3.0 ALTERNATIVES

Consistent with NEPA, DOS conducted an analysis of alternatives to the proposed Project. The alternatives were developed based on the objectives of the proposed Project as discussed in section 1.1. The alternatives analysis relied on information provided to agencies in the Presidential Permit application (including supplemental submittals), information and suggestions provided during scoping for the EA, and information obtained through research and analysis conducted by DOS. Unless noted otherwise, this analysis used the same assumed land requirement widths and the same desktop sources of information to standardize the comparison between the Project and alternatives. Therefore, some of the information presented in this section relative to the Project may differ from the information presented in section 2.0, which is based on Project-specific sources of information including field surveys and engineered drawings.

The alternatives analysis included a screening process that first considered a range of categories of potential alternatives. The categories of alternatives considered included:

- No Action Alternative (section 3.1) − addresses projected beneficial and adverse environmental, social, and economic impacts that would result if the proposed Project were not implemented;
- System Alternatives (section 3.2) − the use of other pipeline systems or other methods of providing ethane to markets located in Alberta, Canada;
- Route Alternatives and Variations (section 3.3); and
- Alternative Mainline Block Valve Sites (section 3.4).

The criteria used to evaluate potential alternatives included whether they:

- offer a significant environmental advantage over the Project;
- are technically and/or economically feasible and practical;
- are permittable within the same general timeframe of the Project; and
- meet Vantage's stated Project objectives.

It is important to recognize that not all conceivable alternatives are technically or economically feasible or practical. Some alternatives may be impractical because they are unavailable and/or incapable of being implemented after taking into consideration costs, existing technologies, and logistics in light of the overall Project purpose. It is also important to consider the environmental advantages and disadvantages of the proposed action and to focus the analysis on those alternatives that may reduce impacts and/or offer a significant environmental advantage without merely transferring impacts from one area or group of landowners to another.

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed Project would not be constructed and operated. Therefore, selection of the No Action Alternative would not require the issuance of a Presidential Permit for construction and operation of the proposed Project. Under the No Action Alternative, the environmental effects specific to the proposed Project described in this EA would not occur. If the No Action Alternative is implemented it is possible that the other methods (e.g., truck) of transporting ethane to the Canadian marketplace could be implemented.

Although it would be purely speculative and beyond the scope of this analysis to attempt to predict what actions might be taken in response to the No Action Alternatives, it is likely that the ethane would continue to be either transported within existing natural gas pipeline systems throughout the United States and extracted elsewhere or burned and released into the atmosphere (also referred to as flared), or, upon completion of the Tioga Gas Plant facility modifications (see section 1.5), the ethane could be extracted at the facility for use by other parties regardless of the Vantage pipeline or flared with the excess gas (i.e., lost).

Also of note is that as technological advances in oil and gas production continues and development of the Bakken area of North Dakota expands, companies are drilling wells into areas that lack natural gas-gathering and processing facilities (North Dakota Department of Mineral Resources, 2009). As a result, the gas production is being burned into the atmosphere (i.e., flared) because there is insufficient infrastructure to accommodate natural gas gathering, compression, and processing. For example, according to the North Dakota Department of Mineral Resources (2009), the state produced over 70 billion cubic feet (bcf) of natural gas in 2007 and nearly 20 percent of that production was flared. According to Energy Information Administration (EIA) data, North Dakota flared 28.5 bcf in 2009 (Industrial Commission of North Dakota, 2011). Based on more recent reports, its estimated that one-third of the North Dakota natural gas produced is flared, which, as of July 2011, has increased 1,200 percent since 2004 (EIA, 2011; Reuters, 2012).

The Industrial Commission of North Dakota, which consists of the Governor, the Attorney General, and the Agriculture Commissioner of the State, has cited that by the end of 2012 natural gas processing capacity is estimated to increase 389 percent from 2006, and that by the end of 2012, North Dakota's natural gas processing plants would have the capacity to process 1 bcf of natural gas per day (Industrial Commission of North Dakota, 2011). The North Dakota Department of Mineral Resources predicts that in 10 to 20 years, nearly 3,750 new oil and gas wells would be installed near Williston and 6,000 new oil and gas wells would be installed near the Ray-Tioga area (North Dakota Department of Mineral Resources, 2010). Oil production, which is an indicator of natural gas resources, is predicted to rise to nearly 450,000 bpd until year 2020, compared to more current rates of about 150,000 to 200,000 bpd (North Dakota Department of Mineral Resources, 2010). Other outlooks predict oil production in North Dakota as a whole to reach 400,000 to 450,000 bpd (Purvin and Gertz, Inc., 2011).

While hard data are lacking, one estimate suggests that flared gas in North Dakota produced 2 million tons of CO_2 last year, which is equivalent to the emissions created by over 350,000 extra cars on the road, and that flared gas cost the State of North Dakota about $110 million in revenue in 2011 (Reuters, 2012). A consequence of the increase in natural gas production discussed above is likely to be further increased CO_2 emissions as well as lost economic benefits.

