

4415.0140 LOCATION OF PREFERRED ROUTE AND DESCRIPTION OF ENVIRONMENT

Subpart 1. Preferred route location. The applicant must identify the preferred route for the proposed pipeline and associated facilities, on any of the following documents which must be submitted with the application:

- A. United States Geological Survey topographical maps to the scale of 1:24,000, if available;**
- B. Minnesota Department of Transportation county highway maps; or**
- C. aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the board.**

The Applicants are enclosing herewith as Appendix I, its USGS topographical maps and aerial photo maps for the proposed pipeline route from the North Dakota state line in Kittson County to the Wisconsin state line in Carlton County, Minnesota.

Subpart 2. Other route locations.

All other route alternatives considered by the applicant must be identified on a separate map or aerial photos or set of maps and photos or identified in correspondence or other documents evidencing consideration of the route by the applicant.

In developing the proposed pipeline route, the Applicants studied a variety of alternatives for routing the proposed pipeline. These alternatives consist of system alternatives, route alternatives, and route variations. The Applicants evaluated and compared several factors, including the ability to meet project objectives, technical and economic feasibility, and potential environmental impacts for each alternative.

Section 2.0 of the Environmental Assessment Supplement provides a detailed analysis of all alternatives considered, and Section 4415.0170 of this application provides a summary of this analysis.

Subpart 3. Description of environment.

The applicant must provide a description of the existing environment along the preferred route.

The Applicants have prepared an Environmental Assessment Supplement for the Alberta Clipper/Southern Lights Diluent Projects that provides a description of the existing environment along the proposed route, an analysis of potential human and

environmental impacts, and a discussion of measures that will be taken to protect and restore the right-of-way and to mitigate adverse impacts. A summary of the existing environmental conditions along the pipeline route is provided below. A summary of potential environmental impacts and mitigative measures is provided in Section 4415.0145 of this application.

Socioeconomics

County population levels within the project area range from a low of 4,317 persons in Red Lake County to a high of 197,179 persons in St. Louis County. In general, population levels are low in the northern counties. Population density (an indicator of the extent of development) in the counties affected by the project averages 16.7 people per square mile. This number is lower than the statewide average of 64 people per square mile and reflects the generally rural character of much of the pipeline route. The September 2006 unemployment rates in the project area varied from 4.6 percent in Polk County to 11.3 percent in Clearwater County (compared to a statewide average of 4.2 percent). Employment in the project area is concentrated in the manufacturing, healthcare and social services, agricultural, and retail trade industries. Educational, health, and social service, manufacturing, and retail trade are the top employment industries in the northern counties. Agriculture, forestry, fishing and hunting, mining, and construction are also important industries in the counties along the pipeline route. Per capita income in 2004 ranged from a low of \$22,715 in Red Lake County to a high of \$33,118 in St. Louis County. In general, the pipeline route avoids population centers and residential areas. Twenty-three municipalities are located within approximately 1 mile of the pipeline route and the municipal boundaries of 11 cities would be crossed by the pipeline route.

Section 3.0 of the Environmental Assessment Supplement provides details regarding socioeconomic conditions in areas associated with the Alberta Clipper/Southern Lights Diluent Projects.

Land Use

Using the U.S. Geological Survey (USGS) Land Use and Land Cover Classification System, the Applicants identified land use along the pipeline route and classified it into the following five categories based on prevalent land use and vegetation cover types: open lands, forest lands, agricultural lands, developed lands, and wetlands/open water. The predominant land use identified along the pipeline route is agricultural land, which accounts for 1,993.0 acres (or 42.0 percent) of the total construction area. Of the agricultural land affected, approximately 30.7 percent (or 1,458.2 acres) is cultivated and the remaining 11.3 percent (or 534.8 acres) is pasture land. Other land uses are forest land (1,342.6 acres or 28.3 percent), wetland/open water (762.2 acres or 16.1 percent), and developed land (97.1 acres or 2.0 percent).

The project route predominantly crosses private lands located outside of municipal

areas (200.5 miles or approximately 70.3 percent of the route). The route also crosses federal (21.6 miles), state (18.3 miles) and county lands (33.3 miles) as well as incorporated areas (11.4 miles). County lands consist of tax-forfeited parcels. Incorporated areas crossed by the pipeline include the Cities of Plummer, Oklee, Trail, Leonard, Wilton, Bemidji, Cass Lake, Bena, Zemple, Warba, and Floodwood.

Section 4.0 of the Environmental Assessment Supplement provides details regarding land uses associated with the Alberta Clipper/Southern Lights Diluent Projects.

