3.9 LAND USE, RECREATION AND SPECIAL INTEREST AREAS, AND VISUAL RESOURCES

Construction, operation, and maintenance of the pipeline facilities and access routes for the Keystone Project would cause temporary and permanent impacts on various types of land uses, such as agriculture, rangeland, wetlands, waterbodies, industrial/commercial land, residential land, and recreational and other special interest areas (e.g., public lands). The potential impacts and mitigation measures identified in the following sections apply to both the Mainline Project and the Cushing Extension routes, except as noted.

As shown in Tables 3.9.3-3 and 3.9.4-3 (in the respective sections), the largest amount of acreage that would be affected by the Keystone Project would be agricultural land (72 percent and 58 percent for the Mainline Project and the Cushing Extension, respectively), followed by rangeland (17 and 35 percent, respectively). Impacts to these and other various land uses, as well as visual resources, are discussed below and are separated for the Mainline Project and the Cushing Extension routes. Wetlands and forested areas are discussed in greater detail in Sections 3.4 and 3.5, respectively.

3.9.1 Right-of-Way Acquisition Process

Pipeline facilities would predominantly affect privately owned land. Private land comprises approximately 99.6 percent of lands that would be crossed by the Mainline Project and 98.8 percent that would be crossed by Cushing Extension. Of the affected privately owned areas, land use is primarily agricultural.

Keystone requires a negotiated easement from all ROW landowners. Easements would consist of two types: permanent easements that would allow Keystone to construct, operate, and maintain the pipeline in the permanent ROW; and temporary easements to allow for additional construction workspace and storage areas. In return, the company compensates the landowner for use of the land. The easement agreement between the company and landowner typically specifies compensation for loss of use during construction, loss of non-renewable or other resources, damage to property during construction, and allowable uses of the permanent ROW after construction. Because the easement acquisition process is conducted with the landowner, it is possible that tenants or lessees could be adversely affected, although it is not known whether any instances of such impacts would occur in conjunction with the components of the Keystone Project.

The potential effect of a pipeline easement on private property values or property income is an issue that would be negotiated between the parties during the easement acquisition process, a process designed to compensate a landowner for the right to use the property for pipeline construction and operation. The impact a pipeline may have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Construction of the proposed Keystone Project would not change the general use of the land (except for permanent aboveground facilities and forest land) but would preclude construction of aboveground structures on the permanent ROW, restrict excavation or alteration of ground elevation, and restrict impoundment of water above the permanent ROW. The easement would allow Keystone the right to cut and clear trees, brush, and shrubbery and to remove structures and other obstacles from the permanent ROW. Construction and operation of the pipeline might interfere with other current uses on a short-term or long-term basis, or contribute to the loss of non-renewable resources or destruction of site improvements such as fences.

Keystone would monetarily compensate landowners in return for granting easements. Compensation would be for loss of use during construction, crop loss, loss of non-renewable or other resources, and

restoration of any unavoidable damage to personal property during construction. In the event that an easement cannot be negotiated with a landowner, Keystone would utilize state eminent domain laws to obtain easements needed for pipeline construction, maintenance, and operation. State laws dictate under what circumstances eminent domain may be used and define the eminent domain process for each state, as applicable. Keystone would still be required to compensate the landowner for the ROW and damages incurred during construction. However, the level of compensation would be determined by a court according to applicable state or federal law. In either case, Keystone would compensate landowners for use of the land. Eminent domain does not apply to lands under federal ownership.

Compensation for crop loss would be determined on a case-by-case basis. Keystone would obtain from the USDA current information regarding commodity prices and yields; these data would be supplemented by property-specific yield and price data supplied by the landowner. Landowners would be compensated at 100 percent for the year of construction, with diminishing percentages over the next 2 years.

Keystone also would acquire a number of sites for the construction, operation, and maintenance of pump stations and other permanent aboveground facilities. These would be negotiated with and purchased from landowners.

