

4.0 LAND USE

4.1 EXISTING LAND USE

Land use along the preferred route was classified using the USGS Land Use/Land Cover (“LULC”) Classification System. This system utilizes satellite imagery to classify land use into 29 categories. For the Project, these USGS land use categories were combined into five general categories: open land, forest land, agricultural land, developed land, and wetland/open water based on prevalent land use and vegetation cover types. Land use along the preferred route was classified by milepost into one of the five categories. Definitions of the five land use categories (per the USGS LULC Classification System) include:

- Agricultural Land consists of areas classified as cultivated crops and pasture.
- Developed Land consists of areas classified as low intensity developed, medium intensity developed, and high intensity developed.
- Forest Land consists of areas classified as deciduous forest, evergreen forest, and mixed forest.
- Open Land consists of areas classified as barren land, developed open space, shrub/scrub, and grasslands or herbaceous areas.
- Wetland/Open Water consists of areas classified as woody wetlands, emergent herbaceous wetlands, and open water.

It should be noted that the land use impacts presented in the following sections are based on USGS LULC digital data only and do not reflect information gathered from field surveys, aerial desktop surveys, or field reconnaissance.

4.2 LAND USE AFFECTED BY PIPELINE CONSTRUCTION AND OPERATION

The total land requirements for the Project generally include a 120-foot-wide construction right-of-way in upland areas and a 95-foot-wide construction right-of-way in wetland areas with additional temporary workspaces at feature crossings (e.g., roads, waterbodies). Table 1.2-1 presents land requirements for the Project.

At this time, NDPC has identified a number of access roads, pipeyards and rail sidings necessary for construction; additional pipeyards and contractor yards will be identified as Project planning and engineering progresses. NDPC considered sensitive environmental features when planning the placement of its pipeyards and use of the pipeyards will not impact sensitive environmental features. Access roads and yards known as of the date of this filing are presented in Tables 1.2.3-1 and 1.2.2-1.

For the approximately 302-mile-long segment across Minnesota, construction will affect approximately 4,266.1 acres of land. The predominant land use identified along the

preferred route is agricultural land, which covers 1,610.3 acres (or 37.7 percent) of the total construction area. Of the agricultural land affected, approximately 1,004.4 acres is cultivated and the remaining 606.0 acres is pasture land. Forested land accounts for 1,524.5 acres (or 35.7 percent) of the total construction area. Other land uses are wetland/open water (614.2 acres or 14.4 percent), open land (510.2 acres or 12.0 percent), and developed land (6.8 acres or less than 1 percent). Table 4.2-1 provides a summary of the land use categories affected by the Project's construction right-of-way and additional temporary workspaces in Minnesota.

Aboveground facilities associated with the Project will include additional infrastructure at the new Clearbrook terminal including tankage, pumps, meters, and new piping. A new pump station will also be sited at Clearbrook and will include pumps, VFD's, and pump and VFD shelters. Mainline valves will be placed at major waterbody crossings and other features along the preferred route. Additionally, new launch and receiver traps, along with a mainline valve, will be installed at a site near Pine River, Minnesota.

The land use categories that will be affected resulting from the siting of the new Clearbrook terminal facilities include agricultural land (122.9 acres or 77.1 percent of the site), wetland (14.6 acres or 9.2 percent), forested land (11.4 acres or 7.1 percent), and open land (10.5 acres or 6.6 percent). Geotechnical and engineering reviews at this site are complete. Construction will only occur on a portion of the parcel presented in this land use analysis. Archaeological surveys at this site were completed in 2013; wetlands and waterbody surveys will occur in 2014.

The land use categories that will be affected resulting from the siting of the Pine River facility include agricultural land (10.6 acres or 79.6 percent of the site), open land (1.4 acres or 10.6 percent), and forest land (1.3 acres or 9.8 percent). Field surveys are complete at the Pine River facility. Construction will only occur on a portion of the parcel presented in this land use analysis.