Terrain and Geology

The majority of the project area is located within the Western Lake Section of the Central Lowlands Physiographic Province. Topography is characterized by large, gently rolling till plains, hilly areas formed by glacial moraines, and outwash plains. The remainder of the project area is located in the Superior Upland physiographic province. Topography in this area is characterized by many low, rounded hills and rock-bottomed lakes formed in basins gouged in the rock by glaciers. Along the pipeline route depth to bedrock can exceed more than 450 feet. Less than 1 percent of the route crosses areas with bedrock at depths of less than five feet. These areas of shallow bedrock are located in St. Louis County and consist primarily of shale and siltstone; therefore, blasting and other methods required for construction in bedrock may be employed during construction.

There is a low probability for earthquakes of significant intensity or other seismic events in the project area, and no Quaternary-age faults are crossed by the project route.

Ten sand and gravel quarry operations are present within 1,500 feet of the pipeline route.

Section 5.0 of the Environmental Assessment Supplement provides details regarding geological resources associated with the Alberta Clipper/Southern Lights Diluent Projects.

Soils

The pipeline route will cross the following Major Land Resource Areas (MLRAs): Red River Valley of the North; Northern Minnesota Gray Drift; Northern Minnesota Glacial Lake Basins; and Superior Stony and Rocky Loamy Plains and Hills, Western Part. The Red River Valley of the North MLRA consists of a nearly level glacial lake plain that is bordered on the east by outwash plains, gravelly beaches, and dunes. The dominant soils in this area are Mollisols and Vertisols. The Northern Minnesota Gray Drift MLRA consists of a complex pattern of moraines, outwash plains, drumlins, lake plains, and drainages. The dominant soils in this area are Alfisols, Entisols, and Histosols, with some Mollisols in the westernmost

part of the area. The Northern Minnesota Glacial Lake Basin MLRA consists of glacial lake plains with remnants of gravelly beaches, strandlines, deltas, and sandbars. The dominant soils in this area are Alfisols, Entisols, and Histosols. The Superior Stony and Rocky Loamy Plains and Hills, Western Part, MLRA consists of numerous drumlin fields, moraines, small glacial lakes, outwash plains, and bedrock-controlled uplands. The dominant soils in this area are Entisols, Inceptisols, and Histosols. The above mentioned MLRAs generally contain very deep, somewhat poorly to very poorly drained soils with a sandy to clayey texture, and have a frigid temperature regime, an aquic or udic soil moisture regime, and mixed, smectitic, or isotic mineralogy.

Approximately 42% of the soils within the project area are considered prime farmland, 45% are hydric, 31% are compaction-prone, 41% are susceptible to erosion, 34% pose re-vegetative concern, and less than 1% of the soils contain bedrock within 5 feet of the surface.

Section 6.0 of the Environmental Assessment Supplement provides details regarding soil resources associated with the Alberta Clipper/Southern Lights Diluent Projects.

Vegetation, Wildlife, and Fisheries

The pipeline route will be constructed through multiple biomes, including the deciduous and conifer-hardwood forest zones and the prairie zone. Wildlife habitats within these areas are diverse and include open areas, wetlands, and forested areas. In agricultural lands within these zones, wildlife habitat is more limited and confined primarily to the undeveloped areas. Within agricultural land, some of the species commonly present include white-tailed deer, pheasant, and raccoon; as well as a few bird species such as starlings, crows, eastern meadowlark, and sparrows.

The emergent wetlands provide habitat for a variety of aquatic wildlife, including muskrat, beaver, mink, waterfowl, wading birds, and numerous species of reptiles and amphibians. The scrub-shrub wetlands and forested wetlands provide additional habitat for terrestrial wildlife, such as the white-tailed deer, moose, gray wolf, fox, bear, porcupine, and a variety of small mammals and songbirds.

Some of the common mammalian species in forests include white-tailed deer, bear, eastern cottontail rabbit, woodchuck, raccoon, skunk, gray and fox squirrel, gray and red fox, and several species of bat. The structural diversity of the forest provides a variety of habitats that can support a large number of avian species, including songbirds, hawks, and owls.

The pipeline route crosses 57 perennial and 71 intermittent waterbodies in Minnesota. Most of these waterbodies contain warm water fisheries. The pipeline route will also cross five designated trout streams near the eastern border in Minnesota. Game fish that may occur in stream crossings in the project area

include: walleye, sauger, northern pike, muskellunge, sunfish, crappie, perch, channel catfish, bluegill, largemouth and smallmouth bass, and brown trout. Other fish that may occur within the project area include: carp, bullhead, suckers, sculpin, burbot, redhorse, minnows, and other forage fish.

The MNDNR and the U.S. Fish and Wildlife Service (USFWS) were consulted on the presence of threatened and endangered species in the vicinity of the project. The MNDNR conducted a review of the Minnesota Natural Heritage database to determine if any federally or state-listed species are known to occur within approximately one mile of the project. The Minnesota Natural Heritage database indicated 16 known occurrences of rare species or native plant communities in the area searched. The USFWS indicated that the home ranges of two other federally listed species (gray wolf and Canada lynx) are located in the vicinity of the project but no known occurrences of these species have been recorded in the project area.