3.9.2 Data and Methodology

The Keystone Pipeline Project Environmental Report (ENSR 2006a) was the primary source of data for this analysis of land use, recreation and special interest areas, and visual resources. The Environmental Report originally was submitted in April 2006 and was updated through 10 subsequent filings, with the final filing submitted in November 2007. Land use classifications provided in the Environmental Report were established by developing Project-specific land cover categories based on analysis of high-resolution aerial photography (TransCanada 2007c). Keystone subsequently has updated its land use data several times: the December 2006 realignment of the Cushing Extension route; the January 24, 2007 supplemental filing to DOS (TransCanada 2007a); the January 29, 2007 Data Request #1 filing (TransCanada 2007b), the April 4, 2007 Data Request #2 filing (TransCanada 2007c), and the September 9, 2007 supplemental filing to DOS (TransCanada 2007d). Keystone's CMR Plan (Appendix B) was instrumental in determining the adequacy of mitigations and impact significance. In addition, aerial strip maps were analyzed to verify land use categories and identify structures on or close to the construction ROW.

On January 26, 2007, a meeting was held between DOS and FSA; on February 1, 2007, a similar meeting between DOS and NRCS was held to discuss potentially affected conservation easements, compensatory mitigation for impacts to agricultural wetlands, and appropriate mitigation and revegetation measures for agricultural lands. Subsequent meetings to discuss agricultural issues were held with FSA on March 15, 2007, and with Keystone on April 9, 2007. Review of the Keystone Project shapefiles indicates that the route as originally proposed in the application would cross three NRCS easements: one each in South Dakota, Missouri, and Oklahoma. Keystone will avoid all but the Missouri easement. For this easement, Keystone determined that potential impacts would be greater to re-route the Project than to cross the easement. NRCS has agreed to this finding with caveats, described fully in the agricultural land use subsection.

3.9.3 MAINLINE PROJECT

3.9.3.1 General Land Use

As proposed, the 1,082-mile Mainline Project would disturb a total of 17,607 acres of land while traversing the states of North Dakota, South Dakota, Nebraska, Kansas, Missouri, and Illinois. Of this

total, approximately 6,667 acres would be retained as the permanent ROW. Approximately 109 acres are to be set aside for permanent aboveground facilities, including pump stations, MLVs, delivery facilities and permanent access roads. All other disturbed acreage (including pipe and contractor yards, additional temporary facilities, and the construction ROW) would revert to previous uses following the construction process.

Approximately 377 miles (43 percent) of the Mainline Project pipeline would be within an approximately 300-foot-wide corridor of existing pipeline, utility, or road ROWs. The remaining 705 miles would require a new ROW (TransCanada 2007c). Table 3.9.3-1 shows the number of acres that would be affected during construction and operation of the Mainline Project.

TABLE 3.9.3-1
Land Requirements for the Keystone Mainline Project

State	Land Affected during Construction (acres)	Permanent Right-of-Way (acres)
North Dakota	3,440	1,342
South Dakota	3,377	1,349
Nebraska	3,335	1,323
Kansas	1,871	608
Missouri	4,675	1,687
Illinois	909	358
Mainline Project total	**17,607**	**6,667**

Sources: ENSR 2006a; TransCanada 2007c, d.

Keystone plans to construct 3.5 miles of permanent roads to access Project facilities (TransCanada 2007c). Existing roads would be used on a temporary basis during construction; and some of these roads may require improvements. A total of 142 new temporary roads or expanded existing roads are planned for the Mainline Project. These roads would range from 0.01 to 13.5 miles long, with the majority less than 0.5 mile long and crossing agricultural land. One access road at MP 1072.5 would be 13.5 miles long and would cross a wetland. Temporary access roads would occupy approximately 142 acres during construction. Access roads also are discussed in Section 2.1.1.3, Ancillary Facilities.

Additional Aboveground Facilities

The Mainline Project would include 23 new pump stations (and a possible 24th at Bond County, Illinois to support expansion) and 57 MLVs, two delivery sites (Wood River and Patoka Terminals), and pig launching and receiving facilities that would be located within pump stations. The Mainline Project would require construction of 24 new electric power lines to provide energy for pump stations. These would total approximately 181 miles in length (the longest spanning about 31 miles, with an average length of 7.5 miles). The power lines would be permitted and built by various utility providers but would be considered a connected activity under NEPA. Keystone assumes that the majority of required transmission lines would parallel existing county road ROWs and that no substation construction would be necessary to accommodate Keystone Project power requirements. Either steel or wooden poles would be used for power lines, with wire conductors installed through pulling or reeling, and insulators installed

as needed. Poles would vary in height from 40 to 80 feet, depending on transmission line voltage. Additional power lines would be required for valve sites and would be supplied from distribution service drops from adjacent distribution power lines. Most of these service drops would require installation of one or two poles with a transformer and would typically be less than 200 feet in length (TransCanada 2007d).

