5.0 Cumulative Impacts

5.1 Introduction

Cumulative impacts are those impacts on the environment that result from the incremental impact of the Proposed Action when added to the impacts of past, present, and reasonably foreseeable future actions (RFFAs), regardless of what agency (federal or non-federal) or private entity undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7). Impacts first must be identified for the Project before cumulative impacts with past, present, and RFFAs can occur.

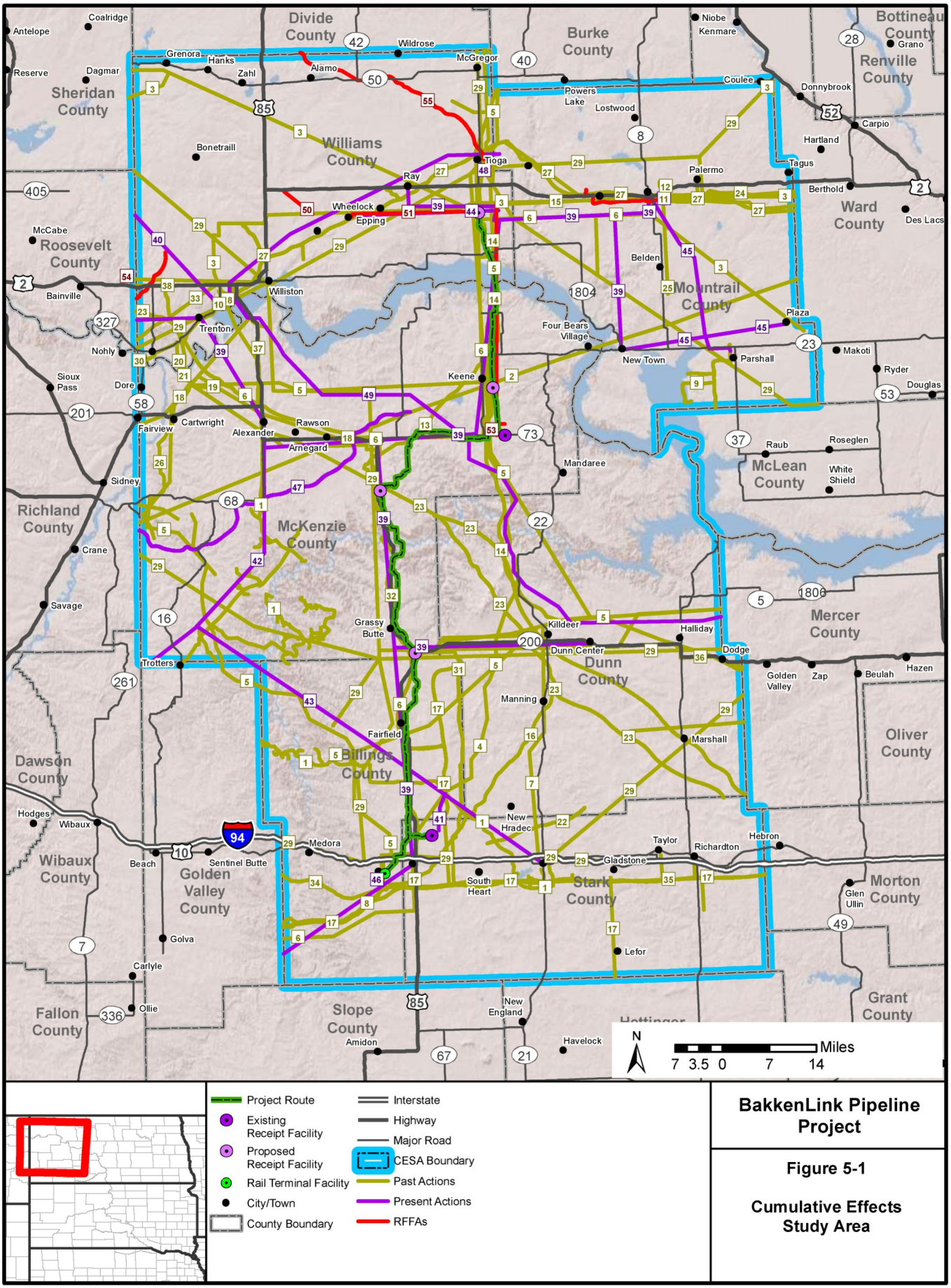
The cumulative effects study area (CESA) includes a 6-county area (approximately 7,374,996 acres) in western North Dakota as illustrated in **Figure 5-1**. Past actions and RFFAs with the potential to cause cumulative impacts in combination with the Project also are illustrated in **Figure 5-1**. These actions were identified primarily by geographic location and type of activities associated with the projects that are being considered in the analysis, as well as the type of resources potentially affected. A brief description of these actions is provided in this section. The area of concern for cumulative impacts would vary by resource. Impacts to certain resources would be restricted to the actual area of disturbance. Other resources, such as vegetation and wildlife and socioeconomics, may be affected over a wider area, and cumulative impacts could involve more than surface disturbance.

5.2 Past, Present, and Reasonably Foreseeable Future Projects

Table 5-1 briefly describes past, present, and reasonably foreseeable future projects within the CESA that were considered in the cumulative impacts analysis. The CESA includes various types of primarily linear projects including pipeline (i.e., crude oil, natural gas, and other liquids) and electric transmission line projects.

5.2.1 Past Projects

Past projects within the CESA include crude oil, natural gas, liquefied natural gas (LNG), and electric transmission lines (**Table 5-1**). The CESA includes 12 crude oil pipelines (1,303 miles; 7,897 acres), 15 natural gas, LNG, and other pipelines (954 miles; 5,781 acres), and 11 electric transmission lines (962 miles; 7,104 acres). These projects extend approximately 3,219 miles and have disturbed approximately 20,782 acres. The majority of the surface disturbances associated with these projects have been reclaimed and have returned to their previous land uses, with the exception of the associated permanent, aboveground facilities.