Following construction in areas where Sandpiper is co-located with existing NDPC right-of-way, NDPC will retain additional permanent right-of-way beyond the existing right-of-way. In areas where Sandpiper is co-located with other third party rights-of-way or is in greenfield areas, new permanent right-of-way will be obtained. The dimensions of the additional right-of-way used for environmental analysis purposes only are as follows:

- 55-foot-wide permanent right-of-way for all areas west of the Clearbrook terminal; when co-located with existing right-of-way, 30 feet will be existing easement and 25 feet will be new permanent right-of-way;
- 50-foot-wide permanent right-of-way in uplands east of the Clearbrook terminal;
- 50-foot-wide permanent right-of-way in small wetlands east of the Clearbrook terminal; and

-
- 50-foot-wide permanent right-of-way east of the Clearbrook terminal in areas where winter construction will be utilized (e.g., large wetland complexes).

Table 4.2-2 presents a summary of the land use categories affected by operation of the pipeline.



**Table 4.2-1
 Land Uses Affected by Construction of the Sandpiper Pipeline Project ^a**

County	Forested		Agricultural		Developed		Open Land		Wetland/Open Water		Total	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Polk	16.0	0.4%	743.3	17.4%	3.0	0.1%	46.0	1.1%	39.1	0.9%	847.3	19.9%
Red Lake	1.8	<0.1%	143.0	3.4%	0.6	<0.1%	4.2	0.1%	11.6	0.3%	161.2	3.8%
Clearwater	268.1	6.3%	183.3	4.3%	0.3	<0.1%	62.1	1.5%	39.1	0.9%	552.9	13.0%
Hubbard	414.4	9.7%	220.9	5.2%	1.0	<0.1%	66.2	1.6%	44.0	1.0%	746.5	17.5%
Cass	375.2	8.8%	69.9	1.6%	0.3	<0.1%	157.5	3.7%	62.7	1.5%	665.6	15.6%
Crow Wing	38.9	0.9%	10.9	0.3%	0.0	—	18.6	0.4%	2.3	0.1%	70.8	1.7%
Aitkin	219.1	5.1%	145.0	3.4%	0.0	—	74.0	1.7%	236.0	5.5%	674.1	15.8%
Carlton	191.0	4.5%	94.0	2.2%	1.6	<0.1%	81.6	1.9%	179.4	4.2%	547.7	12.8%
Total ^b	1,524.5	35.7%	1,610.3	37.7%	6.8	0.2%	510.2	12.0%	614.2	14.4%	4,266.1	100.0%

^a Calculations are based on the construction right-of-way described in Section 4.2 and additional temporary workspaces. Calculations do not include aboveground facilities.
^b Due to rounding, totals may be off slightly.



**Table 4.2-2
 Land Uses Affected by Operation of the Sandpiper Pipeline Project ^a**

County	Forested		Agricultural		Developed		Open Land		Wetland/Water		Total	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Polk	6.6	0.4%	334.2	17.9%	1.4	0.1%	19.2	1.0%	21.9	1.2%	383.4	20.5%
Red Lake	0.9	<0.1%	67.3	3.6%	0.3	<0.1%	1.8	0.1%	5.7	0.3%	75.9	4.1%
Clearwater	113.5	6.1%	81.0	4.3%	0.1	<0.1%	28.0	1.5%	20.6	1.1%	243.3	13.0%
Hubbard	168.9	9.0%	92.5	4.9%	0.5	<0.1%	31.4	1.7%	25.1	1.3%	318.3	17.0%
Cass	142.8	7.6%	30.5	1.6%	0.1	<0.1%	76.2	4.1%	30.2	1.6%	279.8	14.9%
Crow Wing	15.1	0.8%	4.6	0.2%	0.0	—	8.6	0.5%	0.9	<0.1%	29.2	1.6%
Aitkin	96.3	5.1%	61.2	3.3%	0.0	—	35.2	1.9%	112.4	6.0%	305.1	16.3%
Carlton	74.5	4.0%	38.7	2.1%	0.7	<0.1%	36.3	1.9%	86.8	4.6%	237.0	12.7%
Total^b	618.6	33.0%	710.0	37.9%	3.1	0.2%	236.7	12.6%	303.6	16.2%	1,872.0	100%

^a Calculations are based on the operational right-of-way described in Section 4.2. In most cases, the right-of-way will be allowed to revert to the original land use during operation of the Project. These calculations do not include aboveground facilities.

^b Due to rounding, totals may be off slightly.

4.2.1 Ownership Status of Lands Crossed by the Pipeline

As shown in Table 4.2.1-1, the preferred route predominantly crosses private lands located outside of municipal areas (230.8 miles or approximately 75.5 percent of the route). The preferred route also crosses state lands owned and managed by various state agencies (28.1 miles or 9.2 percent) and county lands (47.0 miles or 15.4 percent). County lands include lands that may be owned by the state but administered by the county (tax-forfeiture lands). NDPC continues to work with appropriate state land-managing agencies to identify and obtain the necessary licenses to cross these lands.

