

4.16 SUMMARY OF IMPACTS

The analyses of potential impacts associated with construction and normal operation of the proposed Project suggest that there would be no significant impacts to most resources along the proposed Project route assuming the following:

- TransCanada Keystone Pipeline, LP (Keystone) would comply with all applicable laws and regulations;
- Keystone would, if the Presidential Permit is granted, incorporate into the proposed Project and into its manual for operations, maintenance, and emergencies, which is required by 49 Code of Federal Regulations 195.402, the set of 57 Project-specific Special Conditions developed by the Pipeline Hazardous Material Safety Administration (PHMSA);
- Keystone would incorporate the mitigation measures required in permits issued by environmental permitting agencies into the construction, operation, and maintenance of the proposed Project;
- Keystone would construct, operate, and maintain the proposed Project as described in this Supplemental Environmental Impact Study (Supplemental EIS); and
- Keystone would implement the measures designed to avoid or reduce impacts described in its application for a Presidential Permit and supplemental filings with the U.S. Department of State (Department); the additional measures identified in Chapter 4, Environmental Consequences, of this Supplemental EIS; the methods described in the Project Construction, Mitigation, and Reclamation Plan presented in Appendix G; and the construction methods described in Appendix Y, Pipeline Construction in Sand Hills Native Rangelands.

The remainder of this section summarizes the potential impacts of the proposed Project on a resource-by-resource basis. Table 4.16-1 provides a brief summary of the proposed Project's impacts on all resources considered.

Table 4.16-1 Summary of Potential Impacts

Resource	Construction	Operation	Connected Actions
Geology	Breakup and removal of rock material could occur along approximately 202 miles of the proposed Project route. Due to depth to bedrock, there will be minimal impacts to geologic resources along the remainder of the proposed Project route.	No effects.	Negligible impacts.

Resource	Construction	Operation	Connected Actions
Soils and Sediments	Potential (to varying degrees) for soil erosion, compaction, mixing, and/or contamination; loss of topsoil; and changes in soil composition. The proposed Project avoids the Nebraska Department of Environmental Quality-identified Sand Hills Region and Sand Hills-like soils in Keya Paha County, Nebraska; however, approximately half of the overall proposed Project route would cross highly erodible soils (most of which are water-erodible).	Maintenance and repair of pipeline would be similar to construction, but less extensive and widespread.	Negligible or similar to the proposed Project.
Water Resources: Groundwater	Potential impacts due to fuel spills from construction equipment. These effects could be similar to operation, but less extensive due to smaller potential spill volumes. Water withdrawals for hydrostatic testing could have minor temporary impacts.	Potential impacts due to releases of crude oil. Releases could potentially impact groundwater where the overlying soils are permeable and the depth to groundwater is shallow. Analyses in Section 4.13 suggest that large crude oil releases that do reach groundwater systems (including the Ogallala Aquifer) could result in oil spreading on the water table as far as 1,214 feet, and dissolved components of the oil, such as benzene, could spread as much as an additional 1,050 feet.	Limited potential impacts due to small potential volumes of spills during construction.
Water Resources: Surface Water	Potential impacts during construction of waterbody crossings, ranging from temporary (sedimentation and stream flow changes) to long-term (changes in channel morphology).	Potential impacts due to releases of crude oil. Releases could potentially impact open waterbodies such as rivers, lakes, and ponds, and the ecosystems that rely on them. Analyses in Section 4.13 suggest that crude oil releases that do reach surface waters are expected to be no greater than 1,214 feet from the release point; however, releases to a river will not float on water indefinitely and have the potential to be submerged introducing additional potential impacts and recovery challenges.	Similar to, but less extensive than, potential waterbody crossing impacts of the proposed Project.
Wetlands	Construction would impact approximately 262 acres of wetlands. Impacts would be site-specific, and could be negligible or more substantial—with some requiring post-construction reclamation.	Operation would impact approximately 120 acres of wetlands, including approximately 18 acres permanently converted to uplands. Most other wetland areas affected during operations would continue to be functional wetlands.	Similar to the proposed Project, but generally temporary.