BakkenLink Pipeline Project

Figure 5-1

Cumulative Effects Study Area

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
Past Actions					
Crude Oil Pipelines					
1	Bicentennial to Dickinson Pipeline	Belle Fourche Pipeline Co.	This project included the construction of a 32-mile-long, 8-inch-diameter liquid petroleum pipeline that interconnected with the Belle Fourche facilities at Alexander Station and Bowling Junction. The pipeline has a 30,000 bpd capacity.	222	1,345
2	Cenex Pipeline System	Cenex Pipeline	This project included the construction of an 8-inch-diameter petroleum pipeline.	104	630
3	EPND Pipeline	Enbridge	This project included the construction of a 204-mile-long, 16-inch-diameter crude oil pipeline and the installation of new station facilities and tank age at EPND's existing Beaver Lodge, Stanley, and Berthold Station and Terminal facilities.	204	1,236
4	Heart River Pipeline System	Bridger Pipeline LLC	This project included the construction of a 85-mile-long, 10-inch-diameter crude oil pipeline with three gathering pipeline interconnects and two truck receipt points interconnecting with the Little Missouri System at Fryburg Station and Belle Fourche Pipeline at Skunk Hill Station.	91	552
5	High Plains Pipeline	Tesoro – High Plains Pipeline Company	Crude oil pipeline.	330	2,000
6	Keystone XL On-ramp Pipeline System	BakkenLink Pipeline LLC	This project included the construction of an 110-mile-long, 10-inch-diameter and 55-mile-long, 12-inch-diameter crude oil header pipelines and a 145-mile-long, 16-inch-diameter Trunk line from Watford City to the Keystone XL Pipeline System in Fallon, Montana.	241	1,461
7	Killdeer Dickinson Pipeline	Plains All American Pipeline, LP	This project included the construction of a 33-mile-long, 6-inch-diameter crude oil gathering pipeline from the Killdeer Crude Oil Gathering Facility in Dunn County to 2 miles northwest of Dickinson. The capacity of the pipeline is 10,000 bpd.	33	200

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
8	Little Missouri Pipeline System	Bridger Pipeline LLC	This project included the construction of a 12-inch-diameter crude oil pipeline, which is part of the Four Bears system.	22	133
9	Parshall Pipeline System	Bridger Pipeline LLC	This project included the construction of 210 miles of 4.5-, 6.6-, and 8.6-inch-diameter steel and 4.5-inch-diameter composite pipelines at various operating pressures, which was part of a gathering system for crude oil.	25	152
10	Trenton Gathering Pipeline	Plains Pipeline LP	This project included the construction of 303 miles of 4-, 6-, and 10-inch-diameter crude oil pipelines, of which 280 miles were constructed in Montana.	16	97
11	Stanley Plant to Storage Pipeline	Hawthorn Oil Transportation (North Dakota), Inc.	This project included the construction of an 11-mile-long, 4.5-inch-diameter pipeline from the Stanley Gas Plant to a storage facility in Mountrail County.	11	67
12	Stanley to Railroad Pipeline	Hawthorn Oil Transportation (North Dakota), Inc.	This project included the construction of a 4-mile-long, 12-inch-diameter pipeline for crude oil from one mile southeast of Stanley to a railroad loading facility 2 miles northeast of Stanley.	4	24
Crude Oil Pipeline Totals				1,303	7,897
Natural Gas, LNG, and Other Pipelines					
13	Amerada Hess Natural Gas Pipeline	Amerada Hess	This project included the construction of a 62-mile-long, 10.75-inch-diameter natural gas pipeline from the AHC Tioga Gas Plant to a delivery point on the Northern Border Pipeline.	62	376
14	Dakota Gasification CO_2 Pipeline	Dakota Gasification Company	This project included the construction of 205 miles of pipeline including a12-inch-diameter pipeline segment from the Synfuels Plant site to Tioga, North Dakota and a 14-inch diameter pipeline from Tioga, North Dakota to Weyburn Oil Field in southeastern Saskatchewan, Canada.	115	697

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
15	Beaver Lodge Loop Pipeline	Enbridge	This project included the construction of 56 miles of a 16-inch-diameter LNG pipeline from Berthold Station in Ward County to Beaver Lodge Station in Williams County. This 145,000-bpd capacity pipeline was constructed parallel to the EPND pipeline.	44	267
16	Belle Creek Northern Border System Pipeline	Williston Basin Interstate Pipeline Co.	This project included the construction of an 81-mile-long, 16-inch-diameter natural gas pipeline.	59	358
17	Cabin Creek Bismarck System Pipeline	Williston Basin Interstate Pipeline Co.	This project included the construction of an 159-mile-long, 10-, 12-, and 16-inch-diameter natural gas pipeline.	153	927
18	Cabin Creek Williston System Pipeline	Williston Basin Interstate Pipeline Co.	This project included the construction of a 66-mile-long, 8- and 12-inch-diameter natural gas pipeline.	66	400
19	Cartwright to Trenton System Pipeline	Hiland Operating LLC	This project included the construction of a 10-mile-long, 4-inch-diameter LNG pipeline.	10	60
20	Cartwright to Trenton System Pipeline	Hiland Operating LLC	This project included the construction of a 10-mile-long, 6-inch-diameter LNG pipeline.	10	60
21	Cartwright to Trenton System Pipeline	Hiland Operating LLC	This project included the construction of a 10-mile-long, 8-inch-diameter LNG pipeline.	10	60
22	Fryburg Gathering Pipeline	Plains Pipeline LP	This project included the construction of a 14.1-mile-long, 6-inch-diameter LNG pipeline in McKenzie County.	16	97
23	NBPL Pipeline	Northern Border Pipeline Company	This project included the construction of a 1,407-mile-long, 8-inch-diameter natural gas pipeline through the Williston Basin of Montana and North Dakota.	186	1,127
24	Prairie Rose Pipeline	Pecan Pipeline (North Dakota), Inc.	This project included the construction of a 12-inch-diameter LNG pipeline.	15	91

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
25	Robinson Lake Gas Pipeline	Whiting Petroleum Corp	This project included the construction of a 16.5-mile-long, 6-inch-diameter natural gas pipeline that interconnected with the Williston Basin Interstate Pipeline System. The maximum design operating pressure of the pipeline is 720 psig with a maximum design flow rate of 20 MM ft^3/day.	14	85
26	Williston Basin Pipeline	Bear Paw Energy LLC	This project included the construction of a 64.2-mile-long, 10.75-inch-diameter LNG pipeline. The pipeline was designed to transport approximately 65,000 bpd.	28	170
27	Williston Tioga Minot System Pipeline	Williston Basin Interstate Pipeline Co.	This project included the construction of a 166-mile-long, 12-inch-diameter LNG pipeline.	166	1,006
Natural Gas, LNG, and Other Pipeline Totals				954	5,781
Electric Transmission Lines					
28	Williston to Tioga 230-kV Transmission Line	Basin Electric Power Cooperative	This project included the construction of 61 miles of 230-kV transmission line from the Williston Substation to the Tioga Substation.	61	370
29	Electrical Transmission Lines	North Dakota Electric Companies	Detailed project descriptions or operating companies were not available.	626	3,794
30	Buford Trenton Tap-Buford Trenton P.P. 57-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	1.8	2,940
31	Charlie Creek – Belfield 230-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	40.7	Acreage is included in the 2,940 total acres listed for Project 30.

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
32	Charlie Creek – Watford City Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	34.3	Acreage is included in the 2,940 total acres listed for Project 30.
33	Dawson-Williston 115-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	16.9	Acreage is included in the 2,940 total acres listed for Project 30.
34	Dawson County – Belfield 230-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	27.0	Acreage is included in the 2,940 total acres listed for Project 30.
35	Ward Delivery – Belfield 230-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	46.2	Acreage is included in the 2,940 total acres listed for Project 30.
36	Watford City – Beulah 115-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	51.5	Acreage is included in the 2,940 total acres listed for Project 30.

