

Appendix E

System, Route, and Route Segment Alternatives for the
Sandpiper Pipeline Project and Line 3 Replacement Project

System, Route, and Route Segment Alternatives

The 2014, 2015, and 2016 scoping periods resulted in a number of alternatives to North Dakota Pipeline Company’s (NDPC’s) preferred route for the Sandpiper Pipeline Project (Applicant’s preferred route for Sandpiper) and Enbridge’s preferred route for the Line 3 Replacement Project (Applicant’s preferred route for L3R) to be considered in the process of preparing the Draft Environmental Impact Statements (DEISs). These alternatives are categorized as follows:

- **System alternatives (SAs):** Route for a new pipeline with different origin, destination, or intermediate points of delivery than those proposed by the Applicants.
- **Route alternatives (RAs):** Relatively long sections of new pipeline with the same origin, destination, and intermediate points of delivery as those proposed by the Applicants. Can be evaluated as an entire route.
- **Route segment alternatives (RSAs):** A short deviation along the Applicant’s preferred route (i.e., tenths of miles to a few miles in length). These begin and end at intermediate points along a route alignment and are considered to resolve or mitigate a perceived localized resource conflict.

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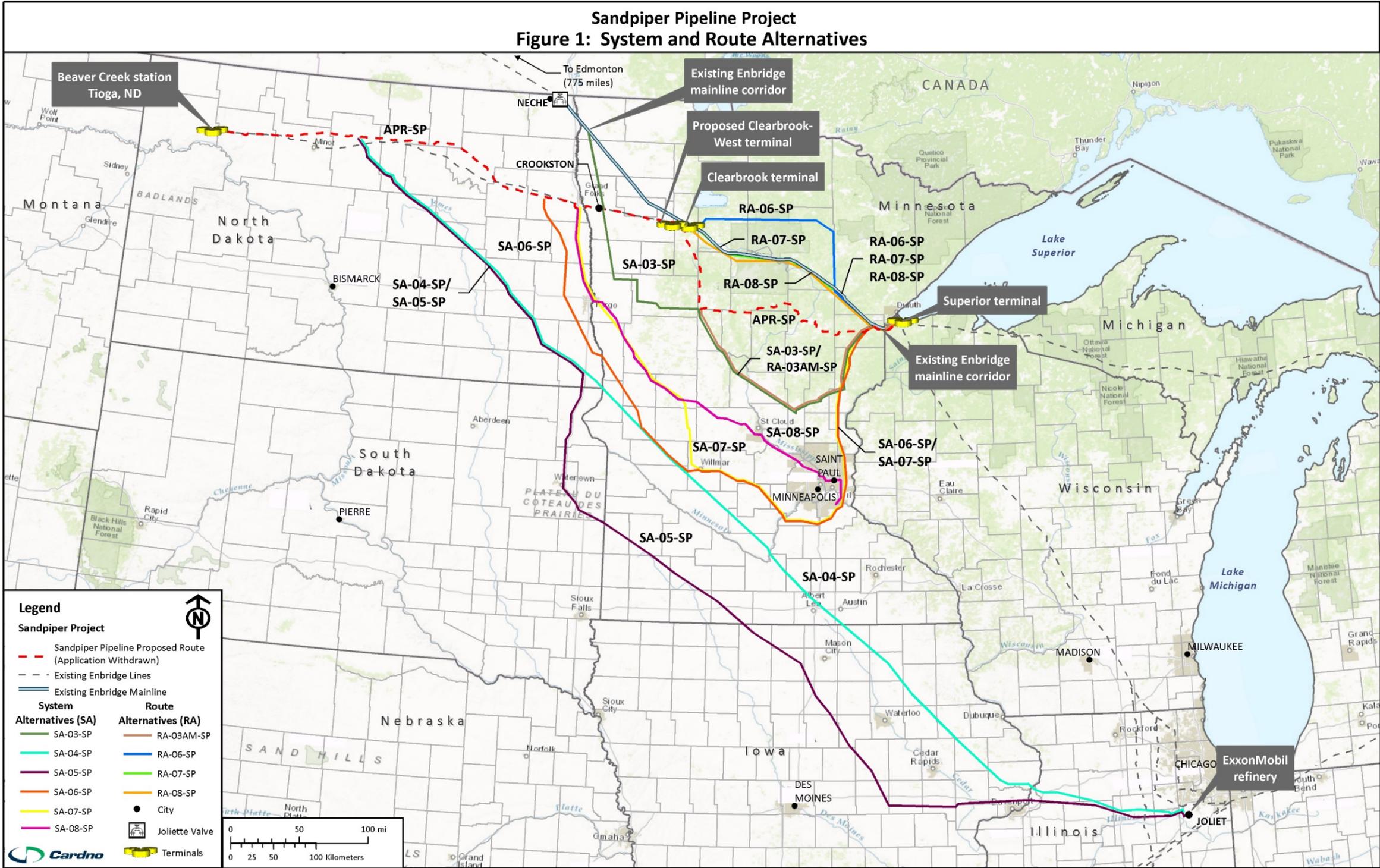