Table 3.9.3-2 catalogues the number of acres required to accommodate aboveground facilities during construction and operation, as well as affected acreage for the pipeline ROWs, additional workspaces, temporary and permanent access roads, and contractor and pipe yards. Some facilities, including MLVs and pig launching and receiving sites, are located within the affected acreage of other facilities (e.g., pig launchers and receivers would be located within pump stations) or would be located entirely within the 50-foot-wide permanent ROW (MLVs). The state, county, and milepost location of each aboveground facility is provided in Table 2.1-6, in Section 2.1.1.3.

Turnouts and access roads from public roads would be installed to each aboveground facility. Drainage would be maintained by installing ditches or culverts, and the short access roads would be surfaced with crushed rock. The delivery facility sites would be enclosed with a chain-link security fence (TransCanada 2007c).

Land Use by State

The Mainline Project would primarily affect agriculture and grassland/rangeland land uses. Of lands that would be crossed by the Mainline Project, agriculture and rangeland account for 72 and 17 percent, respectively, of the total acres affected by the Mainline Project. Table 3.9.3-3 shows affected land use acreages by state for the Mainline Project.

On a state-by-state basis, agriculture is the predominant land use affected, generally followed by grassland/rangeland. Missouri differs in that a much larger percentage of land crossed by the pipeline is comprised of rangeland and forestland than for other states. In Missouri, 22 percent of affected land is rangeland and 13 percent is forestland. Missouri contains more affected forestland acreage than all other stretches of the pipeline combined. The Mainline Project in Kansas and Illinois also has a relatively higher percentage of forestland (6 percent) than in North Dakota, South Dakota, and Nebraska.

The Mainline Project alignment was rerouted to avoid affecting wetlands in several North Dakota and South Dakota sections. These included North Dakota reroutes in Nelson and Steele Counties, and in the Hecla Sandhills (Sargent County, North Dakota, and Marshall County, South Dakota). North Dakota contains the most affected wetland acres of all states on the Mainline Project route (191 acres, or approximately 5.5 percent of total acres in North Dakota). Wetland impacts are discussed in further detail in Section 3.4.3.

Developed land comprises between approximately 1.3 (Kansas) and 7.8 percent (Illinois) of affected acres along the Mainline Project. For the Mainline Project pipeline as a whole, developed land represents about 2.9 percent of the affected acres.

TABLE 3.9.3-2
Acres Affected during Construction and Operation of Pipeline Facilities for the Keystone Mainline Project

Pipeline Facility	Construction	Operation
North Dakota		
Pipeline right-of-way (ROW)	2,892	1,320
Additional temporary workspaces	121	0
Pipe and contractor yards	440	0
Pump stations and delivery facilities	25	25
Permanent access roads	0.2	0.2
Temporary access roads	40	0
North Dakota subtotal	*3,440*	*1,342*
South Dakota		
Pipeline ROW	2,928	1,332
Additional temporary workspaces	129	0
Pipe and contractor yards	329	0
Pump stations and delivery facilities	19	19
Permanent access roads	0.3	0.3
Temporary access roads	20	0
South Dakota subtotal	*3,377*	*1,349*
Nebraska		
Pipeline ROW	2,861	1,301
Additional temporary workspaces	123	0
Pipe and contractor yards	322	0
Pump stations and delivery facilities	25	25
Permanent access roads	0	0
Temporary access roads	7	0
Nebraska subtotal	*3,335*	*1,323*
Kansas		
Pipeline ROW	1,314	598
Additional temporary workspaces	80	0
Pipe and contractor yards	458	0
Pump stations and delivery facilities	11	11
Permanent access roads	1	1
Temporary access roads	0	0
Kansas subtotal	*1,871*	*608*
Missouri		
Pipeline ROW	3,646	1,660
Additional temporary workspaces	280	0
Pipe and contractor yards	800	0
Pump stations and delivery facilities	13	13
Permanent access roads	2	2
Temporary access roads	36	0
Missouri subtotal	*4,675*	*1,687*