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
37	Williston – Watford City Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	41.8	Acreage is included in the 2,940 total acres listed for Project 30.
38	Wolf Point – Williston 115-kV Transmission Line	Western Area Power Administration	Upper Great Plains Region Transmission Line Network.	14.4	Acreage is included in the 2,940 total acres listed for Project 30.
Electric Transmission Line Totals				961.6	7,104
Past Actions Totals				3,218.6	20,782
Present Actions					
Crude Oil Pipelines					
39	BakkenLink Pipeline	BakkenLink Pipeline LLC	This project would include the construction of a crude oil pipeline system consisting of approximately 132 miles of 8-inch-diameter and 12-inch diameter steel crude oil pipeline extending from multiple receipt points in Billings, McKenzie, Stark, and Williams counties, North Dakota, to an interconnect with a proposed, future rail loading facility at Fryburg, North Dakota.	132	1,578
40	Bakken North Project Pipeline	Plains Pipeline LLC	This project would include the construction of a 103-mile, 12.75-inch-diameter crude oil pipeline (44 miles in North Dakota) extending from Trenton, North Dakota to Regina, Saskatchewan, Canada. The pipeline capacity would be 50,000 bpd.	19	115

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
41	Belfield Oil Pipeline Project	Whiting Oil and Gas Corporation	This project would include the construction of a 6.8-mile, 8-inch-diameter crude oil pipeline in Billings and Stark counties. Maxiumum design operating pressure is 500 psig; maximum design flow rate is 60,000 bpd.	6	36
42	Belle Fourche Pipeline	True Companies	This project would include the construction of a crude oil pipeline (50,000 bpd capacity) from the Williston Basin of western North Dakota to the Powder River Basin in Wyoming.	43	261
43	Bicentennial to Dickinson Pipeline	Belle Fourche Pipeline	This project would include an 8-inch-diameter liquid petroleum pipeline.	62	376
44	COLT Connector Pipeline Project	Rangeland Energy	This project would include a 21-mile-long, 8-inch-diameter crude oil pipeline from Epping to Tioga, North Dakota.	21	127
45	Parshall System Pipeline	Bridger Pipeline LLC	This project would include a 54-mile-long crude oil pipeline that would gather Bakken crude oil from over 250 wells in Mountrail County with delivery to Stanley, North Dakota.	54	327
46	Fryburg Rail Terminal Facility	Great Northern Midstream LLC	This project would include the construction of a 315-acre truck yard and rail terminal facility in Billings County, which would be used to collect crude oil from the region.	NA	315
Crude Oil Pipeline Totals				374	3,536
Natural Gas, LNG, and Other Pipelines					
47	Garden Creek Pipeline	Bear Paw Energy	This project would include a 64.2-mile-long, 10.75-inch-diameter (55.3 miles in North Dakota) LNG pipeline. The pipeline would operate at 400-1,300 psig and have a capacity of 65,000 bpd.	52	315
48	Tioga Pipeline	Hess Corporation	This project would include 4-mile-long, 6- and 8-inch-diameter pipelines connected to the Tioga Gas Plant and extending south of Tioga.	4	24

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
Natural Gas, LNG, and Other Pipeline Totals				56	339
Electric Transmission Lines					
49	Antelope Valley Station to Northwestern North Dakota 345-kV Transmission Line Project	Basin Electric Power Cooperative	This project would include the construction of approximately 190 miles of 345-kV electric transmission lines extending from the Antelope Valley Station near Beulah, North Dakota, to the existing Williston Substation near Williston, North Dakota, and onto the Neset Substation near Tioga, North Dakota.	190	1,152
Electric Transmission Line Total				190	1,152
Present Actions Totals				620	4,027
Reasonably Foreseeable Future Actions					
Crude Oil Pipelines					
50	Little Muddy Station Connection Project	Enbridge Pipelines (North Dakota) LLC	This project would include the construction of a new pump and terminal facility, the Little Muddy Station, and an approximately 6-mile-long, 10-inch-diameter pipeline from the new Little Muddy Station to Enbridge's East Fork Station in Williams County. The Little Muddy Station would include two 30,000-barrel tanks, pumping facilities, a shipper-owned and operated truck-offloading facility, and pipeline interconnects to allow for a capacity of 55,000 bpd. The Little Muddy Station Connection is a part of Enbridge's 968-mile-long existing underground petroleum gathering and mainline pipeline system that extends from eastern Montana through North Dakota to Minnesota.	6	26
51	Crude Oil Pipeline	Rangeland Pipeline, LLC	This project would include the construction of approximately 20.5 miles of 10-inch pipeline and a storage tank and meter station approximately 8 miles south of Tioga, for the transmission of crude oil, all in Williams County, North Dakota.	20.5	126

Table 5-1 Projects within the CESA

Map ID Number	Project Name	Company	Project Description	Distance Within CESA (miles)	Surface Disturbance (acres)
52	Nelson to Ross Pipeline	Plains Pipeline, L.P.	This project would include the construction and operation of approximately 16.9 miles of 10.75-inch crude oil pipeline. The pipeline capacity would be 47,000 bpd.	14	85
Crude Oil Pipeline Totals				40.5	237
Natural Gas, LNG, and Other Pipelines					
53	Sanish Project Pipeline	Enbridge	This project would include the construction and operation of approximately 36 miles of 12-inch-diameter and 1 mile of 10-inch-diameter pipeline for crude oil.	37	406
54	Stateline to Riverview Pipeline	ONEOK Rockies Midstream LLC	This project would include the construction and operation of approximately 53.4 miles (12.4 miles in North Dakota) of 10.75-inch-diameter LNG pipeline. The pipeline capacity would be 65,000 bpd and operating at 400 to 1,300 psig.	9	55
55	Vantage Pipeline Project	Vantage Pipeline US LP	This project would include the construction and operation of approximately 430 miles of 10- and 12-inch-diameter LNG pipeline running from the Hess Corporation Gas Plant in Tioga, North Dakota, to Empress, Alberta, Canada.	34	206
Natural Gas, LNG, and Other Pipeline Totals				80.0	667
Reasonably Foreseeable Future Action Totals				120.5	904
All Projects Totals				3,959.1	26,713

5.2.2 Present Projects

A total of 11 projects are currently under construction, undergoing NEPA review, or applications are being developed to meet state permitting requirements (**Table 5-1**), in addition to the Project. These other projects include seven crude oil pipelines (242 miles; 1,643 acres), two natural gas pipelines (56 miles; 339 acres), one electric transmission line (190 miles; 1,152 acres), and one rail terminal facility (315 acres) with a total combined surface disturbance of 3,449 acres. The Project would result in 1,578 acres of surface disturbance. Therefore, the total combined surface disturbance including all present projects would be approximately 5,027 acres.