FIGURE E-1 Sandpiper Pipeline Project System and Route Alternatives

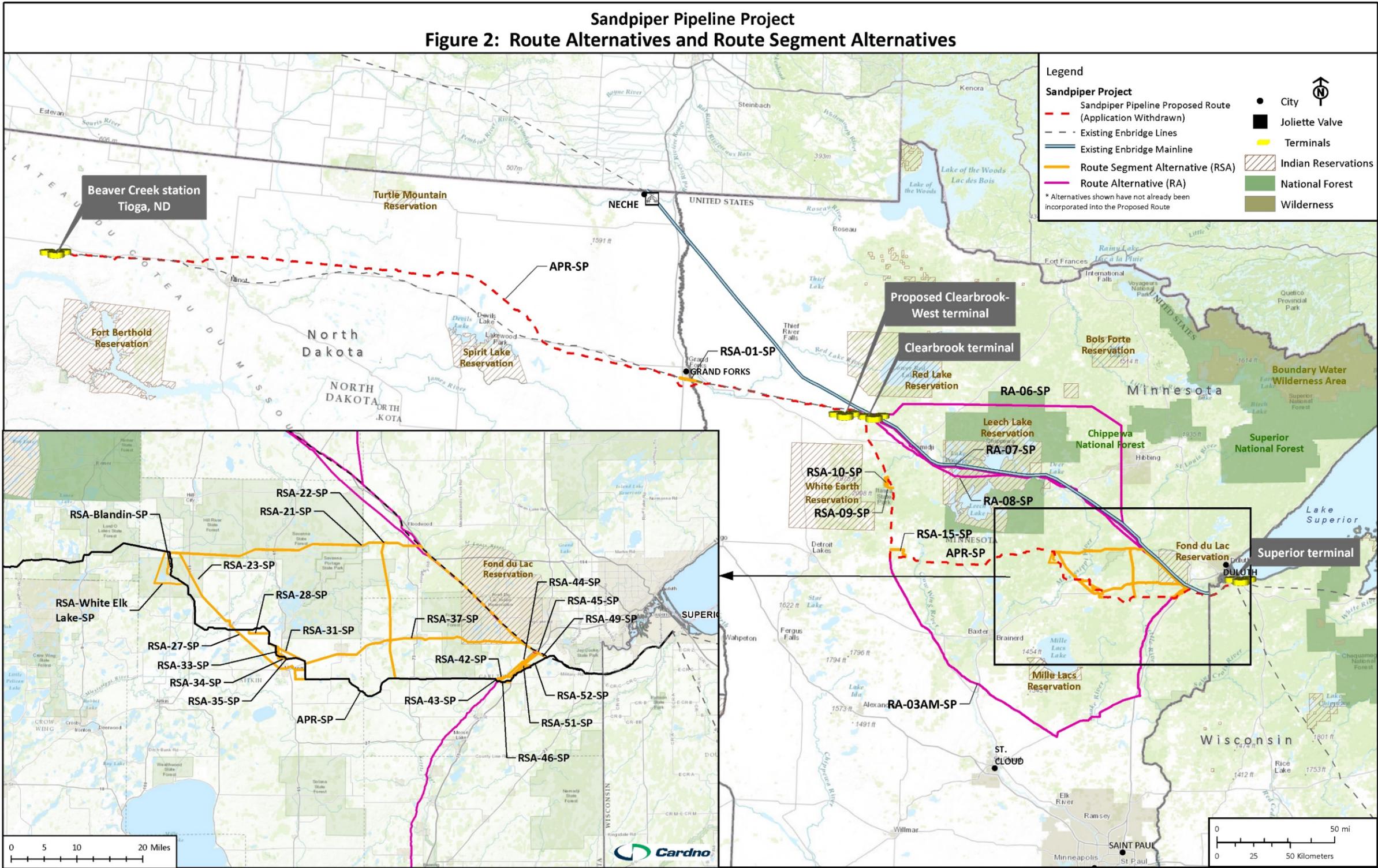


FIGURE E-2 Sandpiper Pipeline Project Route Segment Alternatives

TABLE E-1 Sandpiper Pipeline Project – System and Route Alternatives								
Alternative Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-1 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)
Applicant's Preferred Route (APR-SP)	Beaver Creek Station Tioga, ND	Clearbrook (Clearwater County, MN)	Superior, WI	<p>Route: The Applicant's Preferred Route (APR-SP; previously proposed) would have originated at Enbridge's terminal at the Beaver Lodge Station south of Tioga, North Dakota, which is located in northwestern North Dakota. The APR-SP would have run eastward across North Dakota, crossing into Minnesota just south of Grand Forks, North Dakota. Crossing North Dakota, the APR-SP generally paralleled U.S. Highway 2. The Minnesota portion of the pipeline route began at the Minnesota-North Dakota border approximately 2 miles south of Grand Forks, North Dakota, and followed Enbridge Energy Partners' existing pipeline ROW to Clearbrook, Minnesota, which is located approximately 10 miles north of the U.S. Highway 2 corridor in Clearwater County.</p> <p>From Clearbrook the route would have generally followed the existing Minnesota Pipe Line Company ROW south into Hubbard County. The route ran along the western border of Hubbard County to the locale of Park Rapids. South of Park Rapids, near the border of Wadena County, the route turned eastward entering Cass County. It continued to the east across Aitkin County, generally following portions of existing ROWs for electric transmission lines through generally undeveloped and agricultural areas. In Aitkin County, the route tended to the southeast to the vicinity of McGregor, and then turned east, entering the western portion of Carlton County south of State Route 210. The route continued east, intersecting the U.S. Highway 35 corridor where it trended to the northwest parallel to the interstate, and then turned eastward to the Minnesota-Wisconsin border. The pipeline route would have crossed the Minnesota-Wisconsin border approximately 5 miles east-southeast of Wrenshall, Minnesota, terminating at Enbridge's terminal in Superior, Wisconsin.</p> <p>A route width of 700 feet (350 feet on each side of the pipeline centerline) was proposed except in the expanded route width areas already accepted by the PUC for further review for the project.¹</p> <p>The project would have also included construction and operation of access roads along the pipeline route where access from existing roads is not currently available. Terminal facilities at Clearbrook and pump stations and block valves along the pipeline route would have also been required.</p> <p>In a separate project, Enbridge proposes to replace portions of their Line 3 pipeline from Edmonton, Alberta, to Superior, Wisconsin, including the portion that is located in Minnesota. This project includes replacing the pipeline in the same ROW as the existing Line 3 from the Joliette Valve near Neche in Pembina County, North Dakota, to the Clearbrook terminal. From the Clearbrook terminal to Superior, Enbridge proposes to relocate Line 3 to the ROW previously proposed for the Sandpiper pipeline. Therefore, for this portion of the APR-SP either one or two pipelines could have been constructed adjacent to each other in the same ROW.</p>	610	300	ND MN WI	9
Sandpiper Pipeline Route Alternatives								
RA-03AM-SP (as modified)	Beaver Creek Station Tioga, ND	Clearbrook (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-03AM-SP was proposed by Minnesota DNR to modify the Minnesota PCA route and also to consider a southerly route that avoids the Lakes region and less developed portions of the state. This alternative reroutes around fens, fish hatcheries, and communities, and avoids some specific wildlife management areas. It was also proposed to parallel an existing pipeline ROW, thereby focusing pipeline construction and operations effects in an area already affected by a crude oil pipeline. RA-03AM-SP, however, is routed through Clearbrook, providing access to the Clearbrook terminal and allowing deliveries to the Northern Tier Energy or Flint Hills Resources refineries.</p> <p>Route: Route Alternative RA-03AM-SP combines portions of the previously proposed APR-SP and SA-03-SP. It follows the previously proposed APR-SP from Tioga, North Dakota, through Clearbrook to the vicinity of Park Rapids in southern Hubbard County. It then switches to the SA-03-SP route, going southeasterly to Milaca in Mille Lacs County, and then easterly and northeasterly to Hinckley and north to Carlton. It then follows the Enbridge Mainline System corridor to Superior.</p>	670	360	ND MN WI	12
RA-06-SP	Beaver Creek Station Tioga, ND	Clearbrook (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-06-SP was proposed by commenters to develop a route to the north to avoid crossing Minnesota's Lakes region. The route, however, would traverse the CNF, several state forests, and the Dishpan Wildlife Management Area.</p>	590	280	ND MN	8