Ethane comprises about 20 percent of the natural gas currently delivered from the Project area (Purvin and Gertz, Inc., 2011). Use of the cryogenic process at the Tioga Gas Plant can recover about 90 to 95 percent of the ethane originally in the gas stream (NaturalGas.org, 2012). By processing the natural gas to separate out the ethane and installing infrastructure such as a pipeline to transport the ethane extracted, more of the product can be utilized, lowering the incentive to continue flaring.

3.2 SYSTEM ALTERNATIVES

System alternatives to the proposed Project would make use of other existing, modified, proposed, or planned pipeline systems, or other transportation systems to meet the purpose of and need for the proposed Project. With implementation of a system alternative to meet the objectives of the Project, the Project would not be constructed and the impacts described in this EA would not occur.

However, there would still be environmental impacts associated with any system alternative that could be used to meet the objectives of the proposed Project.

No other pipelines currently exist in North Dakota that are capable of transporting ethane from the Tioga Gas Plant in Tioga, North Dakota to markets located in Alberta, Canada to serve the Project's purpose and need. Therefore, there are no viable system alternatives for the Project that would consist of existing or expanded pipeline infrastructure. Further, there are no known proposed or planned pipeline systems in the Project area that could be capable of transporting ethane to meet the Project's objectives.

While ethane can theoretically be transported by rail, truck, or barge, it is historically and primarily transported via pipelines or in combination with other NGLs that are easier to transport in a liquid state. To transport ethane by rail, truck, or barge, it would need to be transported as a liquid. Ethane would need to be kept at a pressure higher than 560 pounds per square inch to keep it in a liquid state at normal ambient temperatures. Safety and weight considerations of the vessel required for the trucks and rails make it prohibitive to transport by these facilities. Overall, rail or truck transport also involves a sufficient economic commitment making it cost prohibitive to transport ethane. Use of barges would require waterbodies of sufficient size and proximity to transport the product. The nearest waterbody to the Project area potentially capable of supporting barge traffic is the Section 10 (i.e., USACE-regulated navigable waterway) Missouri River, which is over 15 miles from the Project and would require subsequent rail or truck. As a result of these considerations, alternative modes of transportation were not considered a reasonable alternative to meeting the Project objectives and would not offer an overall environmental or safety advantage over the proposed Project and, thus, were not further evaluated.

3.3 ROUTE ALTERNATIVES

DOS considered potential alternative routes to determine whether or not there are route alternatives that would avoid or reduce impacts on environmentally sensitive resources as compared to the impacts of the proposed Project, while still meeting the objectives of the proposed Project. The analysis of alternatives is based on information provided by Vantage and DOS's review of aerial photographs, USGS topographic maps, and other publicly available information. Also, consideration was given to suggestions received from agencies and the public during the scoping period. In addition, variations to the proposed route were also considered during the route development process by Vantage. Variations are relatively short deviations from a proposed route that are developed to resolve or reduce construction impacts on localized, specific resources such as cultural resource sites, wetlands, recreational lands, residences, and terrain conditions.

This section addresses major route alternatives by segment and route variations in the following subsections:

- Approach (section 3.3.1);
- Route Alternatives (section 3.3.2); and
- Route Variations (section 3.3.3).

The agency preferred route is presented in section 3.3.4. Route alternatives are typically only recommended if the alternative confers a significant advantage over the proposal. Otherwise, such an alternative merely represents a shift in impacts from one area or resource to another.

3.3.1 Approach

The alternatives analysis was conducted as a screening process that involved the following steps:

- establish criteria for screening alternatives;
- identify potential alternatives that meet the criteria;
- determine whether the potential alternatives could meet the purpose and need of the proposed Project and whether or not they would be technically and economically practicable; and
- for those alternatives that could meet the purpose and need of the proposed Project and appear to be technically and economically practicable, determine whether or not an alternative offers an overall environmental advantage over the proposed route. If it was determined that the potential alternative would not offer an overall environmental advantage, it was eliminated from further consideration.

3.3.1.1 Screening Criteria

Control Points Criterion

The control points are locations where alternatives would have to begin and end to meet the Project objectives and/or also are features that must either be crossed or avoided. These fixed control points, which placed geographic constraints on potential alternatives, consisted of the following considerations, which include features in the United States and Canada:

- Source Control Point: Hess Tioga North Dakota Plant, Tioga, North Dakota;
- Delivery Control Point: AEGS, Empress, Alberta, Canada;
- United States/Canada border;
- Town of Cadillac, Saskatchewan, Canada; and
- Great Sand Hills Prairie Farm Rehabilitation Administration Pasture.