5.2.3 Reasonably Foreseeable Future Projects

Activities considered to be RFFAs were evaluated based on the criteria listed below. Information was gathered to identify potential future actions in the following ways: obtaining information from the North Dakota PSC's website, computer databases, and considering other EIS/EAs recently completed for other projects in the region. The information gathered was evaluated based on the criteria to determine which of these projects are speculative due to limiting factors and which are reasonably foreseeable to occur and relevant to the cumulative impacts discussion.

- **Siting authorities/applications** – identify if an application has been submitted to a siting authority (e.g., a utilities commission, PSC) that regulates the rates and services of a public utility, reviews and approves and/or denies applications for development of pipeline and electric transmission line projects.
- **NEPA process/federal approvals –** identify if a project is under NEPA review (e.g., federal agencies are required to consider and disclose the potential environmental impacts of their "major" or "significant" proposed actions, prior to decision-making, to keep the decision-making process transparent and cooperative).
- **System studies and planning analysis** – determine if a project requires analysis or an evaluation of proposal design to determine the difficulty in carrying out a designated task. Such studies precede technical development and project implementation. The subsequent discussion describes the activities determined to be RFFAs.

Using the above criteria, six projects have been identified as reasonably foreseeable, which are listed in **Table 5-1**. These RFFAs would include 3 crude oil pipelines (41 miles; 237 acres) and 3 LNG pipelines (80 miles; 667 acres), which would have a combined total surface disturbance of approximately 904 acres. There are no electric transmission lines proposed for construction within the CESA in the foreseeable future.

5.3 Cumulative Effects

5.3.1 Air Quality

To the extent to which construction of the Project would occur simultaneously and in the same general area as other projects, there could be minor cumulative temporary air quality impacts. Simultaneous construction activities in close proximity to one another could result in locally elevated concentrations of pollutants; however, those concentrations would not be expected to result in a degradation of local or regional air quality, or result in any exceedences of the NAAQS. There would be no permanent cumulative impacts associated with the Project, and the expected reduction of the number of oil tanker miles driven could result in a net decrease in air quality impacts by taking 300 trucks per day off the road.

5.3.1.1 Criteria Pollutants

Ambient air quality data for the region reflects impacts of all currently existing operations in the airshed. Air quality in the region meets applicable state and national standards and would be expected to remain

the compliance under existing operations (i.e., the No Action Alternative). As previously discussed, the Project emissions are expected to be negligible primarily due to the temporary nature off all activities; therefore, it is reasonable to expect that implementation of the Project cumulative impacts would be in compliance with all applicable state and national standards. Evaluating the cumulative impacts of the Project within the CESA can best be completed by comparing the scale and nature of the development to relevant existing and proposed developments and the impacts those projects are predicted to have.

As seen in **Table 5-1**, existing developments total a combined distance of 3,218.6 miles with 20,782 acres of surface disturbance. The overall scale of the Project, 132 miles and 1,578 acres of surface disturbance, are on par with several existing developments that did not have any clearly attributable impacts on the NAAQS. In addition, the Project only accounts for 3 percent of the distance and 6 percent of the total surface disturbance for all existing and proposed developments in the CESA. Therefore, the contribution of the Project to cumulative impacts would be minor compared to the impacts from all existing and proposed developments.

5.3.1.2 HAPs

The Project would not be a major source for HAPs and is not expected to greatly increase adverse cumulative impacts from HAPs, and may provide beneficial effects by taking 300 trucks per day off the road.

5.3.1.3 AQRVs

Due to the projected negligible emissions associated with the Project, it is not anticipated the Project would contribute greatly to cumulative impacts at the nearest sensitive area (i.e., Theodore Roosevelt National Park), and may provide beneficial effects by taking 300 trucks per day off the road.

5.3.2 Geology and Minerals

5.3.2.1 Geology

Incremental effects of the Project are difficult to quantify because of varying site conditions and construction. However, given appropriate design or avoidance, geologic hazards are not expected to contribute to cumulative impacts in the CESA.

5.3.2.2 Minerals

Since there are no anticipated impacts to access to oil and gas, coal, or uranium resources during construction or operation, there would be no contribution to cumulative impacts associated with those mineral resources. The Project's demand for aggregate would be small compared to the overall aggregate production in North Dakota which was 1.62 million short tons in 2010 (Willett and Bolen 2011). However, due to local increased oil and gas drilling and associated construction (roads and infrastructure), acute shortages of gravel have developed. Unforeseen events like the flooding in Minot, North Dakota, in spring of 2011 have put additional pressures on local supplies (Schramm 2011). Given that the Project represents about 18 percent the total mileage of the present and reasonably foreseeable projects in the CESA, the projected gravel needs (33,705 tons) for the Project represent a major portion of expected gravel demand for those projects. However, compared to the total gravel demands in the CESA for all types of construction, the Project would present a lesser impact and that impact would be short-term during the construction phase of the Project. Aggregate demand for the Project, present projects, and reasonably foreseeable projects would be minimal during operation and have no long-term effects.

5.3.3 Paleontological Resources

Cumulative impacts to paleontological resources would result from surface disturbance related to industrial developments, unauthorized collection, and natural erosion processes in the CESA. With the implementation of the recommended mitigation measures, the Project, when added to past, present, and

RFFAs, would not contribute to cumulative impacts to paleontological resources in the CESA. A cumulative beneficial impact could result from the discovery of important fossil localities because of construction of the Project or other RFFAs in previously undisturbed areas.

5.3.4 Soils

Past and present actions and RFFAs that contribute to cumulative impacts to soil resources in the CESA include construction of pipelines, electric transmission lines, and a rail terminal facility. Impacts to soils from construction and operation activities associated with pipeline construction would be similar to those described in Section 4.4. Construction of pipelines, electric transmission lines, and a rail loading facility would result in impacts that include removal of vegetation, exposure of the soil, mixing of soil horizons, soil compaction, loss of topsoil productivity, and increased susceptibility of the soil to erosion. Approximately 26,713 acres of soils would be disturbed as a result of past and present actions, RFFAs, and construction of the Project. As stated in Section 5.2.1, the majority of the past surface disturbances associated with these projects have been reclaimed and returned to their previous land uses, with the exception of permanent, aboveground facility locations.

With the implementation of the environmental protection measures and recommended mitigation measures, the Project, when added to past and present actions and RFFAs, would not be expected to substantially contribute to cumulative impacts to soil resources in the CESA.

5.3.5 Water Resources

Impacts to water quality are not anticipated as a result of Project implementation; therefore, cumulative impacts are not anticipated. A pipeline spill or rupture could result in short-term water quality impacts if it reached surface water or groundwater, but any cumulative effects would not be expected in the long term.