TABLE E-1 Sandpiper Pipeline Project – System and Route Alternatives									
Alternative Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-1 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)	
				<p>Route: Route Alternative RA-06-SP follows the same route alignment as the previously proposed APR-SP from Beaver Creek Station to the Clearbrook terminal in Clearwater County, Minnesota. At Clearbrook the route alternative runs easterly across Beltrami County to the south of Lower Red Lake and enters the northwest corner of Itasca County. The route continues eastward to the eastern border of Itasca County, primarily across state and national forest lands. Within George Washington State Forest, the route turns south, adjacent to the eastern border of Itasca County. In the southeast corner of Itasca County, the route joins the major pipeline corridor traversing Minnesota from the Canadian border to Superior, which includes Enbridge’s Line 3 pipeline, which is being reviewed for replacement. The route then trends southeast across the southwest corner of St. Louis County and the northeast portion of Carlton County, crossing the Fond du Lac Indian Reservation. It crosses the Minnesota-Wisconsin border and follows the same alignment as the previously proposed APR-SP to Superior, Wisconsin.</p>			WI		
RA-07-SP	Beaver Creek Station Tioga, ND	Clearbrook (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-07-SP was proposed by commenters to use an existing pipeline corridor for a major portion of the route across Minnesota to minimize the exposure of new areas of the state to pipeline construction and operations while increasing overall pipeline capacity for deliveries to Superior. It was proposed to address the Minnesota DNR and the Minnesota PCA’s concerns regarding further development in the Lakes region. The route would, however, be located in proximity to the CNF and the Leech Lake Band of Ojibwe Reservation and would cross several populated areas.</p> <p>Route: Route Alternative RA-07-SP follows the same route alignment as the previously proposed APR-SP from Beaver Creek Station to the Clearbrook terminal in Clearwater County, Minnesota. The Clearbrook terminal is located on the Enbridge Mainline System corridor. At Clearbrook the route would continue on the Enbridge Mainline System corridor, where it would be located adjacent to existing pipelines. From Clearbrook this route trends southeastward across the southern part of Beltrami County, the Lakes region, and the northern part of Cass County and the southern portion of Itasca County, intersecting the Leech Lake Band of Ojibwe Reservation and the CNF. It continues across the southwest corner of Itasca County into Carlton County and then eastward to Superior.</p>	560	250	ND MN WI	10	
RA-08-SP	Beaver Creek Station Tioga, ND	Clearbrook (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-08-SP was proposed by commenters to achieve the same purpose as SP-RA-07. However, the route alignment was located generally to the south of U.S. Highway 2 to avoid to a greater extent proximity to the CNF and the Leech Lake Band of Ojibwe Reservation. The route would cross several populated areas and is space limited due to the presence of other utilities within the corridor.</p> <p>Route: Route Alternative RA-08-SP follows the same route alignment as the previously proposed APR-SP from Beaver Creek Station to the Clearbrook terminal in Clearwater County, Minnesota. From Clearbrook the route follows the same general configuration as RA-07-SP to Superior, except that in the portion of the route located in Beltrami, Cass, Itasca, and St. Louis counties, the route has been repositioned south and parallel to U.S. Highway 2.</p>	560	250	ND MN WI	10	
Sandpiper Pipeline System Alternatives									
SA-03-SP	Beaver Creek Station Tioga, ND	None	Superior, WI	<p>Purpose of the Alternative: System Alternative SA-03-SP was proposed by Minnesota PCA to consider a southerly route that avoids the Lakes region and less developed portions of the state. It was also proposed to parallel an existing pipeline ROW, thereby focusing pipeline construction and operations effects in an area already affected by a crude oil pipeline.</p> <p>This alternative does not connect with the Clearbrook terminal and therefore would not be able to make deliveries to the Northern Tier Energy or Flint Hills Resources refineries, which are currently served from the Clearbrook terminal.</p> <p>Route: SA-03-SP follows the existing Enbridge mainline corridor from Edmonton, Canada, dropping southeast into Minnesota to a point just west of Crookston, which is located approximately 20 miles east of the North Dakota-Minnesota border. At approximately Crookston, the route turns south and traverses Polk and Norman counties generally along the Viking pipeline ROW. The route then crosses into Clay County, continuing southeast following the Viking pipeline corridor, and then turns easterly and traverses the southcentral portion of Becker County to the southwest corner of Hubbard County in the vicinity of Park Rapids, Minnesota. The route then turns southeasterly</p>	723	413	ND MN WI	15	

TABLE E-1 Sandpiper Pipeline Project – System and Route Alternatives									
Alternative Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-1 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)	
				following the Minnkota Power Cooperative Transmission Line, across Wadena County, the northeast corner of Todd County, and diagonally across Morrison County. It continues across the northeast corner of Benton County and the southern portion of Mille Lacs County to the vicinity of Milaca. The route then turns northeasterly, generally following State Route 23 to approximately the vicinity of Hinckley in Pine County. It then turns northeasterly, paralleling the existing 8-inch Magellan Refined Products pipeline and/or a Northern Natural Gas pipeline to a point where it meets the previously proposed APR-SP near Carlton in Carlton County and then continues to Superior, Wisconsin.					
SA-04-SP	Beaver Creek Station Tioga, ND	None	Joliet, IL	<p>Purpose of the Alternative: System Alternative SA-04-SP was proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota, terminating the pipeline at Joliet, Illinois. This alternative does not provide access to Enbridge’s terminals at either Clearbrook or Superior. A significant portion of the route for SA-04-SP is outside of Minnesota.</p> <p>Route: SA-04-SP follows the previously proposed APR-SP from Tioga, North Dakota, east to McHenry County, North Dakota. SA-04-SP then turns southeast and follows the Alliance pipeline ROW generally southeast across North Dakota and into the northeast corner of South Dakota. The route crosses into Minnesota near Wheaton in Traverse County. In Minnesota, the Alliance pipeline ROW and this alternative route would generally follow the Minnesota River through Big Stone, Swift, Chippewa, Renville, and Nicolet counties to approximately Mankato in Blue Earth County. The route continues southeast, diagonally across Faribault and Freeborn counties to the vicinity of Albert Lea. South of Albert Lea, the route crosses the Minnesota-Iowa border and continues southeast to the vicinity of Clinton, Iowa, generally following the Cedar River. At Clinton the route crosses the Iowa-Illinois border and continues eastward to an existing terminal near Joliet.</p>	930	250	ND SD MN IL IA	13	
SA-05-SP	Beaver Creek Station, Tioga, N.D.	None	Joliet, IL	<p>Purpose of the Alternative: System Alternative SA-05-SP was proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota, terminating the pipeline at Joliet, Illinois. This alternative does not provide access to Enbridge’s terminals at either Clearbrook or Superior. Almost all of the route for SA-05-SP is outside of Minnesota.</p> <p>Route: SA-05-SP follows the previously proposed APR-SP from Tioga, North Dakota, east to McHenry County, North Dakota. SA-05-SP then turns southeast and similar to SA-04-SP follows the Alliance pipeline ROW to the vicinity of Hankinson in Richland County, North Dakota, near the South Dakota border. It then crosses the North Dakota-South Dakota border into South Dakota and runs parallel to the U.S. Highway 29 corridor to the vicinity of Watertown, where it turns southeast, continuing to parallel U.S. Highway 29. In Deuel County, South Dakota, SA-05-SP intersects with the Northern Border pipeline and continues southeast along the Northern Border pipeline ROW, crossing the South Dakota-Minnesota border into Lincoln County. The route then continues diagonally southeast across Minnesota through Pipestone and Nobles counties, crossing the Minnesota-Iowa border in the vicinity of East Chain, Minnesota. The route continues southeast to Poweshiek County, Iowa, where it intersects with an Enbridge pipeline/Oneok NGL Pipeline LP. It then runs east through Illinois to an existing terminal near Joliet, Illinois.</p>	1,000	130	ND SD MN IL IA	6	
SA-06-SP	Beaver Creek Station Tioga, ND	None	Superior, WI	<p>Purpose of the Alternative: System Alternative SA-06-SP was also proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota, but unlike SA-04-SP and SA-05-SP, SA-06-SP terminates at the Enbridge terminal in Superior, Wisconsin. This system alternative does not provide direct access to Enbridge’s terminal at Clearbrook. It does pass through the Rosemount area, which is the location of the Flint Hills Refinery.</p> <p>Route: SA-06-SP follows the previously proposed APR-SP from Tioga, North Dakota, east to Grand Forks County, North Dakota, where it turns and follows a railroad corridor southeast across North Dakota, crossing into Wilkin County, Minnesota, in the vicinity of Wahpeton, North Dakota. It then runs southeast along State Highway 9 until it intersects with the route for SA-04-SP that parallels the Alliance pipeline. The route continues southeast, running through Traverse, Swift, Big Stone, and Chippewa counties to a point southwest of Willmar, Minnesota. The route then turns east and continues southeast where it intersects with the MinnCan pipeline, circling the Twin Cities metropolitan area through Meeker, McLeod, Sibley, Carver, and Scott counties, and continues to the vicinity of the Flint Hills Refinery at Rosemount, which is located in Dakota County. On the east side of the metropolitan area, the</p>	800	400	ND MN WI	17	