Resource Consideration Criterion

The second criterion established was consideration of the following areas to the extent practicable:

- accommodate landowner and government requests, where feasible;
- minimize the pipeline length in order to limit the total area of disturbance. As a general rule, construction of each mile of pipeline would impact approximately 8.5 acres, not including ATWS, access roads, MLBVs, and contractor/pipe yards. Operation of each mile of pipeline would affect approximately 3.6 acres. As a result, there usually are environmental advantages to keeping the length of pipe required to reach the control points as short as possible while considering all other issues of concern;
- follow existing linear disturbances (pipelines, maintained roads, etc.). The rationale for siting a new pipeline parallel to an existing right-of-way is that concentrating linear

facilities in or near existing linear corridors may reduce the impacts on resources that have not previously been disturbed by major linear project construction;

- avoid or minimize:
    - the crossing of steep/moderate slopes;
    - the crossing of sensitive wildlife habitat;
    - impact on wetlands;
    - the crossing of areas of high archeological/paleontological sensitivity;
    - the quantity of waterbody crossings; and
    - close proximity to communities; and

- where watercourses could not be avoided, cross at or near right angles where straight and stable reaches occur and where a successful directionally drilled or bored crossing would be likely.

Although the alternatives identified avoided or minimized crossings of these areas to the extent possible, the extent, shape, and prevalence of many resources (e.g., wetlands, farmland) preclude completely avoiding impacts on them on any selected route.

3.3.1.2 Identification of Route Alternatives

The criteria listed in section 3.3.1.1 were used in the screening process to identify potential alternative routes to the proposed Project route. The routes were evaluated based on technical and economic practicability, and whether the or not the route alternative would meet the purpose of and need for the proposed Project. Alternatives that met those criteria were then evaluated to determine whether or not they offered an overall environmental advantage over the proposed route, particularly with regard to the avoidance criterion. Consistent with 40 CFR 1502.14, the reasons for eliminating alternative routes from further detailed study are provided for each potential alternative in the comparison to the proposed route presented below. Additional information on the proposed Project route is presented throughout section 2.0.

3.3.2 Route Alternatives

Two route alternatives were analyzed. Route alternatives considered would change the international border crossing and locate the pipeline in either Montana or North Dakota. As a result of alternative routing considerations, the routing would also need to change in Canada. This EA focuses on the Project facilities in the United States. Therefore, the route alternatives analysis presented in table 3.3.2-1 below is limited to the impacts that would occur between the Project's source control point (i.e., MP 0.0 at the Tioga Gas Plant) and the U.S./Canada international border (MP 79.8). These alternatives, referred to as Route Alternative 1 and Route Alternative 2, are discussed below and depicted on figure 3.3.2-1. Comparative environmental criteria used in the analysis are presented in table 3.3.2-1.