Section 7.4 of the Environmental Assessment Supplement provides detailed information about protected species consultations for this project.

Water Resources – Groundwater

Groundwater along the route occurs in surficial aquifers and buried drift aquifers. Surficial aquifers occur above bedrock in unconsolidated sediments deposited by glaciers, streams, and lakes. Buried drift aquifers occur in well sorted sands and gravels deposited in bedrock valleys, alluvial channels, and outwash plains. Of the two types, surficial aquifers are most susceptible to impacts from construction because of the relatively shallow depth of the water table and coarse texture of the material overlying the aquifer.

The Applicants identified 27 domestic water supply wells within 200 feet of the pipeline route. No public water supply wells are located within 100 feet of the pipeline route. The pipeline route will not cross any aquifers that are designated by the US Environmental Protection Agency (EPA) as sole-source aquifers. The project route crosses two Drinking Water Supply Management Areas (DWSMA). The route would cross about 0.4 mile of the DWSMA near MP 886.4 in the vicinity of Oklee, MN and 2.8 miles, from MP D1006.8 to D1009.6, of the DWSMA near Grand Rapids. The MDH rates the vulnerability of the Oklee area as low and the Grand Rapids area as low and moderate. The pipeline will cross the Grand Rapids 2 Wellhead Protection Area (WPA), and the Grand Rapids Central WPA.

The Applicants accessed a Minnesota Pollution Control Agency database to identify sites with known or potential contamination within 0.5 mile of the project. The Applicants identified 16 sites within 0.5 mile of the route. Thirteen of the 16 sites were determined to be more than 500 feet from the pipeline route and, therefore, are not anticipated to affect the project. Prior to construction of the project, the Applicants will assess the potential for encountering contaminated groundwater near the sites that are within 500 feet of the pipeline route. If

necessary, appropriate avoidance or mitigation measures will be developed and implemented in accordance with applicable state or federal regulations.

Section 8.0 of the Environmental Assessment Supplement provides details regarding groundwater resources associated with the Alberta Clipper/Southern Lights Diluent Projects.

Water Resources – Surface Water

Surface waters crossed by the project route are located within the Red River of the North, Mississippi Headwaters, St. Croix River, and Western Lake Superior Basins. The project will cross three watershed management districts, the Two Rivers, Middle-Snake-Tamarac, and Red Lake districts. The primary purpose of these watershed districts and organizations is to conserve the natural resources of the state through land use planning, flood control, and other conservation practices.

The Applicants reviewed existing maps, USGS 7.5-minute-series topographic maps, NWI Maps, MDNR Protected Waters and Wetlands Maps, and Minnesota Public Recreation Information Maps, and aerial photography to identify waterbodies (lakes, streams, rivers, and drainage ditches) crossed by the pipeline route. This review identified 128 waterbodies crossed by the pipeline route including 57 perennial streams and 71 intermittent streams. Ten of these waterbodies are designated as Protected Waters by the MDNR.

For routing and planning purposes, the Applicants used National Wetland Inventory (NWI) data to estimate the number, size, and locations of wetlands along the pipeline route. A total of 475 wetlands were identified within a 150-foot-wide survey corridor along the pipeline route. A total of approximately 45.9 linear miles of wetlands will be crossed by the pipeline route. The pipeline route will cross 10 wetlands (public water wetland) listed on the MDNR Protected Waters Inventory.

Section 9.0 of the Environmental Assessment Supplement provides details regarding surface water resources associated with the Alberta Clipper/Southern Lights Diluent Projects.

Cultural Resources

The Applicants reviewed the Minnesota State Historic Preservation Office's (SHPO's) site files to identify previously recorded cultural resources within the construction right-of-way. This review identified nine archaeological sites, three of which (21CE60, 21BL200, and 21MA39) have been determined eligible for nomination to the NRHP. Five of the remaining six sites (21CA569, 21CA571, 21CA572, 21CA573, and 21CA575) were assessed as potentially eligible and additional testing was recommended. The final site (21CA570) was assessed as ineligible and no additional testing was recommended. The Applicants are currently conducting field surveys to identify cultural resources along the pipeline route. If the survey identifies any sites that are eligible for listing in the NRHP, the

Applicants will consult with the appropriate agencies including Minnesota SHPO to identify measures to avoid, minimize, or mitigate adverse effects on these sites.

Refer to section 10.0 in the Environmental Assessment Supplement for detailed information regarding cultural resources.

Federal, State, and County Recreational Areas

The project route will not cross any national parks, state parks, national wildlife management areas, state wildlife management areas, county parks, or state- or county-designated trails. However, the pipeline route will cross a national forest, state and county forests, designated scenic byways, and state-designated canoe and boating routes as discussed in section 11.1 of the Environmental Assessment Supplement.