TABLE E-1 Sandpiper Pipeline Project – System and Route Alternatives								
Alternative Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-1 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)
				route turns north and follows existing pipelines through Washington County to the vicinity of North Branch in Chisago County. The route then continues north along the same route as RA-03AM-SP to the vicinity of Carlton in Carlton County where it joins the previously proposed APR-SP and terminates at the Enbridge terminal in Superior, Wisconsin.				
SA-07-SP	Beaver Creek Station Tioga, ND	None	Superior, WI	<p>Purpose of the Alternative: System Alternative SA-07-SP was also proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota, and like SA-06-SP terminates at the Enbridge terminal in Superior, Wisconsin. This system alternative does not provide access to Enbridge’s terminal at Clearbrook, Wisconsin. It does pass through the Rosemount area, which is the location of the Flint Hills Refinery.</p> <p>Route: SA-07-SP follows the previously proposed APR-SP from Tioga, North Dakota, east to Grand Forks, North Dakota, where it intersects with the U.S. Highway 29 corridor and runs south to Fargo, North Dakota. Near Fargo, the route crosses into Clay County, Minnesota, and then continues southeast along the Magellan pipeline corridor toward Alexandria, crossing Clay, Wilkin, Ottertail, Grant, and Douglas counties. At Alexandria in Douglas County, the route turns south toward Willmar, through Pope and Swift counties. Near Willmar the route joins the proposed route described above for SA-06-SP, terminating at the Enbridge terminal at Superior, Wisconsin.</p>	810	430	ND MN WI	18
SA-08-SP	Beaver Creek Station, Tioga, N.D.	None	St. Paul, MN	<p>Purpose of the Alternative: System Alternative SA-08-SP was also proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota. The route is planned to generally follow the U.S. Highway 29 and U.S. Highway 94 corridors. It does not, however, pass through Clearbrook or terminate at the Enbridge terminal in Superior, Wisconsin. It terminates in the Twin Cities area at the Flint Hills Refinery in Rosemount.</p> <p>Route: SA-08-SP follows the previously proposed APR-SP from Tioga, North Dakota, east to Grand Forks, North Dakota, where it turns south and follows the route proposed for SA-07-SP along the U.S. Highway 29 highway corridor past Fargo, North Dakota. Near Fargo, the route crosses into Clay County, Minnesota, and then continues southeast along the Magellan pipeline corridor to Alexandria in Douglas County. At Alexandria the SA-07-SP route turns south, but SA-08-SP continues along the U.S. Highway 94 corridor through Sterns and Wright counties toward the Twin Cities metropolitan area. Just northwest of Maple Grove, Hennepin County, the route turns east and follows an existing pipeline generally east across the north suburbs before turning south and following another existing pipeline across the east suburbs and terminating in Rosemount, Minnesota.</p>	620	260	ND MN	13

Notes:

CNF = Chippewa National Forest; Minnesota DNR = Minnesota Department of Natural Resources; Minnesota PCA = Minnesota Pollution Control Agency; PUC = Public Utilities Commission; ROW = right-of-way; APR-SP = Applicant’s Preferred Route (previously proposed) for the Sandpiper Pipeline Project

System Alternatives: routes from the Applicant’s designated origin to alternative intermediate and/or destinations.

Route Alternatives: between the Applicant’s designated origin and destination and generally include designated intermediate terminals.

Route Descriptions include the entire routes for both route and system alternatives, which traverse multiple states. While the entire route has been described for each alternative, those portions of the route not within Minnesota are not within the permitting jurisdiction of State of Minnesota regulatory agencies. These extended route descriptions have been included for completeness.

¹ Sandpiper Alternative Routes Summary Report: <http://mn.gov/commerce/energyfacilities/documents/33599/Sandpiper%20Alternative%20Summary%20Report-JULY-16-2014.pdf>.

TABLE E-2 Sandpiper Pipeline Project – Route Segment Alternatives					
Route Segment Alternative Number	County	Project Section	Comment¹ (see Figure E-2 for locations)	Justification²	Length (miles)
RSA-01-SP	Grand Forks, ND, Polk, MN	Grand Forks, ND to Polk, MN	Co-locating the previously proposed pipeline with the existing Line 81 would reduce habitat fragmentation and there would be fewer cumulative effects	May reduce habitat fragmentation and may result in fewer cumulative effects	10.5
Clearbrook to Aitkin County					
RSA-09-SP	Clearwater Hubbard	Clearbrook to Aitkin County	Alternative route starting in Section 11 of Itasca Township in Clearwater County and Hattie Township in Hubbard County to avoid the Big LaSalle Lake area	Avoids the Big LaSalle Lake area; however, impacts new property owners.	8.05
RSA-10-SP	Clearwater	Clearbrook to Aitkin County	Big La Salle Creek alternative: lack of access near crossing of LaSalle Creek could have resulted in delayed spill response times, thus the suggestion of moving the route to a crossing that is more accessible	Addresses PCA concern for more accessible crossing, farther away from Big LaSalle Lake. Alternative would impact new resources/property owners.	6.83
RSA-15-SP	Hubbard	Clearbrook to Aitkin County	Twin Lakes route segment alternative: lack of access near Twin Lakes and Shell River could have resulted in delayed spill response times. Twin Lakes are identified as wild rice lakes by the DNR.	Addresses Minnesota PCA concern for more accessible crossing. Alternative would impact new property owners and traverse an area of center pivot irrigation. It would also be closer to the town of Hubbard.	9.46
Aitkin County					
RSA-Blandin-SP	Aitkin	Aitkin County	Route alternative requested to avoid conservation easement held by Minnesota DNR on lands owned by Blandin Paper Company.	Addresses concerns regarding conservation easement and avoids specific timber resources east of the APR.	3.9
RSA-White Elk Lake-SP	Aitkin	Aitkin County	Minnesota DNR requested an alternative to avoid Forest Legacy Easement and fragmenting MN Biological Survey Site of Biodiversity Significance.	Addresses Minnesota DNR concerns regarding White Elk Lake (a wild rice lake), crosses less acres of wetlands, and avoids recorded location of federally-listed Northern Long Eared Bat. May impact other resources.	9.7
RSA-21-SP	Aitkin	Aitkin County	Minnesota DNR recommended the Aitkin County Power Line as a route segment alternative to eliminate concerns regarding Sandy River fisheries and wild rice habitat as well as trout stream habitat. This would also avoid 3.1 miles of WMAs and follow the existing corridor.	Addresses Minnesota DNR concerns regarding fisheries and habitat impacts; however, it does impact new resources/property owners.	53.88
RSA-22-SP	Aitkin, St Louis, Carlton	Aitkin County	Minnesota DNR recommended a route segment alternative that would avoid critical habitat in the Big Sandy Lake watershed as well as Grayling Marsh WMA, McGregor WMA, Lawler WMA, and Salo Marsh WMA.	Addresses Minnesota DNR concerns related to resources in the area. Follows existing corridors; however, impacts new resources/property owners.	38.82
RSA-23-SP	Aitkin	Aitkin County	The Aitkin County Soo Line Route Alternative was considered in the Enbridge January 31, 2014, permit application but removed from further analysis by the company.	The Soo Line Route Alternative removed from further analysis by NDPC is being carried forward into the route alternatives analysis because it was recommended by several landowners throughout the comment period and it would parallel the existing ATV trail.	31.13
RSA-27-SP	Aitkin, Carlton	Aitkin County	Minnesota DNR is recommending that the analysis include the Soo Line to avoid the McGregor Scientific and Natural Area and the Sandy River watershed	Addresses Minnesota DNR concerns related to the McGregor Scientific and Natural Area and the Sandy River Watershed. May impact new resources.	13.23
RSA-28-SP	Aitkin	Aitkin County	Commenter suggested a route segment alternative that turns south in Aitkin County and meets back with the previously proposed APR-SP to the east.	There was a map submitted during the comment period without a written comment attached. Based on the aerial image, the APR-SP (previously proposed), segment was suggested to avoid gravel pits.	3.50
RSA-31-SP	Aitkin	Aitkin County	Commenter requested a route segment alternative to cut straight and diagonally across several miles in Aitkin County.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new resources/property owners.	6.12