TABLE 3.9.3-2 (Continued)

Pipeline Facility	Construction	Operation
Illinois		
Pipeline ROW	655	345
Additional temporary workspaces	34	0
Pipe and contractor yards	175	0
Pump stations and delivery facilities (includes the Bond County pump station (PS-38) potentially needed for expansion)	13	13
Permanent access roads	0	0
Temporary access roads	39	0
Illinois subtotal	*909*	*358*
Mainline Project		
Total pipeline ROW	14,296	6,556
Total additional temporary workspaces	767	0
Total pipe and contractor yards	2,524	0
Total pump stations and delivery facilities	106	106
Total permanent access roads	4	4
Total temporary access roads	146	0
Mainline Project total	**17,607**	**6,667**

Notes:

Discrepancies between acreages for individual features and totals and subtotals are attributable to rounding.

Affected acreage for densitometer sites and mainline valves is effectively included within the 50-foot-wide permanent ROW of the pipeline and therefore is not listed separately here.

All pig launching and receiving facilities would be located within pump stations and would not require any additional acreage.

Affected lands components total acreage is quantified by component and does not account for overlap between components. Therefore, the total acreage of affected lands per state will not be the same as the sum of the individual components.

Sources: ENSR 2006a; TransCanada 2007c, d.

TABLE 3.9.3-3
Acres Affected during Construction by Land Use Type for the Keystone Mainline Project

Land Use Type	ND	SD	NE	KS	MO	IL	Total	Percent of Total (%)
Agriculture/cropland	2,649	2,504	2,751	1,348	2,754	581	12,587	71.5
Grassland/rangeland	450	679	447	349	1,014	112	3,051	17.3
Forestland	48	2	44	115	600	58	867	4.9
Wetlands/riparian	191	98	25	18	76	73	481	2.7
Developed	90	88	50	25	182	71	506	2.9
Water	12	6	18	16	49	14	115	<1
Total	**3,440**	**3,377**	**3,335**	**1,871**	**4,675**	**909**	**17,607**	

Notes:

Agriculture includes cultivated crops, flood or pivot irrigation crops, and fallow cropland.

Rangeland includes tall grass prairie, mid-grass prairie, short grass prairie, sand prairie, non-native grassland, deciduous shrubland, mixed native and non-native grasslands and mixed prairie, improved and unimproved pasture, and lands that appear to be used for cattle or other livestock grazing—with or without a shrub component.

Forestland includes upland and wetland forested areas.

Wetlands include palustrine forested wetlands and palustrine emergent/scrub-shrub wetlands.

Developed land includes both industrial/commercial and residential uses. Industrial/commercial includes electric power or gas utility stations, manufacturing or industrial plants, livestock feedlots, landfills, mines, quarries, commercial or retail facilities, and roads.

Residential includes residential yards, subdivisions, and planned new residential developments.

Sources: ENSR 2006a; TransCanada 2007c, d.

Ownership

Land along the Mainline Project is principally privately owned. In all states except Illinois, private ownership comprises more than 99 percent of lands that would be crossed by the Mainline Project (see Table 3.9.3-4). For Illinois, private ownership accounts for approximately 95 percent of land that would be crossed, with federal lands making up the remaining 5 percent. For the Mainline Project as a whole, private ownership accounts for approximately 99.6 percent of land crossed by the Project. This translates to approximately 66 acres of affected federal land in Illinois and 18 acres of affected state land in North Dakota, South Dakota, and Missouri (TransCanada 2007d) (see Table 3.9.3-5).

As noted earlier, temporary and permanent ROWs would be acquired via negotiation with private landowners on a case-by-case basis. Where the pipeline would traverse state land, all applicable state statutes would apply. The Mainline Project would cross approximately 1.3 miles of state-owned lands comprising 0.8 miles in North Dakota, and approximately 0.5 miles in Missouri (TransCanada 2007c).

Where the pipeline would traverse federal land, all applicable federal statutes would apply. In July 2007, Keystone applied for Right-of-Way Grants pursuant to the Mineral Leasing Act, which would authorize temporary construction use and long-term use of federal land for pipeline purposes. A Right-of-Way Grant is issued for a 30-year term and contains a right of renewal if the project continues to be used for its initial purpose. Each federal agency has its own easement procedure. The Mainline Project would cross about 3 miles of federally owned land in Illinois, comprising about 66 acres (TransCanada 2007c). The Mainline Project would not cross any other federal lands.