Resource	Construction	Operation	Connected Actions
Terrestrial Vegetation	Most impacts would affect cropland and grassland/pasture. Vegetation removed from the construction right-of-way (ROW) could require 5-15 years to re-establish. Tree removal would be permanent. Noxious and invasive plants could delay re-establishment of natural communities.	Same as construction, but effects limited to the operation ROW. Increased soil temperature from operating pipeline could affect some species, including prairie grasses.	Similar to, but less extensive than the construction impacts from the proposed Project.
Wildlife	Potential impacts due to habitat loss and fragmentation, direct and indirect mortality, reduced breeding success, and reduced survival. Proposed Project route would cross more than 200 miles of important wildlife habitats.	Maintenance and repair of pipeline would be similar to construction, but less extensive.	Primary concerns involve direct mortality due to avian species collision with electrical lines.
Fisheries	Potential impacts associated with open-cut stream crossings and hydrostatic testing include changes in the benthic invertebrate community, mortality, feeding difficulty, and reduced productivity and spawning due to increased suspended sediments, temperature changes, physical disturbance of the streambed, changes in oxygen content, and other effects of the proposed Project.	Potential temperature increases around stream crossings, especially in low flow situations.	Similar to, but less extensive than the construction impacts from the proposed Project.
Threatened and Endangered Species	Same types of impacts as to Wildlife (see above). Thirteen federally-listed or candidate species could be affected, but only the American burying beetle is likely to be adversely affected. Thirteen state-listed species could potentially be affected.	Same types of impacts as to Wildlife (see above); however, maintenance and repair of pipeline may affect, and is likely to adversely affect the American burying beetle.	Similar to the proposed Project, but fewer species affected, and to a lesser extent.
Land Use, Recreation, and Visual Resources	Temporary change of land use within the construction ROW and at the locations of proposed aboveground facilities. Some potential reduction in use of recreational resources near proposed Project facilities under construction.	Permanent change in land use at the site of aboveground facilities. Some changes in visual character.	Negligible temporary changes in land use during construction. Potential long-term changes in visual character (in the case of transmission lines).

Resource	Construction	Operation	Connected Actions
Socioeconomics	<p>Temporary socioeconomic benefits due to local employment, taxes, spending by construction workers, and spending on construction goods and services. Including direct, indirect, and induced effects, construction would support (over a 1-2 year construction period):</p> <ul style="list-style-type: none"> • Approximately 42,100 jobs across the United States; • Approximately \$2.05 billion in employee earnings; • Approximately \$3.1 billion in direct expenditures; and • An undetermined amount of revenue from sales and use taxes. <p>Other impacts include minor increases in demand for utilities and public services (e.g., police, fire, and emergency medical services), some temporary traffic delays, and minor and temporary impacts on environmental justice populations.</p>	<p>35 to 50 permanent jobs and negligible earnings and other revenues. Operation would support approximately \$2 million in property taxes.</p>	<p>Similar to, but less extensive than the proposed Project.</p>
Cultural Resources	<p>No permanent adverse effects to known cultural resource sites. Temporary visual effects on structures eligible for inclusion in the National Register of Historic Places due to construction materials, vehicles, and dust.</p>	<p>Negligible effects.</p>	<p>Similar visual impacts as the proposed Project.</p>
Air Quality and Greenhouse Gases	<p>Temporary and localized fugitive dust and other emissions from construction equipment.</p>	<p>Minimal volatile organic compound and fugitive dust emissions associated with pump stations and other aboveground facilities. Combustion of fossil fuels such as crude oil is a major source of global greenhouse gas emissions, which contribute to human-caused climate change.</p>	<p>Construction emissions similar to, but less extensive than, the proposed Project. Minimal operations emissions.</p>
Noise	<p>Localized and intermittent noise due to construction activity.</p>	<p>Negligible noise from aboveground facilities.</p>	<p>Extent of impacts not known, but not anticipated to be significant.</p>

Resource	Construction	Operation	Connected Actions
Climate Change Impacts on the Proposed Project	Climate change would have no substantive effects on construction of the proposed Project.	Climate change would have no substantive effects on operation of the proposed Project, and these effects would be even further reduced by implementation of the 57 PHMSA-approved design and operation conditions. The proposed Project's lifecycle greenhouse gas emissions (and their effects on global climate change) are discussed under Air Quality, above.	Not evaluated.
Potential Releases	See Water Resources: Groundwater, above.	Spills associated with the proposed Project that enter the environment are expected to be rare and relatively small. Industry standards and practices (including the 57 Project-specific Special Conditions developed by PHMSA) provide a level of protection above that of other pipeline systems in existence. Modeling shows that, exclusive of topography and groundwater flow, large spills (20,000 barrels) could spread up to 1,214 feet on the ground surface or on the water table, and up to 1,050 feet dissolved in groundwater. Spills reaching surface water could be transported greater distances.	No effect, except for Bakken Marketlink, which would be similar to the proposed Project.

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