TABLE E-2 Sandpiper Pipeline Project – Route Segment Alternatives					
Route Segment Alternative Number	County	Project Section	Comment¹ (see Figure E-2 for locations)	Justification²	Length (miles)
RSA-33-SP	Aitkin	Aitkin County	Commenter would like the pipeline moved east to the back edge of his property where it joins with the Peat Plant.	Addresses commenter concern and would impact new resources/property owners.	1.80
RSA-34-SP	Aitkin	Aitkin County	Commenter suggesting shifting the pipeline north into the tree line.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new resources/property owners.	2.22
RSA-35-SP	Aitkin	Aitkin County	Commenter suggesting route segment alternative that would cut south on Township Road 270th and traverse east until it meets with the APR-SP.	Addresses commenter concern regarding distance from home. Alternative route would impact new resources/property owners potentially including a peat farm.	1.72
RSA-37-SP	Aitkin, Carlton	Aitkin County	Commenter suggesting route segment alternative that would parallel State Highway 210 after mile marker 550 and then turn south to reconnect with the previously proposed APR-SP south of Cloquet.	The recommended route alternative would follow the existing corridor, avoiding the Salo Marsh and Lawler WMAs.	38.68
Carlton County					
RSA-42-SP	Carlton	Carlton County	Commenter requesting to co-locate pipeline with an existing power line corridor.	Addresses commenter concern. Alternative recommended would impact new resources/property owners.	3.48
RSA-43-SP	Carlton	Carlton County	Commenter suggesting moving pipeline to north side of U.S. Highway 61, co-locating it with a utility corridor.	Addresses commenter concerns regarding continuity of utility corridors. Alternative recommended would impact new resources/property owners.	3.08
RSA-44-SP	Carlton	Carlton County	Commenter suggested following an existing utility corridor on the north side of U.S. Highway 61 to avoid the Blackhoof River watershed.	Addresses commenter concern regarding groundwater flow around the watershed. Alternative recommended would impact new resources/property owners.	7.66
RSA-45-SP	Carlton	Carlton County	Commenter suggested following south side of U.S. Highway 61 to avoid the Blackhoof River watershed.	Addresses commenter concern regarding groundwater flow around the watershed. Alternative recommended would impact new resources/property owners.	7.13
RSA-46-SP	Carlton	Carlton County	Commenter suggested shifting the pipeline to the south, running parallel to County Road 61.	Addresses commenter concern. Alternative recommended would impact new resources/property owners.	1.91
RSA-49-SP	Carlton	Carlton County	Commenter requested to follow the south sides of Interstate 35 and U.S. Highway 61 to distance pipeline from multiple properties.	Addresses commenter concern. Alternative recommended would impact new resources/property owners.	5.96
RSA-51-SP	Aitkin	Carlton County	Commenter proposed shifting the pipeline north to follow the tree line and distance it from homesteads.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new resources/property owners.	1.41
RSA-52-SP	Aitkin	Carlton County	Commenter proposed shifting the pipeline north to follow the tree line and distance it from homesteads.	Addresses landowner concern regarding distance from home. Alternative would impact new resources/property owners.	0.84

Notes:

ATV = all-terrain vehicle; CNF = Chippewa National Forest; Minnesota DNR = Minnesota Department of Natural Resources; Minnesota PCA = Minnesota Pollution Control Agency; PUC = Public Utilities Commission; ROW = right-of-way; APR-SP = Applicant's Preferred Route (previously proposed) for Sandpiper Pipeline Project; WMA = Wildlife Management Area

¹ **Comment:** The comment column is a summary of the issue that was identified in the comment submitted during scoping period.

² **Justification:** The justification column describes why the route alternative is being carried forward for further analysis.