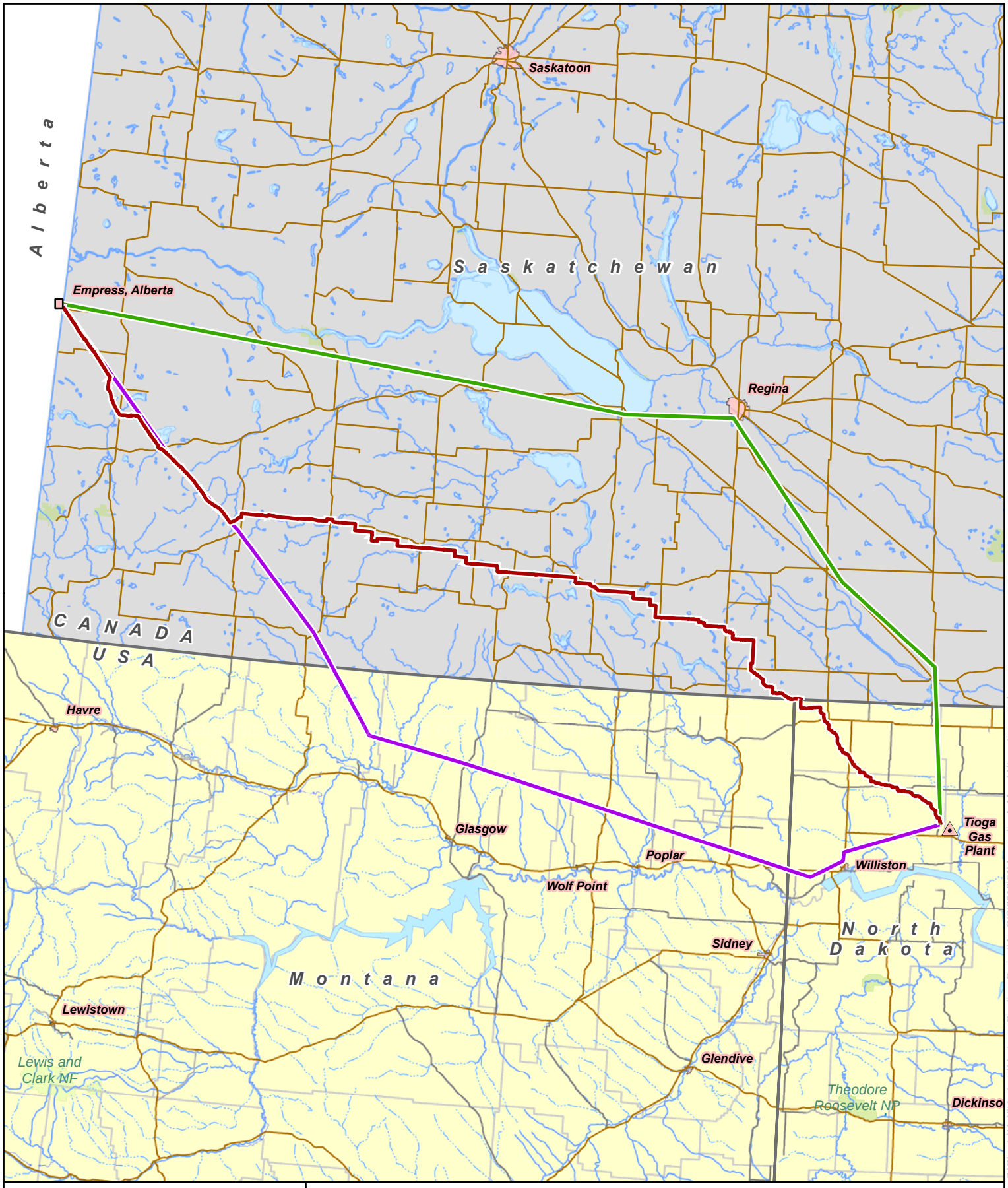

Figure 3.3.2-1
Vantage Pipeline Project
Route Alternatives 1 and 2
Divide and Williams Counties, North Dakota
Saskatchewan, Canada

Source: Z:\Clients\U_X\Vantage\Vantage_Pipeline_Project\ArcGIS\2012\01\Appendix_A_Maps\Alternatives.mxd
Date: (3/1/2012)

TABLE 3.3.2-1

Comparison of the U.S. Portion of the Proposed Route, Alternative Route 1, and Alternative Route 2

Factor	U.S. Portion of Proposed Route	U.S. Portion of Alternative Route 1	U.S. Portion of Alternative Route 2
Length (miles)	79.8	240.1	41.4
Length adjacent to existing right-of-way (miles/percent)	6.3 (8)	0.0 (0)	0.0 (0)
Construction right-of-way (acres)[a]	677.1	2,037.2	351.3
Permanent right-of-way (acres)[a]	290.2	873.1	150.6
Wetland crossings (no.)	12	118	64
Construction impact on wetlands (acres)	1.1	19.7	10.5
Operation impact on wetlands (acres)	0.0	0.0	0.0
Parcels crossed (no.)	195	640	106
Residences within 50 feet of the construction right-of-way	0	4	0
Road crossings (no.)	100	211	52

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

3.3.2.1 Alternative Route 1

Alternative Route 1 was developed to attempt to follow a greater percent of existing rights-of-way in Canada. Alternative Route 1 would begin at MP 0.0 and diverge southwest of the Tioga Gas Plant towards Williston, North Dakota for about 50 miles before turning northwest about 8 miles from the North Dakota/Montana state border.

The U.S. portion of Alternative Route 1 would be approximately 240.1 miles long, 160.3 miles longer than the U.S. portion of the proposed route. Because of its longer length, the alternative would result in a significantly greater land use impacts as a result of construction. The alternative would affect about 1,360.1 acres more during construction and about 582.9 acres more during operation than the U.S. portion of the proposed route. Alternative Route 1 would cross about 118 wetlands compared to 12 wetlands crossed along the proposed route. Alternative Route 1 would also involve crossing a significantly greater number of property parcels, and four residences would be located within 50 feet of the construction right-of-way associated with Alternative Route 1 compared to none along the proposed route. Additionally, Alternative Route 1 would encounter over 100 additional road crossings compared to the U.S. portion of the proposed route.

In addition to the overall greater land use impacts associated with the significantly longer U.S. segment of Alternative Route 1, the alternative would cross additional environmental and engineering features. It is anticipated that most feature crossings would require ATWS, thus resulting in more land use impacts. While Vantage has committed to avoiding wetland impacts by adopting the horizontal bore crossing method, resulting in similar impacts for both the alternative and proposed routes, consideration for ATWS at each crossing would result in greater land use impacts associated with the alternative route. The significantly greater number of road crossings associated with the U.S. segment of the alternative route would also require ATWS at each crossing, thus increasing the overall land use impacts.