5.3.6 Vegetation Resources

Project-related surface disturbance, in addition to past and present actions and RFFAs within the CESA, would result in the cumulative surface disturbance of approximately 26,793 acres. Surface disturbance from these projects would total approximately 0.4 percent of the entire CESA. Cumulative impacts to vegetation would be minimized by implementing numerous environmental protection measures including proper handling of topsoil and spoil, noxious weed control measures, and reclamation techniques as described in **Table 2-5**, the CMRP (POD, Appendix XV), and the Noxious Weed and Aquatic Nuisance Species Control Plan (POD, Appendix VI). Implementation of these measures, in addition to the minimal loss of vegetation in relation to the total amount of vegetative cover within the CESA, would be considered minimal.

5.3.7 Wetlands and Floodplains

5.3.7.1 Wetlands

Temporary impacts to wetlands within the CESA have occurred as a result of construction of past actions including pipelines and electric transmission lines. Vegetation within these wetlands likely has naturally recovered over time and regained its vegetative productivity. Present actions and RFFAs also would result in temporary impacts to wetlands. Environmental protection measures and mitigation measures would be implemented to minimize impacts to wetlands. Construction of the Project would result in approximately 3.3 acres of temporary disturbance to wetlands. Long-term loss of wetland vegetation and function is not anticipated from construction of the Project. Therefore, cumulative impacts to wetlands would be limited to temporary surface disturbance within wetlands.

5.3.7.2 Floodplains

Impacts to floodplains are not anticipated as a result of Project implementation; therefore, cumulative impacts are not anticipated.

5.3.8 Noxious Weeds and Invasive Species

Minimal impacts to existing vegetation types from noxious weed and invasive species establishment are anticipated as a result of Project implementation. Environmental protection measures and mitigation measures outlined in **Table 2-5** and the CMRP (POD, Appendix XV), and the Noxious Weed and Aquatic Nuisance Species Control Plan (POD, Appendix VI) would be implemented to minimize impacts related to noxious weeds and invasive species. Therefore, cumulative impacts are expected to be minimal.

5.3.9 Wildlife and Fisheries

The cumulative analysis for wildlife and fisheries focuses on the past and present actions and RFFAs presented in **Table 5-1,** and the Project disturbance, presented in **Table 2-1**. It assumes that: 1) human use of the CESA would increase with the implementation of the Project; 2) wildlife habitats are currently at their respective carrying capacities in and adjacent to the Project area; and 3) the overall region has been previously affected by at least some level of historic and current development activities and would be affected by RFFAs.

Cumulative impacts to wildlife and aquatic species would be directly related to habitat loss, habitat fragmentation, animal displacement, and direct mortalities. Permanent surface disturbance incrementally adds to wildlife habitat losses, overall habitat fragmentation, and animal displacement. In areas where development has occurred, habitat fragmentation may have resulted in the disruption of seasonal patterns or migration routes. Historic, current, and future developments in the vicinity of the Project have resulted, or would result in the reduction of carrying capacities, as characterized by the amount of available cover, forage, and breeding areas for wildlife species.

The CESA includes six counties and approximately 7,374,996 acres of land. The CESA was identified to encompass the various habitat types utilized by wildlife and aquatic species that inhabit the Project area. As presented in **Table 5-1**, a total of 26,713 acres are estimated to be disturbed. Impacts from Project construction would include the permanent disturbance of approximately 75.5 acres of wildlife habitat. Surface disturbance from these projects would be less than 1 percent of the entire CESA.

Surface disturbance considered in the CESA results from the construction and operation of pipelines and electric transmission lines. However, other activities such as livestock grazing; agriculture, and recreational activities also contribute to cumulative impacts on wildlife and their habitats. Wildlife species would be susceptible to these cumulative impacts, since encroaching human activities in the CESA resulted, or would result in habitat loss and fragmentation and animal displacement in areas that may be at their relative carrying capacity for these resident species. Many of the local wildlife populations (e.g., small game, migratory birds) that occur in the CESA would likely continue to occupy their respective ranges and breed successfully, although population numbers may decrease relative to the amount of cumulative habitat loss and disturbance from incremental development.

5.3.10 Special Status Species

5.3.10.1 Special Status Wildlife Species

Special status wildlife species would be cumulatively impacted by past and present actions, RFFAs, and the Project. The resulting direct impacts would be similar to those discussed in Section 4.9, Wildlife and Fisheries. However, in many cases surveys for special status species are required in potential or known habitats. These surveys would help determine the presence of any special status wildlife species or the extent of potential habitat, and protective measures would be taken to avoid or minimize direct

disturbance in these important areas. Surface disturbance in the CESA primarily results from construction and operation of pipelines and electric transmission lines. However, other activities such as livestock grazing, agriculture, and recreational activities also contribute to cumulative impacts on wildlife and their habitats.

Whooping crane

Historic population declines of the whooping crane are the result of habitat destruction, shooting, and displacement by human activities. Current threats include limited genetics of the population, loss and degradation of migration stopover habitat, construction of additional transmission lines, degradation of coastal ecosystems, and the threat of chemical spills in whooping crane wintering habitat in Texas. The wild whooping crane population is characterized by low numbers, slow reproductive potential, and limited genetic diversity. A catastrophic event could eliminate the wild, self-sustaining Aransas-Wood Buffalo population (AWBP). The Project and the CESA occur within the whooping crane migration corridor. Protection and enhancement of migration habitat for the AWBP is one of the recovery strategies presented in the International Recovery Plan for the Whooping Crane (Canadian Wildlife Service and USFWS 2007).

The CESA includes six counties and approximately 7,374,996 acres of land. As presented in **Table 5-1**, a total of 3,908 acres are estimated to be disturbed by past and present actions and RFFA projects. Temporary habitat loss from Project construction would include approximately 205.4 acres of agricultural fields within the ROW; approximately 13.8 acres of agricultural land would be permanently disturbed. This incremental amount of disturbance to potential whooping crane migration habitat would be negligible. Measures to prevent whooping crane collisions with transmission lines are being developed in consultation with USFWS. Temporary disturbance from construction activities would be minimized by vigilant surveillance by Project staff. Construction activities would cease if a whooping crane were sighted until the bird(s) move out of the Project ROW.

5.3.10.2 Special Status Plant Species

Project-related surface disturbance, in addition to past and present actions and RFFAs within the CESA, would result in the cumulative surface disturbance of approximately 26,793 acres. An unknown percentage of this total acreage would be considered potentially suitable habitat for the 12 special status plant species impacted by the implementation of the Project, in addition to past and present actions and RFFAs. Cumulative impacts to vegetation would be minimized by implementing numerous environmental protection measures including proper handling of topsoil and spoil, noxious weed control measures, and reclamation techniques as described in **Table 2-5**, the CMRP (POD, Appendix XV), and the Noxious Weed and Aquatic Nuisance Species Control Plan (POD, Appendix VI). Implementation of these measures, in addition to the minimal loss of vegetation in relation to the total amount of vegetative cover within the CESA, would be considered minimal.