Line 3 Replacement Project
Figure 3: System and Route Alternatives

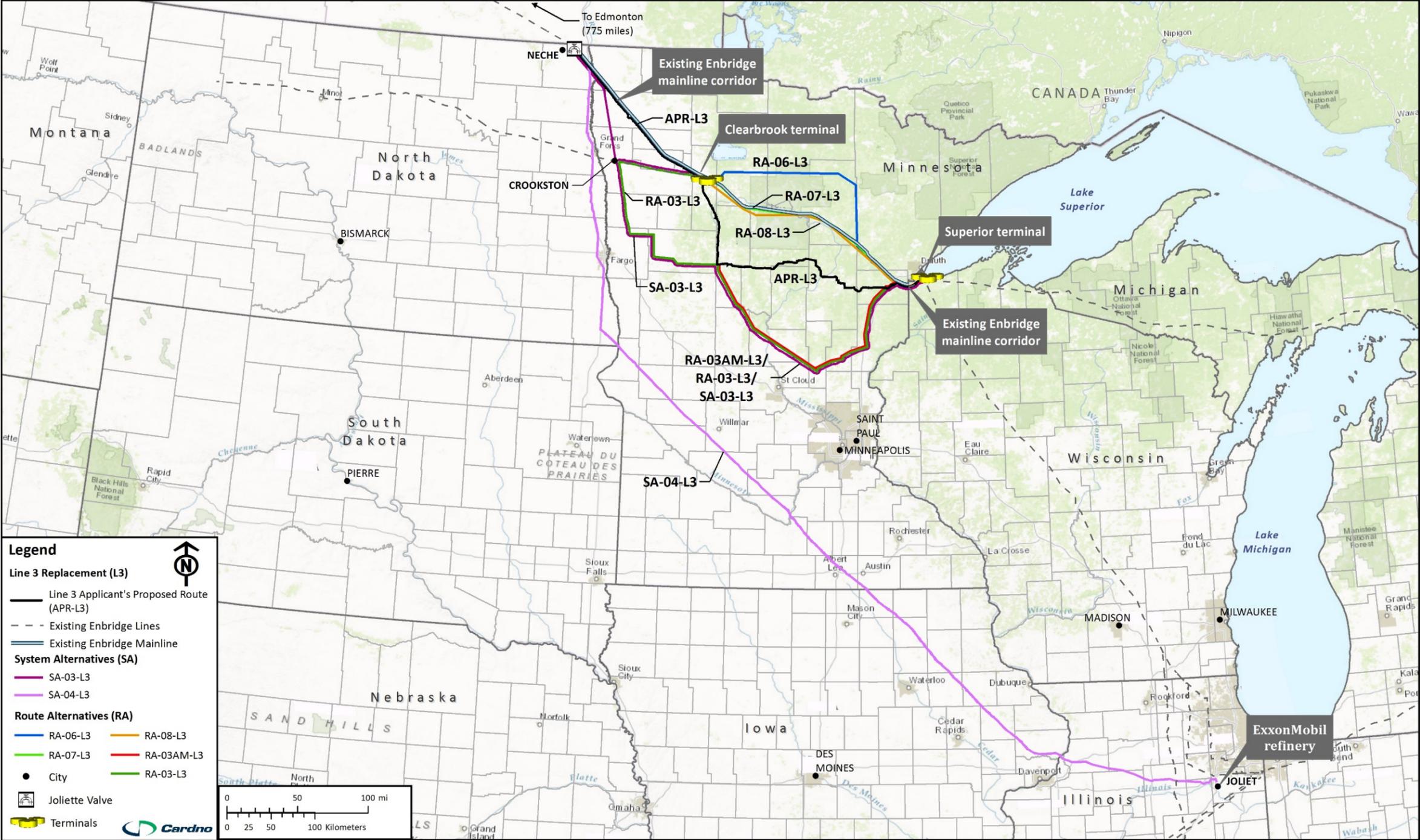


FIGURE E-3 Line 3 Replacement Project System and Route Alternatives

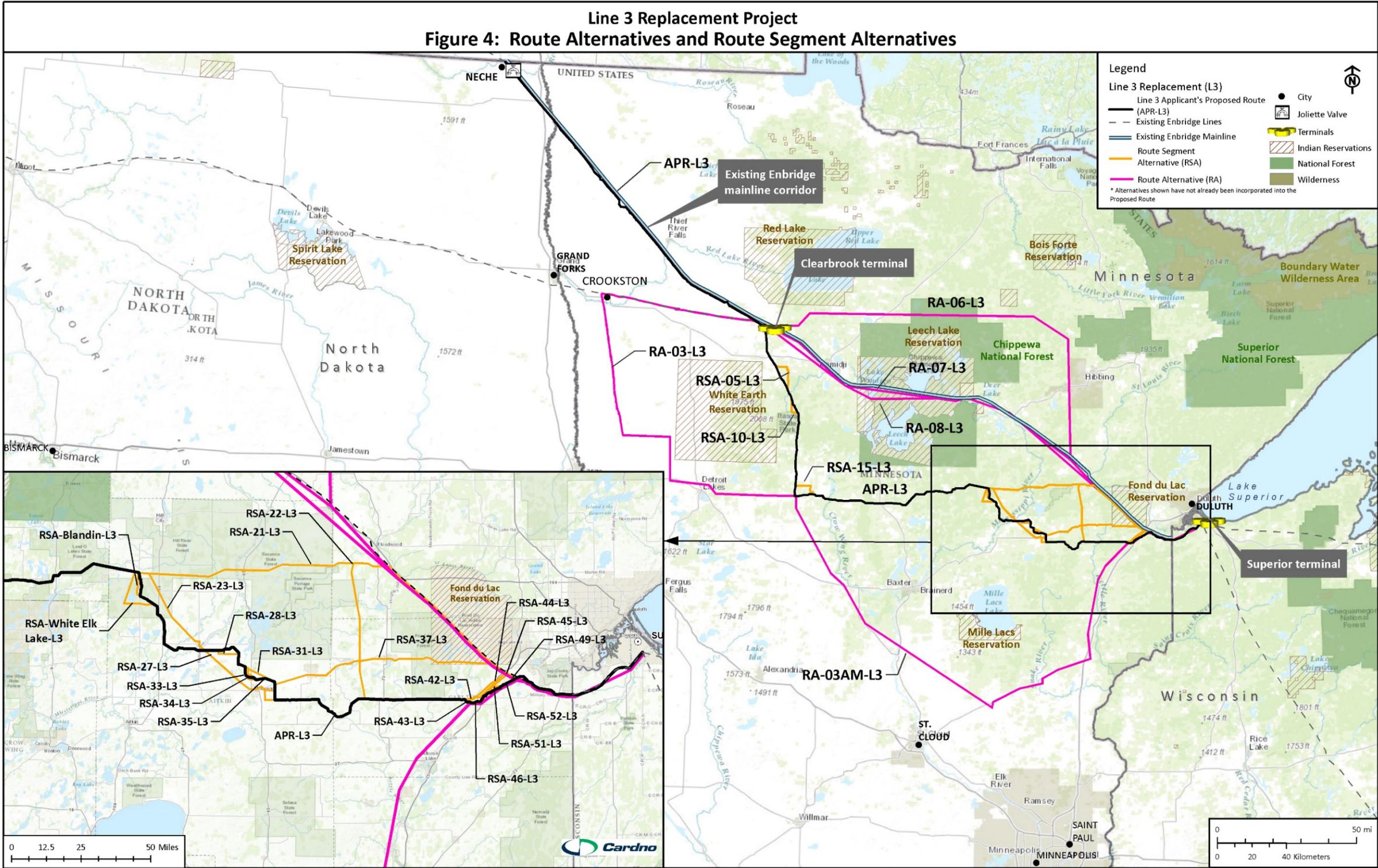


FIGURE E-4 Line 3 Replacement Project Route Segment Alternatives

TABLE E-3 Line 3 Replacement Project – System and Route Alternatives								
Alternative Name/Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-3 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)
Applicant's Preferred Route (APR-L3)	Joliette Valve, Neche, ND	Clearbrook Terminal (Clearwater County, MN)	Superior, WI	<p>Route: The Applicant's preferred route (APR-L3) begins at the Joliette Valve located near Neche (Pembina County) in the northeast corner of North Dakota near the U.S.-Canadian border. The route follows the existing Line 3 pipeline corridor southeast, crossing into Kittson County, Minnesota, continuing southeast through Marshall, Pennington, Red Lake, and Polk counties, and arriving at Clearbrook in Clearwater County. The APR-L3 would interconnect with the existing Clearbrook terminal.</p> <p>From the Joliette Valve to Clearbrook, the Line 3 Replacement Project would be constructed in a ROW immediately adjacent to the existing Line 3 pipeline. From Clearbrook to its intersection with the Enbridge Mainline System in Carlton County, the Line 3 Replacement pipeline would be located in a new pipeline corridor, taking a more southerly route than the existing Line 3 pipeline route between Clearbrook and the Enbridge Mainline System corridor in Carlton County. The route would generally follow the existing Minnesota Pipe Line Company ROW south into Hubbard County. The route runs along the western border of Hubbard County to the locale of Park Rapids. South of Park Rapids, near the border of Wadena County, the route turns eastward and enters Cass County. It continues to the east across Aitkin County, generally following portions of existing ROWs for electric transmission lines through generally undeveloped and agricultural areas. In Aitkin County, the route tends to the southeast to the vicinity of McGregor and then turns east, entering the western portion of Carlton County south of State Route 210. The route continues east, intersecting the U.S. Highway 35 corridor where it trends to the northwest parallel to the interstate, and then turns eastward to the Minnesota-Wisconsin border. The pipeline route crosses the Minnesota-Wisconsin border approximately 5 miles east-southeast of Wrenshall, Minnesota, and terminates at Enbridge's terminal in Superior, Wisconsin.</p> <p>A route width of 750 feet (375 feet on each side of the pipeline centerline) is proposed except in the expanded route width areas already accepted by the PUC for further review for the project.¹</p> <p>The Project would also include construction and operation of access roads along the pipeline route where access from existing roads is not currently available. Terminal facilities at Clearbrook and pump stations and block valves along the pipeline route would also be required.</p>	378.3	337.5	3	12
Line 3 Replacement Route Alternatives								
RA-03-L3	Joliette Valve, Neche, ND	Requires new terminal at Crookston (Polk County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-03-L3 was proposed by Minnesota PCA to consider a southerly route that avoids the Lakes region and less developed portions of the state. It was also proposed to parallel an existing pipeline ROW, thereby focusing pipeline construction and operations effects in an area already affected by a crude oil pipeline.</p> <p>This alternative would connect with the Clearbrook terminal and would be able to make deliveries to the MinnCan pipeline that serves the Northern Tier Energy and Flint Hills Resources refineries. If it included a new terminal at Crookston, it would be able to transfer crude oil into the Enbridge Mainline System for delivery to Superior.</p> <p>Route: RA-03-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the Clearbrook terminal then turns west for approximately 60 miles to the vicinity of Crookston to intersect the existing Viking pipeline corridor. Crookston is located approximately 20 miles east of the North Dakota-Minnesota border. At approximately Crookston, the route turns south and traverses Polk and Norman counties, generally along the Viking pipeline ROW. The route then crosses into Clay County, continuing southeast following the Viking pipeline corridor, and then turns easterly and traverses the southcentral portion of Becker County to the southwest corner of Hubbard County in the vicinity of Park Rapids, Minnesota. The route then turns southeasterly following the Minnkota Power Cooperative Transmission Line, across Wadena County, the northeast corner of Todd County, and diagonally across Morrison County. It continues across the northeast corner of Benton County and the southern portion of Mille Lacs County to the vicinity of Milaca. The route then turns northeasterly, generally following State Route 23 to approximately the vicinity of Hinckley in Pine County. It then turns northeasterly, paralleling the existing 8-inch Magellan Refined Products pipeline and/or a Northern Natural Gas Pipeline to a point where it meets the APR-L3 near Carlton in Carlton County and then continues to Superior, Wisconsin.</p>	556	515	3	11
RA-03AM-L3	Joliette Valve, Neche, ND	Clearbrook Terminal	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-03AM-L3 was proposed by Minnesota DNR to modify the Minnesota PCA route (RA-03-L3) and also consider a southerly route that avoids the Lakes region and less developed portions of the state.</p>	434	396	3	15