Ownership	Crossing Length (miles)	Percentage of Route
State Lands	28.1	9.2
County Lands	47.0	15.4
Private Lands	230.8	75.5
Total ^a	301.6	100
^a The source of this data is the MNDNR 2008 GAP Stewardship dataset available on MNDNR's DataDeli. The total does not equal the sum of the addends, This data should be used as an approximation only, as the GAP dataset has overlapping features, causing some crossings to be over-represented. NDPC continues to consult with private landowners, counties, and state agencies regarding the ownership of lands crossed by the Project route.		

4.2.2 Areas with Comprehensive Land Use Plans

The Project will cross two watershed districts and eight counties where comprehensive land use plans have been established. These are the Wild Rice and Red Lake Watershed Districts; and Polk, Red Lake, Clearwater, Hubbard, Cass, Crow Wing, Aitkin, and Carlton counties. Watershed Districts are further discussed in section 9.1.

NDPC has initiated consultations with affected watershed districts and counties to ensure that the Project is designed and constructed in a manner that is consistent with these land use plans.

4.3 GENERAL CONSTRUCTION AND OPERATION IMPACTS AND MITIGATION

4.3.1 Forest Land

Approximately 1,524.5 acres of forest land will be temporarily disturbed during construction in Minnesota. Construction in most forested areas will be adjacent to existing pipeline or other third party rights-of-way. Following construction, approximately 618.6 acres of forest will be permanently converted to shrub and herbaceous cover types. This conversion is

required to facilitate safe pipeline operation and inspection. The remaining temporarily cleared forestland in the construction right-of-way will be allowed to revegetate.

Localized short- and long-term impacts will result from the construction of the pipeline through forested areas. Trees and brush will be removed from the construction right-of-way and additional temporary workspaces. Overlapping the construction right-of-way with existing maintained right-of-way to the greatest extent possible minimizes impacts on forest land. The existing permanent right-of-way will be maintained in an herbaceous state to facilitate aerial inspection.

Following construction, forested areas located on the new permanent right-of-way will be seeded to promote herbaceous cover types. Consistent with previous practices, the new permanent right-of-way will be maintained in an herbaceous state. Forested areas on the temporary right-of-way and in additional temporary workspaces will be restored to allow the natural reestablishment of forest cover. The rate of forest reestablishment will depend upon the type and age of the vegetation cleared, as well as the natural fertility of the areas affected. It is anticipated that early successional species will begin to colonize the temporary right-of-way and additional temporary workspaces within a few years after construction, followed by establishment of later successional species.

4.3.2 Agricultural Land

Approximately 1,610.3 acres of agricultural land will be temporarily disturbed during construction in Minnesota. Construction activities will temporarily utilize active cropland within construction work areas. Construction activities may also coincide with planting or harvesting, depending on the construction season. Following construction, agricultural activities will resume across the permanent pipeline right-of-way.

NDPC will maintain access to fields, storage areas, structures, and other agricultural facilities during construction, and will maintain irrigation and drainage systems that cross the right-of-way to the extent practicable. Impacted drainage systems will be repaired in accordance with the APP (see Appendix C). Agricultural land in the construction right-of-way will generally be taken out of production for one growing season and restored to previous uses following construction. Landowners will be compensated for crop losses and other damages caused by construction activities.

Based on a review of publicly-available information, including aerial photos along the preferred route and field review, NDPC anticipates that approximately 16 center-pivot irrigation systems will be crossed by the Project. Construction activities may interrupt the center-pivot irrigation systems, depending on the construction season. Irrigation systems that could be interrupted and result in crop damage will be identified and appropriate measures will be taken in accordance with the APP (see Appendix C).

NDPC will implement measures to avoid, minimize, or mitigate potential impacts on soil productivity in accordance with the APP (see Appendix C). These measures include erosion control, topsoil segregation, rock removal, and measures to avoid compaction or loosen compacted soils. To prevent soil compaction, drainage alteration, and damage to crops, operation of equipment on agricultural lands will be limited to access routes agreed upon with landowners.