The U.S. portion of Alternative Route 1 would also impact a significantly greater number of property owners and require additional regulatory approvals from the State of Montana. Also, due to the greater pipeline length in the U.S. and the DOT's spacing requirements, Alternative Route 1 would require additional permanent aboveground facilities (i.e., MLBVs) compared to the proposed route.

The U.S. portion of Alternative Route 1 would not offer an overall environmental advantage over U.S. portion of the proposed route it would replace. Therefore, Alternative Route 1 was eliminated from further consideration.

Although not a consideration in analyzing the environmental impacts associated with the U.S. portion of the route, we note that Alternative Route 1 would take advantage of following a greater percentage of existing rights-of-way along the Canada segment. It would, however, cross extensive areas of native prairie in southern Saskatchewan, Canada. Additionally, the combined U.S. and Canada portions of the alternative route (about 398 miles) would be longer than the U.S. and Canada portions of the proposed route (about 357 miles), resulting in significantly greater land use impacts.

3.3.2.2 Alternative Route 2

Alternate Route 2 would begin at MP 0.0 and extend north towards the U.S./Canada border for about 41 miles.

The U.S. portion of Alternative Route 2 would be approximately 41.4 miles long, 38.4 miles shorter than the U.S. portion of the proposed route. Because of its shorter length, the alternative would result in fewer land use impacts as a result of construction. The alternative would affect about 325.8 acres less during construction and about 139.6 acres less during operation than the U.S. portion of the proposed route. Alternative Route 2 would cross about 64 wetlands compared to 12 wetlands crossed along the proposed route. Alternative Route 2 would also involve crossing about 89 fewer property parcels than the proposed route. No residences would be located within 50 feet of the construction right-of-way for either the proposed or alternative route. Additionally, Alternative Route 2 would encounter about 48 fewer additional road crossings compared to the U.S. portion of the proposed route.

In addition to the overall fewer land use impacts associated with the shorter U.S. segment of Alternative Route 2, the alternative would cross fewer roads. It would, however, cross over 50 additional wetlands than the proposed route. It is anticipated that most feature crossings would require ATWS, thus resulting in more land use impacts. While Vantage has committed to avoiding wetland impacts by adopting the horizontal bore crossing method, resulting in similar impacts for both the alternative and proposed routes, consideration for ATWS at each crossing would result in greater land use impacts associated with the alternative route.

Based on the analysis, it appears that the shorter Alternative Route 2 could be feasible and may result in less environmental impacts on some resources as compared to the proposed route. However, as noted above, Alternative Route 2 would cross 52 additional wetlands in the United States as compared to the proposed route. While shorter pipeline routes often result in reduced environmental impacts because less land is disturbed in the pipeline construction, in the case of Alternative Route 2, DOS is aware that reducing the mileage in the United States is accomplished only by significantly increasing the mileage in Canada (and the mileage of the pipeline overall by some 50 miles). Alternative Route 2 would proceed through a sensitive Great Sand Hills Ecological Reserve in southern Saskatchewan, Canada that was avoided by Vantage for significant environmental and Aboriginal traditional land use reasons (NEB, 2012).

3.3.3 Route Variations

Two variations that would avoid crossing North Dakota Land Department lands were analyzed in response to comments concerning potential impacts on state lands. In particular, the State of North Dakota expressed concerns regarding the Project's impacts on the function of School Trust lands, which provide financial support for elementary and secondary schools in North Dakota through the leasing of

the lands for livestock grazing and mineral (e.g., oil and gas) development. These variations, referred to as Route Variation 1 and Route Variation 2, are discussed below and depicted on figures 3.3.1-1 and 3.3.1-2. Comparative environmental criteria used in the analyses are presented in tables 3.3.3-1 and 3.3.3-2. For these analyses, the alternatives are compared to MPs 16.1 to 20.1 (Route Variation 1) and MPs 77.6 to 79.8 (Route Variation 2) of the proposed route.

3.3.3.1 Route Variation 1

Route Variation 1 would diverge from the proposed route at MP 16.1, proceed west for about 2.7 miles, turn northwest for about 1.5 miles, and rejoin the proposed route near MP 20.1. Comparative environmental criteria used in the analysis of Route Variation 1 are presented in table 3.3.3-1.

TABLE 3.3.3-1

Comparison of the Proposed Route and Route Variation 1

Factor	Proposed Route	Route Variation 1
Length (miles)	4.0	4.2
Length adjacent to existing right-of-way (miles/percent)	0.0 (0)	0.0 (0)
State of North Dakota Land crossed (feet)	210	0
Construction right-of-way (acres)[a]	34.1	35.4
Permanent right-of-way (acres)[a]	14.6	15.2
Wetland crossings (no.)	1	0
Construction impact on wetlands (acres)	0.1	0.0
Operation impact on wetlands (acres)	0.0	0.0
Residences within 50 feet of the construction right-of-way	0	0
Road crossings (no.)	3	3

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

Route Variation 1 would be approximately 4.2 miles long, or approximately 0.2 mile longer than the corresponding segment of the proposed route. Route Variation 1 would also avoid crossing approximately 210 feet of North Dakota State Land Department land. Due to its greater length, Route Variation 1 would impact about 1.3 acres more during construction and 0.6 acre more during operation than the proposed route. Route Variation 1 would avoid crossing one wetland affected by the proposed route. Road crossings and residences within 50 feet of the construction right-of-way would be similar for both routes.