TABLE E-3 Line 3 Replacement Project – System and Route Alternatives									
Alternative Name/Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-3 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)	
		(Clearwater County, MN)		<p>This alternative reroutes around fens, fish hatcheries, and communities, and avoids some specific Wildlife Management Areas. It was also proposed to parallel an existing pipeline ROW, thereby focusing pipeline construction and operations effects in an area already affected by a crude oil pipeline. RA-03AM-L3, however, is routed through Clearbrook, providing access to the Clearbrook terminal and allowing deliveries to the Northern Tier Energy or Flint Hills Resources refineries through the MinnCan pipeline.</p> <p>Route: RA-03AM-L3 follows APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the Clearbrook terminal (see description above). From Clearbrook the route would generally follow the existing Minnesota Pipe Line Company ROW south into Hubbard County. The route runs along the western border of Hubbard County to the locale of Park Rapids. The route then turns southeasterly, following the Minnkota Power Cooperative transmission line, across Wadena County, the northeast corner of Todd County, and diagonally across Morrison County. It continues across the northeast corner of Benton County and the southern portion of Mille Lacs County to the vicinity of Milaca. The route then turns northeasterly, generally following State Route 23 to approximately the vicinity of Hinckley in Pine County. It then turns northeasterly, paralleling the existing 8-inch Magellan Refined Products pipeline and/or a Northern Natural Gas pipeline to a point where it meets the APR-L3 near Carlton in Carlton County and then continues to Superior, Wisconsin.</p>					
RA-06-L3	Joliette Valve, Neche, ND	Clearbrook Terminal (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-06-L3 was proposed by commenters to develop a route to the north to avoid crossing Minnesota's Lakes region. The route, however, would traverse the CNF, several state forests, and the Dishpan Wildlife Management Area.</p> <p>Route: RA-06-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the Clearbrook terminal (see description above). At Clearbrook the route alternative runs easterly across Beltrami County to the south of Lower Red Lake and enters the northwest corner of Itasca County. The route continues eastward to the eastern border of Itasca County, primarily across state and national forest lands. Within George Washington State Forest, the route turns south, adjacent to the eastern border of Itasca County. In the southeast corner of Itasca County, the route joins the major pipeline corridor traversing Minnesota from the Canadian border to Superior, which includes the existing Line 3 pipeline. The route then trends southeast across the southwest corner of St. Louis County and the northeast portion of Carlton County, crossing the Fond du Lac Indian Reservation. It crosses the Minnesota-Wisconsin border and terminates in Superior, Wisconsin.</p>	355	315	3	10	
RA-07-L3	Joliette Valve, Neche, ND	Clearbrook Terminal (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-07-L3 was proposed by commenters to use an existing pipeline corridor for a major portion of the route across Minnesota to minimize the exposure of new areas of the state to pipeline construction and operations while increasing overall pipeline capacity for deliveries to Superior. It was proposed to address the Minnesota DNR and the Minnesota PCA's concerns regarding further development in the Lakes region. The route would, however, be located in proximity to the CNF and the Leech Lake Band of Ojibwe Reservation and would cross several populated areas.</p> <p>Route: RA-07-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the Clearbrook terminal (see description above). The Clearbrook terminal is located on the Enbridge Mainline System corridor. At Clearbrook the route would continue on the Enbridge Mainline System corridor, where it would be located adjacent to existing pipelines. From Clearbrook this route trends southeastward across the southern part of Beltrami County, the Lakes region, and the northern part of Cass County and the southern portion of Itasca County, intersecting the Leech Lake Band of Ojibwe Reservation and the CNF. It continues across the southwest corner of Itasca County into Carlton County and then eastward to Superior.</p>	327	286	3	13	
RA-08-L3	Joliette Valve, Neche, ND	Clearbrook Terminal (Clearwater County, MN)	Superior, WI	<p>Purpose of the Alternative: Route Alternative RA-08-L3 was proposed by commenters to achieve the same purpose as RA-07-L3. However, the route alignment was located generally to the south of U.S. Highway 2 to avoid to a greater extent proximity to the CNF and the Leech Lake Band of Ojibwe Reservation. The route would cross several populated areas and is space limited due to the presence of other utilities within the corridor.</p> <p>Route: RA-08-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the Clearbrook terminal (see description above). From Clearbrook the route follows the same general configuration as RA-07-L3 to Superior, except</p>	324	284	3	13	

TABLE E-3 Line 3 Replacement Project – System and Route Alternatives									
Alternative Name/Number	Origin Terminal	Intermediate Terminals	Destination Terminal	General Route Description (see Figure E-3 for locations)	Total Route Length (miles)	Route Length in MN (miles)	States Crossed	Counties Crossed (MN)	
				that in the portion of the route located in Beltrami, Cass, Itasca, and St Louis counties, the route has been repositioned south and parallel to U.S. Highway 2.					
Line 3 Replacement System Alternative									
SA-03-L3	Joliette Valve, Neche, ND	Requires new terminal at Crookston (Polk County, MN)	Superior, WI	<p>Purpose of the Alternative: System Alternative SA-03-L3 was proposed by MN DNR and MPCA to evaluate an alternative that avoids the central portion of Minnesota, terminating the pipeline at Superior, Wisconsin. In 2015, the Minnesota DNR also proposed changes to this system alternative in order to connect it into Line 3 and to avoid sensitive resources near the Detroit Lakes area and populated areas in the northern Twin Cities Metro area near North Branch. With further modifications during development of the scope, this alternative provides access to Enbridge’s terminals at both Clearbrook and Superior, but would also require a new terminal at Crookston, Minnesota.</p> <p>Route: SA-03-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve and splits from the APR-L3 heading south to Crookston where a new terminal would be built and the line would split with one portion continuing east to connect with the existing Clearbrook Terminal in Clearbrook Minnesota and the other portion following the same path as RA-03AM-L3 to Superior, Wisconsin.</p>	514.7	473.9	ND MN WI	13	
SA-04-L3	Joliette Valve, Neche, ND	None	Joliet, IL	<p>Purpose of the Alternative: System Alternative SA-04-L3 was proposed by commenters to evaluate an alternative that avoids the central portion of Minnesota, terminating the pipeline at Joliet, Illinois. This alternative does not provide access to Enbridge’s terminals at either Clearbrook or Superior. A significant portion of the route for SA-04-L3 is outside of Minnesota.</p> <p>Route: SA-04-L3 follows the APR-L3 (existing Enbridge Mainline System) from the Joliette Valve to the vicinity of U.S. Highway 29 in the northeast corner of North Dakota, where it intersects the Alliance pipeline corridor and follows it until it crosses into Minnesota near Wheaton in Traverse County. In Minnesota the route parallels the Alliance pipeline ROW and the Minnesota River through Big Stone, Swift, Chippewa, Renville, and Nicolet counties to approximately Mankato in Blue Earth County. The route continues southeast, diagonally across Faribault and Freeborn counties to the vicinity of Albert Lea. South of Albert Lea the route crosses the Minnesota-Iowa border and continues southeast to the vicinity of Clinton, Iowa, generally following the Cedar River. At Clinton the route crosses the Iowa-Illinois border and continues eastward to an existing terminal near Joliet.</p>	781	248	5	13	

Notes:
 CNF = Chippewa National Forest; Minnesota DNR = Minnesota Department of Natural Resources; Minnesota PCA = Minnesota Pollution Control Agency; PUC = Public Utilities Commission; ROW = right-of-way; APR-L3 = Applicant’s preferred route for the Line 3 Replacement Pipeline
System Alternatives: routes from the Applicant’s designated origin to alternative destinations.
Route Alternatives: between the Applicant’s designated origin and destination and generally include designated intermediate terminals.
Route Descriptions include the entire routes for both route and system alternatives, which traverse multiple states. While the entire route has been described for each alternative, those portions of the route not within Minnesota are not within the permitting jurisdiction of State of Minnesota regulatory agencies. These extended route descriptions have been included for completeness.

