of structures associated with the transmission lines or pipeline ROWs. People who prefer this type of recreation, therefore, are impacted indirectly by the addition of new transmission and pipelines.

#### **4.2.13. Agriculture**

Although heavily forested as a whole, the Study Area also contains agricultural areas, particularly at the western and eastern edges and along the northern portion of the Study Area. The primary agricultural uses in the Study Area are pasture, row crops, and small grains. Wild rice also is grown commercially (OES, 2009).

Impacts to farmlands usually are greatest during the construction phase. During construction, utility equipment may damage crops, compact the soil, require grading and the temporary relocation of livestock fencing, and temporarily interrupt some farming activities (OES, 2009). Operational impacts would include the loss of farmland once the project features are in place.

All Project alternatives would result in long-term and temporary impacts to lands in agricultural use. During construction, temporary impacts within the ROWs may occur such as soil compaction and crop damages, depending upon the time of construction. Construction activities that may disturb surface soils include site clearing, grading, and excavation activities at structure locations, pulling and tensioning sites, setup areas, and the transport of crews, machinery, materials, and equipment over access routes. This analysis assumes that previously disturbed sites would be used for staging and stringing set up areas. If construction time periods from the Project and Enbridge pipeline construction are staggered, cumulative effects from temporary loss of agricultural land during construction are not expected.

Long-term loss of agricultural land would occur from the addition of Enbridge above-ground pipeline values and access points. However, the pipelines themselves would likely be buried deep enough (a minimum of 36 to 54 inches deep from the top of the pipeline to ground level) that traditional farming activities could continue after construction.

#### **4.2.14. Forestry**

Co-location of the Project and roadway or pipeline expansions on adjacent easements may result in compounding loss of forest, which could affect potential for future timber production and fragment wildlife or vegetation populations. Similar compounding effects may occur if the Project is located adjacent to existing or future CNF forest projects, some of which require a certain amount of forested acreage to study wildlife, vegetation, and fire suppression.

Total acres that would be affected by the Enbridge pipelines are 6,402.1 acres, approximately 1,254.5 acres of which are forested lands.

#### **4.2.15. Mining**

Because there are no direct or indirect effects, there are no cumulative impacts to mining.

#### **4.2.16. Community Services**

Because there are no anticipated long-term direct or indirect effects, there are no cumulative impacts to community services.

#### **4.2.17. Public Utilities**

When a high-voltage AC transmission line is located adjacent to a pipeline, the pipeline may be subjected to electrical interference from electric and magnetic induction, conductive interference, and capacitive effects. Capacitive effects are typically only a concern during pipeline construction when long sections of the pipeline are above ground. If the Project follows the Enbridge pipeline and construction of the Project overlaps with the construction timeframe of the two Enbridge pipelines, precautions would be necessary to mitigate the increased risk of electrical interference. To prevent contact shock hazards, proper horizontal and vertical separation between the transmission line's conductors and equipment used during pipeline construction and maintenance (such as cranes and shovels) must be maintained.

If these electrical interference effects are great enough during normal operation, then a potential shock hazard exists for anyone that touches an above-ground part of the pipeline, such as a valve or cathodic protection test station. In addition, during normal operation, if the induced AC current density at a flaw in the pipeline coating is great enough, AC pipeline corrosion may occur. Lastly, damage to the pipeline coating can occur if the voltage between the pipeline and surrounding soil becomes excessive during a fault condition.

#### **4.2.18. Traffic and Transportation**

Short-term impacts to traffic and transportation may occur during Project construction, due to detours or traffic delays caused by construction vehicles crossing roads, delivering materials, setting guard poles, or stringing conductors.

In locations where the Project is sited in proximity to other cumulative effects projects, especially in locations where the Project would closely follow existing pipeline or roadway ROWs that are undergoing construction during the timeframe of Project construction, road closures and delays could result in compounding traffic delays. The longest delays in traffic would occur on roads with high traffic volumes, including U.S. 2, U.S. 71, and MN 371. However, complete road closures and related detours would

likely last for only short periods of time (a period of hours, as opposed to a period of days), and could likely be anticipated and advertised well in advance for all projects. Some lane closures may be longer-term in nature, particularly where the Project closely parallels a road that is under construction or is located in proximity to construction of a pipeline or other cumulative effects project.

Project Route Alternative 1 and Segment Alternatives B and C have the potential to affect the planned MN 197/U.S. 71 expansion because they cross MN 197 (MP 1-7). In this location, construction of the Project could interfere with and slow highway expansions projects. Multiple construction vehicles in the area could increase traffic delays. Highway construction on MN 197/U.S. 71 is expected to occur in 2010 or 2011. Potential impacts could be reduced by coordinating construction schedules with MnDOT.

Project Route Alternative 2 and the Enbridge pipelines have the potential to affect the planned MN 197/U.S. 71 expansion because they cross MN 197 (MP 2-6). In this location, construction of the Project could interfere with and slow highway expansions projects. Multiple construction vehicles in the area could increase traffic delays. Highway construction is expected to occur in 2010 or 2011. Potential impacts could be reduced by coordinating construction schedules with MnDOT.

Although Route Alternative 3 is the longest of the Route Alternatives and could follow or parallel roadways for the longest distance, the Route Alternative is largely outside of cumulative effects projects identified, including MnDOT highway expansions, the Enbridge pipelines, the Superfund Site, and CNF projects. Thus, fewer cumulative effects to traffic and transportation would be anticipated for Route Alternative 3 than Route Alternatives 1 and 2.

#### **4.2.19. Safety and Health**

Because no direct or indirect effects are expected from magnetic fields associated with this project, no cumulative effects are expected.

Increased construction in the Study Area could result in increased spills and releases of construction-type materials (such as gasoline, diesel, and lubricating and hydraulic fluids); most result from vehicle and construction equipment fueling and maintenance in construction staging areas or along the ROW. However, the potential for spills are much greater if there is a break in a petroleum line once project operation begins. With implementation of Enbridge plans and procedures, including adherence to federal requirements, the reliability and safety of the proposed pipelines would meet or exceed industry standards. Due to these precautions, no adverse cumulative effects are expected.

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#### **4.2.20. Noise**

Noise generated by construction equipment is likely to constitute the greatest temporary noise impact as a result of the cumulative projects. Earth moving machinery like bulldozers or supporting equipment like air compressors or concrete mixers will generate temporary noise above ambient background noise levels. With Project Alternative 3, the cities of Tenstrike, Blackduck, and Deer River would experience construction-related noise impacts while under Alternative 2, the cities of Cass Lake and Bena would be impacted. The impacts at nearest sensitive receptors from construction are expected to comply with the respective local noise ordinances per location as well as the applicable Minnesota noise standard and classifications under which noise generating activity is to occur. For daytime hours, the noise level would range from 60 dBa (L<sub>50</sub>) for the most stringent noise area classification 1 (urban/residential) to 75 dBa (L<sub>50</sub>) for noise area classification 3 (industrial/manufacturing).

In addition, the drilling rig, pumps, generators, and mobile equipment used for Enbridge horizontal directional drilling (HDD) operations produce noise that may impact nearby noise-sensitive uses. If noise from HDD operations cannot be mitigated to the required level, other measures – such as providing temporary lodging at a local motel for affected residents – could be used to avoid exposing residents to objectionable noise. Noise impacts from construction would be temporary and minor if appropriate mitigation measures are implemented.