NDPC will also take appropriate measures to protect livestock during construction. To minimize short-term disruption to livestock operations, NDPC will minimize the length of time that the trench is open and will coordinate with landowners to minimize disruption of access. Where appropriate, NDPC will maintain temporary access ways across the trench as necessary to allow the passage of livestock, and will erect temporary fences (including gates) as necessary to contain and protect livestock from construction-related hazards. After completing construction, fences and gates will be rebuilt to their former condition or better.

NDPC consulted with the Minnesota Department of Agriculture (“MDA”) to determine if any organic farms will be crossed by the preferred route. MDA provided a list of certified organic farms based on the farms’ participation in voluntary MDA organic programs, information supplied by organic certifying agencies, and the National Organic Program. Organic farmers are not required to register with the MDA, therefore, farms exempt from the requirement to certify and farms in transition to organic certification were not available. NDPC also learned of organic farms through a variety of project public outreach.

Appendix A of the APP (see Appendix C for the APP) sets forth the specific additional mitigation measures that will be applied specifically to Organic Agricultural Lands, such as Organic Certified farms or farms that are in active transition to become Organic Certified. NDPC will continue to work with affected landowners to identify organic farms and will implement mitigation measures accordingly.

4.3.3 Wetland/Open Water

Approximately 614.2 acres of open water and wetlands will be affected by construction of the Project. The open water will be affected at crossings of streams, rivers, and lakes. NDPC has reduced the construction workspace width to 95 feet in wetlands to reduce impacts on these areas and will continue to evaluate workspaces in wetland areas as construction planning progresses. Following construction, wetlands will be allowed to revegetate naturally. Construction impacts associated with these crossings are discussed in Section 9.3.4 and the EPP (see Appendix A).

4.3.4 Open Land

Approximately 510.2 acres of open land will be temporarily disturbed during construction of the Project. Open land will be temporarily disturbed during grading, trenching, backfilling,

and restoration. After final construction clean up, the open land in upland areas will be reseeded and mulched in accordance with the EPP (see Appendix A).

4.3.5 Developed Land

Approximately 6.8 acres of developed land will be affected during construction of the Project. Based on examination of aerial photographs, there are approximately 168 residences within 500-feet of the construction right-of-way (see Table 4.3.5-1). In addition, there are 21 residences within 50-feet of the construction right-of-way.

County	500-Feet	50-Feet
Polk	23	0
Red Lake	1	0
Clearwater	27	2
Hubbard	46	8
Cass	7	2
Crow Wing	2	0
Aitkin	21	1
Carlton	41	8
Total	168	21

During construction, residences in proximity to construction activities may be exposed to short-term increases in construction-related noise and dust. Construction-related dust emissions will generally be of short duration and dependent on soil type, weather conditions, and the extent of ground disturbance. Some minor dust emission is inevitable on any construction project; however, the construction right-of-way and access roads near residential areas will be sprayed with water as needed to control dust during active construction. During periods of high winds, work may be temporarily suspended if control measures are ineffective and if dust is excessive for the area. After construction is completed, measures to stabilize and revegetate the right-of-way will prevent ongoing dust emissions.

The heavy construction equipment needed to construct the Project will generate unavoidable short-term increases in ambient noise levels. Typical bulldozers, trackhoes, and sideboom tractors used to install large-diameter pipelines generate 80 to 90 decibels within 50-feet of the equipment. Increases in ambient noise levels due to heavy equipment operation will be limited to the construction period. Construction activities will generally be limited to daylight hours. No noise will be generated along the pipeline right-of-way during normal operation of the facility.

Some operational noise will be generated by the new Clearbrook terminal. NDPC's standards restrict the noise levels around neighboring dwellings and industrial facilities to 40 decibels, measured at a distance of 50-feet from the affected structure, unless state regulations allow higher noise levels. Noise control is incorporated into the design if these levels are exceeded.

4.3.6 Transportation Infrastructure

Roads and Railroads

The Project will cross federal, state, county, city/township, and private/commercial roads, and railroads. In total, the preferred route will cross 304 roads as summarized in Table 4.3.6-1; a complete list of road crossings is included in Appendix B.