¹ Line 3 Replacement Project Alternative Routes Summary Report: http://mn.gov/commerce/energyfacilities/documents/34079/CR_FINAL_MAY12.pdf

TABLE E-4 Line 3 Replacement Project – Route Segment Alternatives				
Route Alternative Number	County	Comment¹ (see Figure E-4 for locations)	Justification²	Length (miles)
Clearbrook to Aitkin County				
RSA-05-L3	Clearwater	Route alternative requested to avoid Eastern Wild Rice Watershed and possible hydrological connection to Lower Rice Lake by modifying centerline of APR. Route segment modified by requestor to improve constructability.	Reroute addresses water quality environmental impacts and should not affect operations.	12.9
RSA-10-L3	Clearwater	Lack of access near crossing of LaSalle Creek could result in delayed spill response times; route segment alternative would move route to a crossing that is more accessible.	Addresses Minnesota PCA concern for more accessible crossing, farther away from Big LaSalle Lake. Alternative recommended would impact new property owners.	6.83
RSA-15-L3	Hubbard	Twin Lakes route alternative: lack of access near Twin Lakes and Shell River could result in delayed spill response times. Twin Lakes are identified as wild rice lakes by the Minnesota DNR.	Addresses Minnesota PCA concern for more accessible crossing. Alternative recommended would impact new property owners and traverse an area of center pivot irrigation. It would also be closer to the town of Hubbard.	9.46
Aitkin County				
RSA-Blandin-L3	Aitkin	Route alternative requested to avoid conservation easement held by Minnesota DNR on lands owned by Blandin Paper Company.	Addresses concerns regarding conservation easement and would avoid specific timber resources east of the APR-L3.	3.9
RSA-White Elk Lake-L3	Aitkin	Minnesota DNR requested an alternative to avoid Forest Legacy Program easement and fragmenting Minnesota Biological Survey Site of Biodiversity Significance.	Addresses Minnesota DNR concerns regarding White Elk Lake (a wild rice lake); the route segment alternative would cross fewer acres of wetlands and avoid the recorded location of federally listed northern long-eared bat.	9.7
RSA-21-L3	Aitkin	Minnesota DNR recommended the Aitkin County Power Line as a route alternative to eliminate concerns regarding Sandy River fisheries and wild rice habitat as well as trout stream habitat. This would also avoid 3.1 miles of WMAs and follow the existing corridor.	Addresses Minnesota DNR concerns regarding fisheries and habitat impacts; however, it would impact new property owners.	53.88
RSA-22-L3	Aitkin, St. Louis, Carlton	Minnesota DNR recommended an alternative that would avoid critical habitat in the Big Sandy Lake watershed as well as Grayling Marsh WMA, McGregor WMA, Lawler WMA, and Salo Marsh WMA.	Addresses Minnesota DNR concerns related to resources in the area. The route segment alternative would follow existing corridors; however, it would impact new property owners.	38.82
RSA-23-L3	Aitkin	The Aitkin County Soo Line Route Alternative was considered in the Enbridge January 31, 2014, permit application but removed from further analysis by the company.	The Soo Line Route Alternative removed from further analysis by Enbridge is being carried forward into the route alternatives analysis because it was recommended by several landowners throughout the comment period and it would parallel the existing ATV trail.	31.13
RSA-27-L3	Aitkin, Carlton	Minnesota DNR recommended that the analysis include the Soo Line to avoid the McGregor Scientific and Natural Area and the Sandy River watershed.	Addresses Minnesota DNR concerns related to the McGregor Scientific and Natural Area and the Sandy River watershed.	13.23
RSA-28-L3	Aitkin	Commenter suggested a route alternative that turns south in Aitkin County and meets back with the APR-L3 to the east.	There was a map submitted during the comment period without a written comment attached. Based on the aerial image, this route segment alternative was suggested to avoid gravel pits.	3.50
RSA-31-L3	Aitkin	Commenter requested a route alternative to cut straight and diagonally across several miles in Aitkin County.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new property owners.	6.12
RSA-33-L3	Aitkin	Commenter requested the pipeline be moved east to the back edge of his property where it joins with a peat plant.	Addresses commenter concern and would impact new property owners.	1.80

TABLE E-4 Line 3 Replacement Project – Route Segment Alternatives				
Route Alternative Number	County	Comment¹ (see Figure E-4 for locations)	Justification²	Length (miles)
RSA-34-L3	Aitkin	Commenter suggesting shifting the pipeline north into the tree line.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new property owners.	2.22
RSA-35-L3	Aitkin	Commenter suggesting route alternative that would cut south on Township Road 270th and travel east until it meets with the APR-L3.	Addresses commenter concern regarding distance from home. Alternative route would impact new property owners and potentially impact a peat farm.	1.72
RSA-37-L3	Aitkin, Carlton	Commenter suggesting route alternative that would parallel State Highway 210 after mile marker 550 and then turn south to reconnect with the APR-L3 south of Cloquet.	The recommended route segment alternative would follow the existing corridor, avoiding the Salo Marsh and Lawler WMAs.	38.68
Carlton County				
RSA-42-L3	Carlton	Commenter requested co-location of pipeline with an existing power line corridor.	Addresses commenter concern. Recommended route segment alternative would impact new property owners.	3.48
RSA-43-L3	Carlton	Commenter suggesting moving pipeline to the north side of U.S. Highway 61, co-locating it with a utility corridor.	Addresses commenter concerns regarding continuity of utility corridors. Recommended route segment alternative would impact new property owners.	3.08
RSA-44-L3	Carlton	Commenter suggested following an existing utility corridor on the north side of U.S. Highway 61 to avoid the Blackhoof River watershed.	Addresses commenter concern regarding groundwater flow around the watershed. Alternative recommended would impact new property owners.	7.66
RSA-45-L3	Carlton	Commenter suggested following the south side of U.S. Highway 61 to avoid the Blackhoof River watershed.	Addresses commenter concern regarding groundwater flow around the watershed. Alternative recommended would impact new property owners.	7.13
RSA-46-L3	Carlton	Commenter suggested shifting the pipeline to the south, running parallel to County Road 61.	Addresses commenter concern. Alternative recommended would impact new property owners.	1.91
RSA-49-L3	Carlton	Commenter requested following the south sides of Interstate 35 and U.S. Highway 61 to distance the pipeline from multiple properties.	Addresses commenter concern. Alternative recommended would impact new property owners.	5.96
RSA-51-L3	Aitkin	Commenter proposed shifting the pipeline north to follow the tree line and distance it from homesteads.	Addresses commenter concern regarding distance from home. Alternative recommended would impact new property owners.	1.41
RSA-52-L3	Aitkin	Commenter proposed shifting the pipeline north to follow the tree line and distance it from homesteads.	Addresses landowner concern regarding distance from home. Alternative would impact new property owners.	0.84

Notes:

ATV = all-terrain vehicle; Minnesota DNR = Minnesota Department of Natural Resources; Minnesota PCA = Minnesota Pollution Control Agency; APR-L3 = Applicant's Preferred Route for Line 3 Replacement Project; WMA = Wildlife Management Area

¹ **Comment:** The comment column is a summary of the issue that was identified in the comment submitted during scoping period.

² **Justification:** The justification column describes why the route alternative is being carried forward for further analysis.