TABLE 3.9.3-4
Ownership of Land Crossed by the Keystone Mainline Project

Land Owner	Miles Crossed	Percent of Total (%)
North Dakota		
Federal	0.0	0.0
State	0.8	0.4
Private	217.0	99.6
North Dakota subtotal	*217.8*	
South Dakota		
Federal	0.0	0.0
State	0.0	0.0
Private	219.9	100.0
South Dakota subtotal	*219.9*	
Nebraska		
Federal	0.0	0.0
State	0.0	0.0
Private	214.6	100.0
Nebraska subtotal	*214.6*	
Kansas		
Federal	0.0	0.0
State	0.0	0.0
Private	98.7	100.0
Kansas subtotal	*98.7*	
Missouri		
Federal	0.0	0.0
State	0.5	0.2
Private (includes Nature Conservancy lands)	273.5	99.8
Missouri subtotal	*274.0*	
Illinois		
Federal	3.0	5.3
State	0.0	0.0
Private	53.9	94.7
Illinois subtotal	*56.9*	
MAINLINE PROJECT		
Federal	3.0	0.3
State	1.3	0.1
Private	1,077.6	99.6
Mainline Project total	**1,081.9**	

Note: Discrepancies between mileage for individual land owner type, totals, and subtotals are attributable to rounding.

Sources: ENSR 2006a; TransCanada 2007c, d.

TABLE 3.9.3-5 Ownership of Acres Affected during Construction by the Keystone Mainline Project				
Location	**Federal**	**State**	**Private**	**Total**
North Dakota	0	11	3,429	3,440
South Dakota	0	<1	3,377	3,377
Nebraska	0	0	3,335	3,335
Kansas	0	0	1,871	1,871
Missouri	0	7	4,668	4,675
Illinois	66	0	843	909
Mainline Project total	**66**	**18**	**17,523**	**17,607**

Sources: ENSR 2006a; TransCanada 2007c, d.

3.9.3.2 Agricultural Land

The Mainline Project primarily would cross cropland in private ownership. Construction and operation of the Mainline Project facilities would affect about 12,587 acres of agricultural land along approximately 1,082 miles of construction route. Of this, approximately 589 miles are considered prime farmland by the NRCS (including land considered potential prime farmland, if adequate protection from flooding and drainage was provided).

To determine the amount of agricultural land that potentially would be affected, Keystone reviewed aerial photographs and made general observations during reconnaissance activities. Further refinements to the assessment of various types of cover were completed during an August 2006 grassland survey. Based on the aerial photography evaluations and ground surveys, Keystone has indicated that no known orchards would be crossed by the Keystone Project.

Crops vary significantly along the pipeline route due to its length (ranging from the 49th Parallel N at the U.S./Canadian border to the 43rd Parallel N at Patoka, Illinois, and the 36th Parallel N at Cushing, Oklahoma). Typical crops along the pipeline route include corn, soybeans, wheat, barley, rye, sorghum, sunflower, dry edible beans, flaxseed, canola, popcorn, alfalfa, hay, sugar beets, and oats. Certain crops are more common in the southern states of the pipeline route, including cotton, fruits and nuts, rice, vegetables, flowers, and tomatoes.

Numerous tracts of land are enrolled in USDA programs managed through NRCS and FSA. The NRCS negotiates easements with landowners for a variety of land and habitat conservation priorities. Some NRCS programs include the Wetland Reserve Program (WRP), the Farm and Ranchland Protection Program (FRRP), and the Wildlife Habitat Incentives Program (WHIP). FSA does not negotiate easements but enters into a contract with landowners for certain conservation practices. Some FSA programs include the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), the Farmable Wetlands Program (FWP), and the Emergency Conservation Program (ECP). The Grassland Reserve Program is implemented by both the FSA and NRCS and provides rental and easement options. Both easements and rental contracts for these programs are available for a variety of durations, and some easements can be made in perpetuity.