5.3.11 Land Use

Past actions and RFFAs that contribute to cumulative impacts to land use in the CESA include pipeline and electric transmission line projects. Impacts to land use from construction and operation activities associated with Project construction would be similar to those described in Section 4.11. The Project would contribute approximately 6 percent to the cumulative temporary surface disturbance within the CESA. The permanent loss of 80 acres of land represents a negligible portion of the entire CESA. Temporary impacts would include the loss of agricultural productivity as a result of construction activities.

With the implementation of environmental protection measures, the Project, when added to past and present actions and RFFAs would result in minimal cumulative impacts to land use within the CESA.

5.3.12 Recreation

Past actions and RFFAs that contribute to cumulative impacts to recreation in the CESA include pipeline and electric transmission line projects. Impacts to recreation from construction and operation activities would be similar to those described in Section 4.12. Construction impacts would include potential temporary disruptions to hikers, hunters, anglers, and campers by increased use of facilities by construction workers. These potential impacts would end as soon as construction activities are completed. Long-term impacts to recreation would be negligible.

5.3.13 Wilderness

Impacts to wilderness are not anticipated as a result of Project implementation; therefore, cumulative impacts are not anticipated.

5.3.14 Visual Resources

Past and present actions and RFFAs that contribute to cumulative visual impacts would include the presence and visual contrasts of receipt facilities, MLVs, electric transmission structures, conductors, and substations within the viewshed of residents, recreationists, and motorists travelling on roads and highways within the CESA. Vegetation removed within the construction ROW for the Project would result in visual impacts within the viewshed. After reclamation has been completed, visual impacts would lessen over time with the establishment of vegetative cover. Overall, the cumulative visual impacts within the viewshed from existing pipelines and electrical transmission structures and facilities, in addition to the pipeline and aboveground facilities associated with the Project, would occur over the long term until the receipt facilities and MLVs have been removed. The RFFA rail loading facility would contribute nighttime equipment and ground surface glow impacts from the down-shielded lights, daytime glint and glare impacts from reflectance of the machinery and equipment surfaces, and visual form, line, and color impacts to the surrounding landscape.

5.3.15 Noise

Past and present actions and RFFAs that contribute cumulative impacts to soundscapes from noise in the CESA include pipelines and electric transmission lines. Impacts to soundscapes from noise generated during construction and operation activities associated with pipeline construction would be similar to those described in Section 4.15. Noise emanating from the rail loading facility would be a long-term impact; however, the facility would be in an area dominated by agriculture with limited noise sensitive receptors. With implementation of routing away from sensitive noise receptors (e.g., residences) and the temporary duration of construction, the Project, when added to past and present actions and RFFAs, would minimally contribute to cumulative noise levels in the CESA.

5.3.16 Socioeconomics

Past and present actions and RFFAs that contribute to cumulative impacts to socioeconomics in the CESA include pipelines and electric transmission lines. Impacts to socioeconomics from construction and operation activities associated with pipeline construction would be similar to those described in Section 4.16. The majority of lands affected by past and present actions and RFFAs would be agricultural. Although the loss of agricultural productivity would affect landowners, they would be compensated for the loss of productivity. Past and present actions and RFFAs also would contribute to the local tax base, adding increased revenue. Incremental impacts within the CESA would be minimal.

5.3.17 Environmental Justice

Past and present actions and RFFAs that contribute to cumulative impacts to environmental justice in the CESA include pipelines and electric transmission lines. Impacts to environmental justice from construction and operation activities associated with pipeline construction would be similar to those described in Section 4.17. Despite the presence of a meaningfully greater Native American population

and poverty rates that are meaningfully greater than the state average, the Project would generate income through property tax revenues, as well as support local services such as restaurants and lodging, potentially benefiting minority communities. The Project, when added to past and present actions and RFFAs, would not be expected to significantly contribute to cumulative impacts to minority and low-income populations in the CESA.

5.3.18 Transportation

Past and present actions and RFFAs that contribute to cumulative impacts to transportation in the CESA include pipelines and electric transmission lines. Impacts to transportation from construction and operation activities associated with pipeline construction would be similar to those described in Section 4.18. Minor traffic increases would occur on local roads during construction; however, once the pipeline is operating, it is expected that 300 fewer tanker trucks per day would be traveling area roads in the long term as a result of operations traffic. Temporary impacts would include increased traffic on local roads as a result of construction activities.

Minor increases in traffic to and from the rail loading facility would be an RFFA. Impacts from this RFFA would be a long-term minor increase of traffic on local roads. Local roads near the rail loading facility are rural in nature with low levels of traffic. The increase in traffic would not outstrip the capacity of local roads, but may add to long-term maintenance costs. With the implementation of environmental protection measures, the Project, when added to past and present actions and RFFAs, would not be expected to significantly contribute to cumulative impacts to transportation resources in the CESA; and it is expected that construction of the Project should result in a net decrease in tanker truck traffic throughout the Project area, helping to relieve traffic congestion, somewhat.

5.3.19 Public Safety

Past and present actions and RFFAs that contribute to cumulative impacts to human health and safety in the CESA include pipeline and electric transmission lines. Impacts to human health and safety from construction and operation activities associated with pipeline construction would be similar to those described in Section 4.19. As there are no anticipated long-term impacts to human health and safety, there are no long-term cumulative impacts to human health and safety. Short-term impacts would include increased risk of accidents as a result of construction activities.

With the implementation of environmental protection measures, the Project, when added to past and present actions and RFFAs, would not be expected to significantly contribute to cumulative impacts to human health and safety in the CESA.

5.3.20 Hazardous Materials and Solid Waste

Compliance with existing regulations and implementation of spill plans and environmental protection measures, the Project, when added to past, present, and future actions, would represent a small contribution to cumulative impacts.

5.3.21 Cultural Resources/Native American Concerns

Cumulative impacts to cultural resources would result from surface disturbance, unauthorized collection, and natural erosion processes in the CESA. With the implementation of the recommended mitigation measures and avoidance, the Project, when added to past and present actions and RFFAs, would not be expected to significantly contribute to cumulative impacts to cultural resources in the CESA.

Cumulative impacts to Native American traditional values would result from surface disturbance, surface structures, unauthorized collection, and natural erosion processes in the CESA. With the implementation of the recommended mitigation measures and avoidance, the Project, when added to past and present actions and RFFAs, would not be expected to significantly contribute to cumulative impacts to Native American traditional values in the CESA.