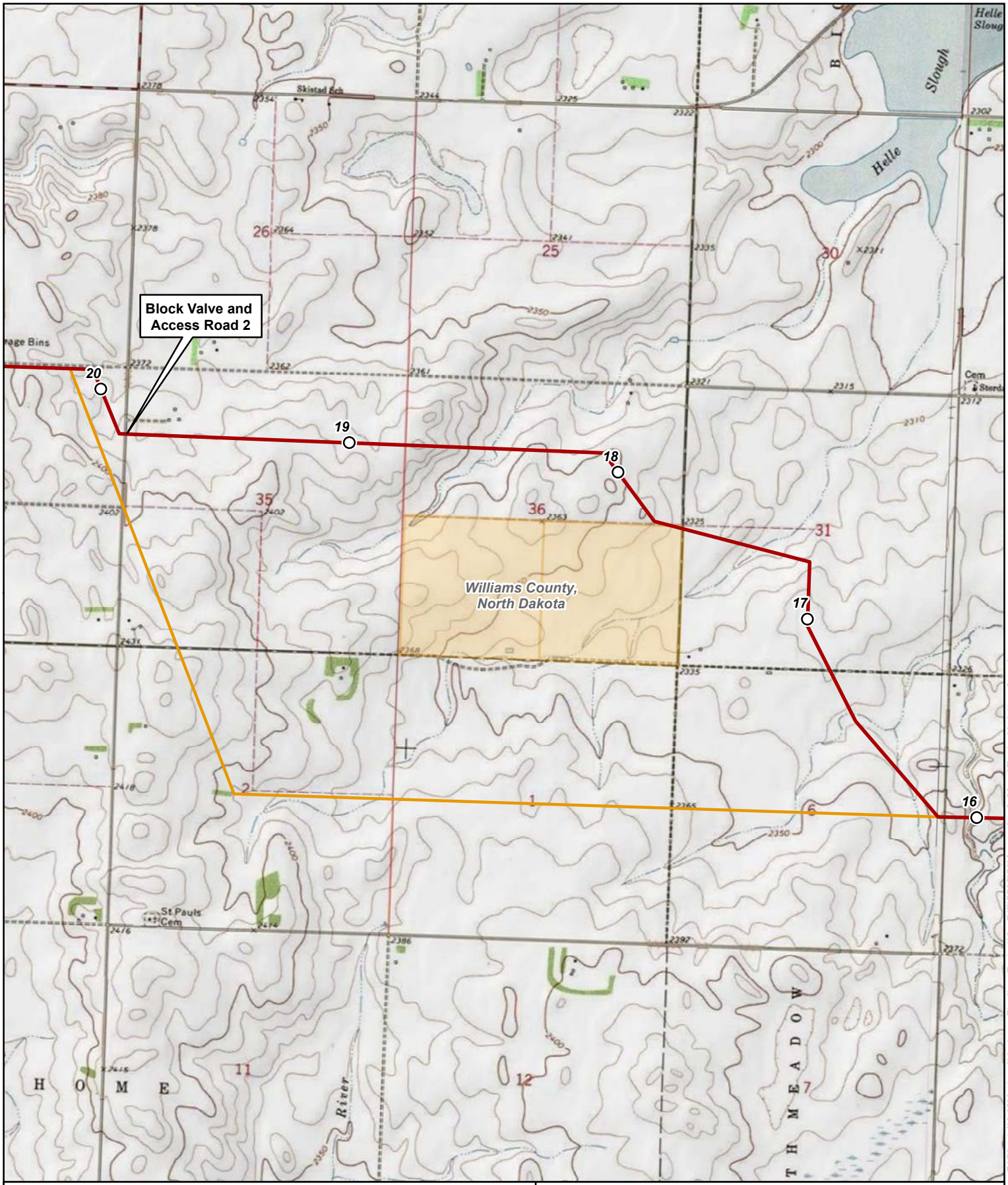

Figure 3.3.3-1
Vantage Pipeline Project
Route Variation 1
Williams County, North Dakota

Source: Z:\Clients\U_X\Vantage\Vantage_Pipeline_Project\ArcGIS\2012\01\Appendix_A_Maps\Route_Variation_1.mxd
Date: (1/26/2012)