County	State or Federal	County/City	Private/Commercial
Polk	4	52	6
Red Lake	1	9	0
Clearwater	3	34	11
Hubbard	4	41	31
Cass	4	26	9
Crow Wing	0	2	2
Aitkin	2	22	4
Carlton	4	27	6
Total	22	213	69

Construction methods will vary among roadway types crossed by the Project. Typical crossing methods are discussed in NDPC's EPP (see Appendix A). NDPC proposes to bore beneath most paved roads allowing them to remain open during construction. Open-cut construction is typically proposed for unpaved roads, which will require temporarily closing these roads and implementing detours. If no reasonable detour is feasible, at least one traffic lane will be maintained, except for brief periods essential to laying the new pipeline. Construction disturbance at each open-cut road crossing will typically be limited to one day, which is not expected to have a significant impact on local traffic patterns. Detour, warning, traffic control, and safety signs will be posted as prescribed by federal, state, and local (county) departments of transportation. Attempts will be made to avoid road closures during peak-traffic time periods.

The Project will cross the Burlington Northern Santa Fe and the Canadian Pacific Railways at seven locations in Polk, Red Lake, Clearwater, Hubbard, and Aitkin counties as identified in Table 4.3.6-2. NDPC plans to cross most railroads by boring beneath them. Two crossings of the Burlington-Northern Santa Fe Railroad (one in Polk County at MP 307.5

and one in Clearwater County at MP 388.1) will be crossed by HDD. Both of these construction methods will allow the railroads to remain operational during construction. No long-term effects are expected on roads and railroads crossed by the preferred route because the function of these areas will be restored after construction.

County	Milepost	Description	Township	Range	Section
Polk	307.5	Burlington Northern Railway	150	48	5
	318.8	Burlington Northern Railway	150	46	7
Red Lake	334.0	Burlington Northern Railway	150	44	27
Polk	347.7	Canadian Pacific Railway	149	42	2
Clearwater	388.1	Burlington Northern Railway	147	37	28
Hubbard	443.9	Burlington Northern Railway	139	35	34
Aitkin	550.3	Burlington Northern Railway	48	23	22

Designated Roadways

The King of Trails Scenic Byway

The King of Trails Scenic Byway (Minnesota State Highway 75) stretches along 414 miles of Minnesota’s western border. Scenery along the byway includes prairies and farmlands. The Project will cross Minnesota State Highway 75 at approximate 318.5. NDPC proposes to bore this crossing. NDPC will consult with Polk County and MDOT regarding construction crossing techniques, restoration, and rerouting of traffic to area roadways during the construction period.

Lake Country Scenic Byway

The Lake Country Scenic Byway (Minnesota State Highway 34) is 88 miles long and was designated in 1999. The byway is made up of a 67-mile portion on Minnesota State Highway 34 from Detroit Lakes through Park Rapids to Walker, and a 21-mile spur connecting Park Rapids with Itasca State Park. The Project will cross the Lake Country Scenic Byway at approximate 433.6 in Hubbard County. NDPC proposes to bore this crossing. NDPC will consult with Hubbard County and MDOT during the permitting process regarding construction crossing techniques, restoration, and rerouting of traffic to area roadways during the construction period.

The Great River Road

The Great River Road (CSAH 10) in Minnesota has two components: a federally designated 430-mile National Route and a 755-mile state-designated alternate route. Combined, the route provides 1,185 miles of scenic, historic, and recreational opportunities for travelers. The Project will cross the Great River Road at approximate MP 403.4 in Clearwater County and approximate MP 533.8 in Aitkin County. NDPC proposes to bore this crossing. NDPC

will consult with Clearwater and Aitkin counties and MDOT during the permitting process regarding construction crossing techniques, restoration, and rerouting of traffic to area roadways during the construction period.

Veterans Evergreen Memorial Scenic Byway

Commonly referred to as the scenic road to Duluth, the Veterans Evergreen Memorial Scenic Byway occurs along a 50-mile stretch of State Highway 23 that runs from Banning State Park to New Duluth. The Project will cross Minnesota State Highway 23 at approximate MP 598.7 in Carlton County. NDPC proposes to bore this crossing. NDPC will consult with Carlton County and MDOT during the permitting process regarding construction crossing techniques, restoration, and rerouting of traffic to area roadways during the construction period.

Airports

Several airports are located within 1 mile of the preferred route in Minnesota. The airports include the Crookston Municipal Airport, the Bagley Airport, McGregor Municipal, and private airpark Sky Manor Aero Estates. NDPC will consult with the Federal Aviation Association and any other appropriate agencies regarding construction techniques and restoration of this area during the permitting process.