6.0 Consultation and Coordination

6.1 Agency Scoping

Two agency scoping meetings were conducted in the BLM – North Dakota Field Office in Dickinson, North Dakota; the first meeting was held on September 7, 2011, and the second meeting was held on October 10, 2011. Agencies that participated in the meetings or provided written comments during the agency scoping period included the U.S. Forest Service, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Park Service, Bureau of Indian Affairs, and State Historical Society of North Dakota. Key issues discussed at these meetings or provided in letters included the following:

- Special status species (federal listed, candidate, and USFS-sensitive species);
- Migratory birds (compliance with the MBTA);
- Soils and hydrology;
- Noxious weeds;
- Cultural resources;
- Lake Sakakawea crossing (the horizontal directional drill [HDD] technique is preferred by the USACE and North Dakota Department of Health, Water Quality Division (NDDH WQD); the NDDH–WQD will not issue a Section 401 Permit if open trenching is the proposed construction technique to be used for the Lake Sakakawea crossing);
- Water quality issues – potential disturbance of heavy metals in the substrate of Lake Sakakawea and potential impacts to the pallid sturgeon (federal listed species);
- Potential for accidental release of crude oil into waters, primarily Lake Sakakawea (potential impacts to the pallid sturgeon, which is a concern to the U.S. Fish and Wildlife Service) and the Little Missouri River; the USACE recommended that a Spill Risk Assessment be completed for the Project;
- Bighorn sheep lambing area in the Little Missouri River area;
- Roadless inventory area on USFS land;
- “Suitable for Wilderness” area on USFS land adjacent to the Project corridor;
- The USFS has a maximum construction ROW width of 50 feet and permanent ROW width of 20 feet across the LMNG;
- Potential impacts to Management Indicator Species as described in the Grassland Management Plan for USFS land;
- Need to develop additional alternatives;
- Impacts to air quality;
- Degradation of roads and public safety;
- Nighttime visibility of Rail Loading Facility lighting; and
- Impacts from ancillary facilities.

6.2 Public Interest/Public Scoping

The BLM compiled a mailing list of agencies, organizations/companies, individuals, and other entities that may have an interest in the Project. The list included federal, state, and local agency offices with jurisdiction over the Project, as well as potentially affected landowners, Native American tribes, and NGOs. An information letter describing the Project and requesting comments was distributed on

November 7, 2011, to all individuals identified on the mailing list; a 30-day comment period was provided.

Public notices were published in the following regional newspapers from November 7 through November 12, 2011, notifying the public of the Project and soliciting comments:

- The Bismarck Tribune;
- Williston Daily Herald;
- Dickinson Press;
- Minot Daily News;
- Billings County Pioneer;
- Dunn County Herald; and
- McKenzie County Farmer.

Five comment letters were received during the public scoping period. A summary of the issues identified in these letters has been provided below.

- Adverse impacts to natural soundscapes, air quality, scenic vista degradation, primarily from the Rail Loading Facility;
- Must evaluate a reasonable range of alternative pipeline routes (at least one route alternative that would not traverse public lands) including the No Action Alternative;
- Cumulative impacts from oil and gas development within the Project region.
- Impacts to air quality and scenic qualities in the LMNG;
- Fragmentation of and surface disturbance within wildlife habitat;
- Potential impacts at the Lake Sakakawea crossing;
- Adverse and cumulative impacts related to the Rail Loading Facility near Fryburg, North Dakota;
- Full disclosure of associated facilities needed for Project operation;
- Provide substantiation that truck traffic would decrease with the operation of the Project.
- Mass wasting and soil erosion along the bluffs of the Little Missouri River Valley;
- Potential for pipeline rupture and crude oil release as a result of mass wasting and slope failure along the bluffs of the Little Missouri River Valley;
- An early warning detection system should be installed along the pipeline segments to be constructed along the bluffs of the Little Missouri River Valley in order to monitor slope creep;
- Pipeline valves should be installed in close proximity to mass wasting areas to limit the amount of crude oil potentially released;
- Potential impacts to large wetlands as a result of pipeline construction and operation;
- Potential subdivision housing development may be affected by the construction and operation of the Project; and
- Potential impacts to cultural resources from pipeline construction.

6.3 Agencies, Organizations/Companies, Native American Tribes, and Persons Consulted

The following agencies, organizations/companies, individuals, and other entities were contacted during the public scoping process.

6.3.1 Agencies

Federal

Bureau of Land Management

Theodore Roosevelt National Park
- South Unit Staff
- North Unit Staff

U.S. Army Corps of Engineers
- Regulatory Office (Bismarck, ND)
- Omaha District Office (Omaha, NE)

U.S. Department of Agriculture - Animal Plant Health Inspection Service, Wildlife Services

U.S. Department of Agriculture - Natural Resources Conservation Service, North Dakota State Office

U.S. Fish and Wildlife Service - North Dakota Field Office

U.S. Forest Service - Dakota Prairie Grasslands

U.S. Forest Service - Little Missouri National Grassland, McKenzie Ranger District

U.S. Department of the Interior - Office of Surface Mining Reclamation and Enforcement

State

Dickinson State University

Dickinson State University Foundation

North Dakota Department of Health

North Dakota Forest Service

North Dakota Game and Fish Department
- Bismarck Office
- Williston Office
- Riverdale Office

North Dakota Industrial Commission - Oil and Gas Division

North Dakota Land Department

North Dakota Parks and Recreation Department

North Dakota State Historical Society

North Dakota State University - Department of Soil Science

North Dakota State Water Commission

North Dakota Tourism Division

State of North Dakota

Local

McKenzie County Commissioners

McKenzie County Extension Agent

McKenzie County Weed Board

6.3.2 Organizations/Companies

Agassiz Basin Group Sierra Club

American Rivers

Associated Press

Badlands Conservation Alliance

Badlands Shooting Club

Chimney, Butte Land Company L.P.
Cliffhangers Four-wheeler Club
Continental Resources, Inc.
Dakota Cyclery
Dakota Resource Council
Dakota Roughrider Bike Club
Exxon Company, USA
FNAWAS Headquarters
Grimestad Farm and Ranch, LLP
Hess Corporation
Independent Petroleum Association of Mountain States
Job Development Authority
Keene First Lutheran Church
McKenzie County Farmer
McKenzie County Grazing Association
Medora Grazing Association
MHA Elders Organization
Mule Deer Foundation
National Audubon Society State Office
National Wildlife Federation
Norstog Enterprises LLC
North Dakota Bowhunters Association
North Dakota Council of Humane Societies
North Dakota Farm Bureau
North Dakota Petroleum Council
North Dakota Wildlife Federation
Pheasants Forever
Premier Bulk Management Systems, Inc.
Public Lands Advocacy
Rutland Sportsman
Sierra Club, Teddy Roosevelt Group
Watford City Wildlife Club
WildWest Institute