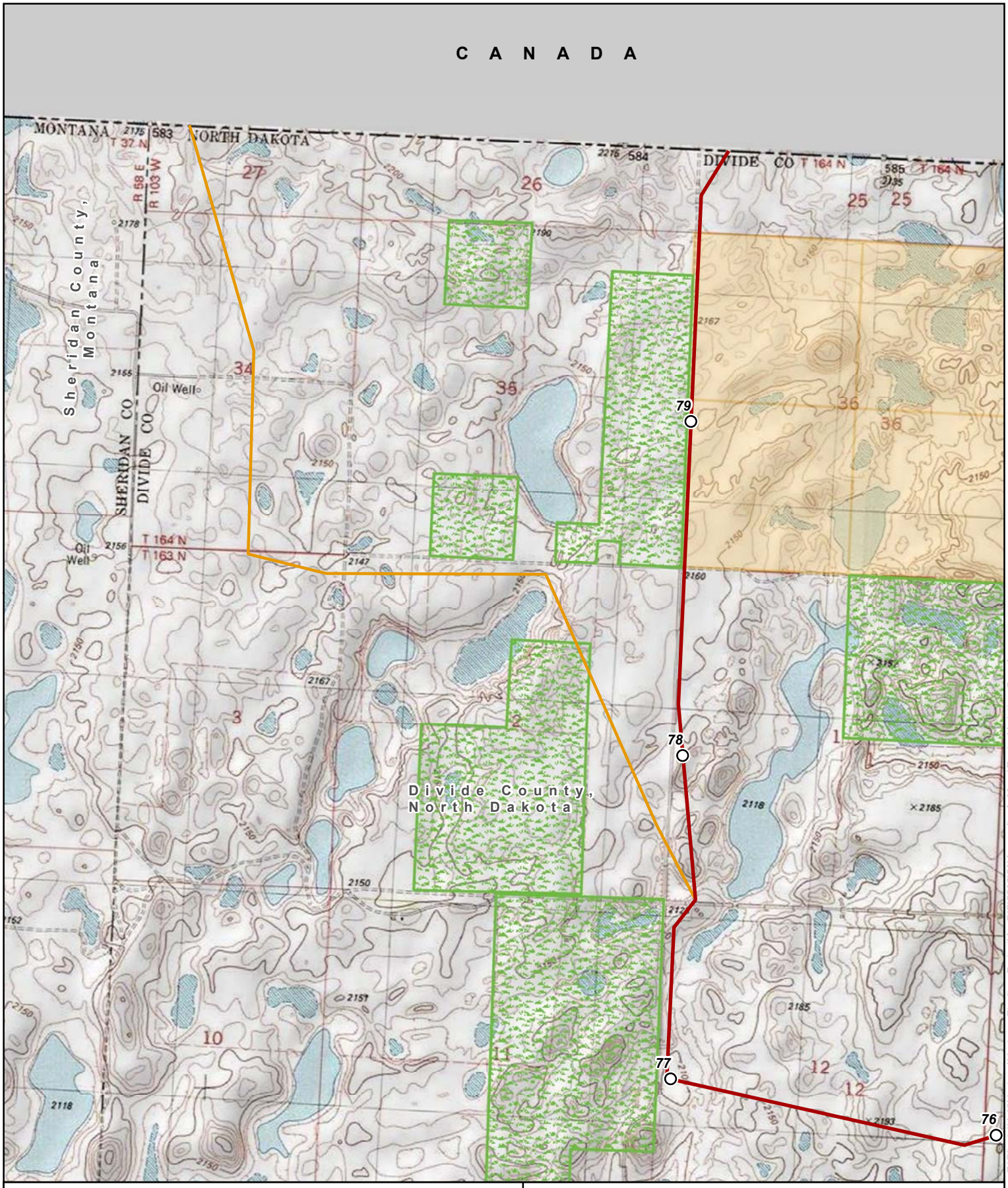

Figure 3.3.3-2
Vantage Pipeline Project
Route Variation 2
Divide County, North Dakota

Source: Z:\Clients\U_X\Vantage\Vantage_Pipeline_Project\ArcGIS\2012\01\Appendix_A_Maps\Route_Variation_2.mxd
Date: (1/26/2012)

Route Variation 1 would not cross North Dakota State Land Department land and, therefore, would avoid any potential impact on School Trust land activities. Adoption of the proposed route would result in a minor, temporary impact on any current grazing activities; however, operation of the Vantage pipeline would not preclude existing or future livestock grazing on School Trust lands. Also, due to the limited crossing length (210 feet), it is not anticipated that the pipeline would result in an adverse impact on mineral development at this location. While the proposed route would cross one wetland, Vantage would avoid wetland impacts by adopting the horizontal bore method at each crossing. Further, due to its added length, Route Variation 1 would have a greater construction and operational footprint. The alternative and proposed rights-of-way would both require creating new right-of-way.

Based on the factors described above, Route Variation 1 would not offer an overall environmental advantage over the segment of the proposed route it would replace. In June 2012, the NDPSC approved Vantage's proposed route. Therefore, Route Variation 1 was eliminated from further consideration.