6.3.3 Tribal Contacts

Bureau of Indian Affairs
Fort Berthold Agency
Great Plains Regional Office
Standing Rock Chairman
Fort Peck Assiniboine and Sioux Tribes
Spirit Lake Sioux Tribe
Standing Rock Sioux Tribe
Three Affiliated Tribes - Mandan, Hidatsa and Arikara Nation
Turtle Mountain Band of Chippewa Indians of ND

6.3.4 Individuals

Llewellyn and Sharon Alexenko
Mari and Jon Ambjor
Gene Anderson
Curtis and Sharon Anderson
Ronald and Myra Anderson
Anheluk Family
Gail Baker, Sr.
John and Stacy Bang
Dale Baranko
Orest and Phyllis Baranko
Brad Bjork
Raymond and Lois Blegen
Loren and Judy Bock
Max Borseth
Mike Brand
James and Janel Braun
Owen Brenna
Ronald and Karen Broderson
Micheal Burian
Bill Ceynar
Robert Ceynar
Dwayne Clement
Scott Cymbaluk
Nevin and Laura Dahl
Edward and Alice Darwin
Ryan and Jenice Davidson
Gerald and Joann Defoe
Lynn Dewhirst
John Dixon
Dale and Shirley Dolezal
Lauren Donoven
Bernarda Doolittle
John and Nancy Duletski
Tim Dwyer
Edwin and Gwen Egly
Ronald Wayne Ekren
Layne and Malinda Ferguson
Timothy and Fayleen Fischer
Lydia Frank
Theodore Frank
Lori Gefroh
Raymond and Linda Gilstad
Dianne Glovatsky
Stephen Granzow
Gerald Grosulak
Shirley Groth
James and Roxann Haag
Roger and Linda Halverson
Albert Hardy
Lemoine and Clarice Hartel
Steve and Kadrmas Connie Hartman
Isabelle Hartman
Stephen Hayton
Lynn and Jeanne Hecker
Raymond and Anton Hecker
Sonia, Denise and Lori Hegg
John Heiser
John and Riitta Hellerud
Tom and Tim Hlebechuk
Glen Houghton
Lauren Hunze
Raymond Iverson
Sally Iverson
Leif Jellesed
Dale and Lori Jilek
Alvin Johnson
Carlotta Johnson
Maryann Johnson
Timothy and Susan Jorgenson
Merle Jost
Roque and Karen Kadrmas
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Patrick and Shirley Kessel
Anthony and Teresa Kessel
Greg Kessel
Michelle Kessel
Paul Klamm
Joyce Klocko
John Knapp
Elisabeth Knapp
Harold Knudtson
Andrew and Christine Koch
Gordon Koch
Ward and Joetta Koeser

Mark and Janice Koeser
Mark and Janice Koeser
Loren and Wendy Kordonowy
Ronald Kostelecky
Andrew and Suzanne Kostenko
Darwin and Jean Krenz
Arnold and Dorothy Krogen
Gary Kudrna
John Lamb
Angelen Larson
Shirley Lee
Jean Legge
Ardehl Leland
Virginia Leland
Gary and Patsy Levang
Gordon Levang
Leon Levesque
Leroy and Jay Lillibridge
William Lillibridge
Donald and Bonnie Lovaas
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Kasey and Darnyl Malkowski
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Patrick and Kristy Marx
Wilfred and Virginia Mastel
Darrel Minow
Gary Mittlestadt
Eugene and Penny Moe
Jeffery and Eleanor Moe
Leon Moe
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Mike Nelson
Steven and Wanda Nelson
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Audrey Olson
Jacqueline and Shane Olson
Lorin and Teri Nelson and Lance Olson
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Dale and Joy Patten
Walter Piehl
James and Colleen Pojorlie
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Greg Simonson
Kathy Skarda
Gary Skarda
Jack Skarda
Lee Snyder
Norman and Marlene Sondrol
Curtis and Jennifer Sorenson
Gary and Martha Sorenson
Jarvis and Kadie Sorenson
Larry and Carla Sorenson
Perry and Regina Sorenson
Jack Sorum
Judith Stenehjem

Vicky Stenehjem and Ardis Burkholder
Randy Stockman
Robert and Genevieve Stockman
Odin and Hazel Stutrud
Gary and Amy Swenson
Lynn and Pearl Swenson
Rodney Syminow
Cody and Janell Tachenko
S.C. and Virginia Tachenko
Curtis and Juanita Talkington
Greggory Tank
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Mary Tarnavsky
Morris and Thomas Tarnavsky
Tarnavsky Brothers
Lowell Mark and Wayne Thompson
John Jr. and Christine Tinker
Manley Truchan
Wallace Tweden
Ruth Van Hise
Larry Veeder
Linnea and David Veeder
Rosalie Veeder
Larry Veikly
Rodney Johnson
Terry and Pamela Wanner
Thorwald and Peggy Wanner
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Denton and Margaret Zubke
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7.0 Preparers and Reviewers

Table 7-1 lists staff from various federal agencies and companies that contributed to the preparation and review of the EA.

Table 7-1 List of Preparers and Reviewers

Agency/Company	Name	Responsibility
Bureau of Land Management	Lowell Hassler	NEPA Project Lead
	Justin Peters	Archaeologist
U.S. Forest Service – McKenzie Ranger District	Tim Abing	Acting District Ranger
	Kim Grotte	NEPA Review
	Libby Knotts	Vegetation, Special Status Plants, and Wetlands
	David Valenzuela	NEPA Review
	Robert George	Water Resources, Soils
U.S. Army Corps of Engineers – Garrison Dam Lake Sakakawea	Linda Phelps	NEPA Specialist
	Ryan Newman	NEPA Specialist
AECOM	Scott Patti	Project Manager
	Jon Alstad	Assistant Project Manager
	Randy Walsh	Project Coordinator
	Allie Grow	Vegetation Resources, Special Status Plants, Noxious Weeds and Invasive Species, Wetlands and Floodplains
	Julie Barraza	Wildlife and Fisheries, Special Status Wildlife
	Jim Burrell	Water Resources
	Terra Mascarenas	Soils
	Bill Berg	Geology and Minerals, Paleontological Resources, Hazardous Materials and Solid Waste
	Chris Driscoll Vince Scheetz	Air Quality
	Jason Marmor Kim Munson	Cultural Resources/Native American Concerns
	Steve Graber	Socioeconomics, Environmental Justice, Recreation, Wilderness, Noise, Land Use, Public Safety, Transportation

Table 7-1 List of Preparers and Reviewers

Agency/Company	Name	Responsibility
AECOM (Cont'd)	Merlyn Paulson	Visual Resources
	Todd White	GIS Specialist
Project Consulting Services, Inc.	Patrick Navratil	Project Assistant
	Jarrett Davis	Engineer
	Danny Guigou	Engineer Assistant
Bartlett & West	Jame Todd	Engineer
	Leif Sande	Engineer Assistant
Carlson McCain, Inc.	Todd Hartleben	Engineer
	Kathy Kjar	Botanist

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