3.3.3.2 Route Variation 2

Route Variation 2 would diverge from the proposed route at MP 77.6, head northwest for about 1.0 mile, turn west for about 1.0 mile, then turn north-northwest for another 1.3 miles, and rejoin the proposed route near MP 79.8. Comparative environmental criteria used in the analysis of Route Variation 2 are presented in table 3.3.3-2.

TABLE 3.3.3-2

Comparison of the Proposed Route and Route Variation 2

Factor	Proposed Route	Route Variation 2
Length (miles)	2.2	3.3
Length adjacent to existing right-of-way (miles/percent)	1.5 (68)	0.0 (0)
State of North Dakota land crossed (miles)	1.0	0.0
Construction right-of-way (acres)[a]	19.0	27.8
Permanent right-of-way (acres)[a]	8.2	11.9
Wetland crossings (no.)	1	1
Construction impact on wetlands (acres)	<0.1	0.3
Operation impact on wetlands (acres)	0.0	0.0
Residences within 50 feet of the construction right-of-way	0	0
Road crossings (no.)	0	2

[a] Based on a 70-foot-wide temporary construction and a 30-foot-wide permanent right-of-way. Does not include reduced construction or operational right-of-way areas to avoid impacts on wetlands or other resources (e.g., cultural resources sites).

Route Variation 2 would be approximately 3.3 miles long, or approximately 1.1 miles longer than the corresponding segment of the proposed route. Route Variation 1 would also deviate from existing rights-of-way for a greater percent when compared to the proposed rout, but would avoid crossing approximately 1.0 mile of North Dakota State Land Department land. Due to its greater length, Route Variation 2 would impact about 8.8 acres more during construction and 3.7 acres more during operation than the proposed route. Route Variation 2 would require two road crossings compared to none along the corresponding segment of the proposed route. Wetland crossings and residences within 50 feet of the construction right-of-way would be similar for both routes.

Route Variation 2 would not cross North Dakota State Land Department land and, therefore, would avoid any potential impact on School Trust land activities. Conversely, the proposed route is located along the western-most portion of the affected School Trust land section adjacent to a road right-

of-way. Adoption of the proposed route would result in a minor, temporary impact on any current grazing activities and operation of the Vantage pipeline would not preclude existing or future livestock grazing on School Trust lands. Future mineral development activities could, however, experience long-term effects as result of the permanent 30-foot-wide right-of-way.

Consultations with the FWS revealed that a number of parcels enrolled in the FWS's Grassland Easement Program[8] exist between the proposed route and Route Variation 2, and would be affected by other alignments in the area. Based on comments received from the FWS during the scoping process, grassland easements are crucial for wildlife habitat and are protected from being disturbed in any manner. It is not expected that construction and operation of an underground pipeline would adversely affect a grassland easement, and that, similar to a 60-foot-long FWS easement being crossed by the Project, the area along Route Variance 2 could be avoided by use of the horizontal bore method.

While the proposed route would cross State Trust lands, potentially affecting future mineral development of the section, it would affect a relatively small portion of the section as the permanent operational right-of-way would be 30-feet-wide and would not preclude the remaining portion of the section from future development. Due to its added length, Route Variation 2 would have a greater construction and operational footprint. The variation would also create about 3.3 miles of new right-of-way; whereas, the proposed route would be collocated with existing road right-of-way for about 68 percent of its corresponding length. Route Variation 2 would cross additional roads when compared to the corresponding segment of the proposed route, resulting in additional land use impacts (i.e., ATWS) at the feature crossings.

Based on the factors described above, Route Variation 2 would not offer an overall environmental advantage over the segment of the proposed route it would replace. Therefore, Route Variation 2 was eliminated from further consideration.

3.3.4 Agency-Preferred Route

Alternatives and variations were developed and assessed based on information provided in the Presidential Permit application and supplemental submittals related to the application, comments received in the scoping process, and information obtained from research of relevant available information conducted by DOS.

For the reasons stated above, based on the assessment of alternatives and variations described above, DOS-preferred route consists of the route as proposed by Vantage.

3.4 ALTERNATIVE MAINLINE BLOCK VALVE SITES

All MLBVs for the proposed Project would be sited within the permanent right-of-way. As a result, alternate locations for MLBVs were included in general in the assessment of the alternative and proposed pipeline routes discussed in sections 3.3. The locations of MLBVs must be consistent with 49 CFR 195.260. As a result, there is little option to install MLBVs at alternative sites. However, the proposed MLBV locations avoid sensitive environmental resources to the extent practicable while complying with the PHMSA regulatory requirements. As such, no alternative locations were identified.

[8] A grassland easement is a legal agreement signed with the United States of America, through the FWS, that pays a landowner to permanently retain his/her land in grass (FWS, 2012a).