The CRP is the largest of these programs. Landowners with CRP contracts can receive annual rental payments and cost-share assistance to establish long-term resource-conserving covers on eligible farmland. CRP protects millions of acres of topsoil from erosion and is designed to safeguard natural resources. The program encourages farmers to convert highly erodible cropland or other environmentally

sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filter strips[1], or riparian buffers. Participants enroll in CRP contracts for 10 to 15 years (FSA 2007a).

Potential Impacts and Mitigation

Construction-related activities such as grading, trenching, stringing, welding, backfilling, and restoring could impact agricultural lands by leading to soil erosion, interference with and damage to agricultural surface and subsurface drainage and irrigation systems, mixing or loss of fertile topsoil and subsoil, and soil compaction. All of these impacts could result in reduced productivity of agricultural lands or direct crop loss.

During the scoping period for the Keystone Project, several members of the public expressed concerns regarding impacts on agricultural activities that could result in crop losses, including:

- Soil compaction due to heavy construction equipment;
- Construction schedule and duration during which agricultural activities could not be conducted;
- Impact to center pivot irrigation systems;
- Surface and subsurface drainage, ponds, waterlines, and drainage ditches;
- Access to farmland, particularly in areas where large amounts of wetland surround the farmland;
- Effect of wetland impacts on farmers eligible for payments associated with protection of wetlands on farmland (FSA programs);
- Impacts on landowners with CRP lands; and
- Compensation for affected crop production.

To address impacts on agricultural lands, Keystone has proposed a number of mitigation measures that are detailed in the CMR Plan (Appendix B). Keystone proposes to restore all disturbed areas associated with construction of the Keystone Project, in accordance with its CMR Plan and all other applicable federal, state, and local permit requirements. Keystone intends to repair or restore drain tiles, fences, and land productivity as these may be damaged during the construction process. Following construction, agricultural land can revert to its previous use, except for about 109 acres of land that would be set aside for permanent aboveground facilities (consisting of about 106 acres for pump stations and 3.5 acres for permanent access roads) and that Keystone would directly purchase from landowners. At this time, it is unclear what percentage of these acres to be devoted to permanent aboveground facilities would be located in agricultural land use areas; however, agriculture is the predominant land use, and these facilities are likely to displace agricultural land use acreage. When construction and cleanup have been completed, affected land along the temporary and permanent ROWs could be returned to agricultural production, although the magnitude of construction and operational impacts could include changes in agricultural use or even conversion to a non-agricultural use at a landowner's request.

Keystone's CMR Plan includes typical measures such as avoiding or minimizing topsoil/subsoil mixing and ensuring that compaction and other construction-related effects are rectified. See Section 3.2.2.1 for a detailed discussion of topsoil segregation. In addition, several of Keystone's proposed mitigation

[1] Filter strips are vegetated areas planted adjacent to crops that are designed to filter runoff and improve water quality. They are frequently used near streams, ponds, lakes, sinkholes, and agricultural drainage wells. Filter strips are typically planted with very close-growing vegetation, to better trap sediments, nutrients, and chemicals.

measures directly address the comments raised by landowners and other stakeholders affected by the Keystone Project:

- Only use machinery with low ground pressure;
- Avoid or restrict construction activities in excessively wet soil conditions to minimize soil compaction and rutting;
- Restore all temporary and permanent ROWs and additional workspaces to pre-construction levels of soil compaction through ripping and discing subsoil prior to salvaged topsoil replacement;
- Provide a minimum of 24 hours notice to a landowner before accessing his/her property for construction purposes;
- Supply Keystone contact information to affected landowners prior to construction;
- Reach a mutually acceptable agreement between Keystone and a landowner on the access route for entering and exiting the pipeline construction ROW, should access not be possible from adjacent pipeline construction ROW segments or from a public access road;
- Establish with a landowner an acceptable amount of time that an irrigation system (pivot, spray, or flow) may be out of service due to pipeline construction and reasonably compensate a landowner for any losses incurred due to irrigation disruption, both on and off the temporary and permanent ROWs;
- Implement measures to allow for irrigation to continue during pipeline construction when feasible and mutually agreeable to Keystone and the landowner;
- Not disrupt irrigation ditch water flows, except for the amount of time required to install the pipeline (typically 1 day or less), unless otherwise directed;
- Reestablish all original contours and drainage patterns following construction;
- Limit disruption to the surface drain network near the ROW;
- Leave gaps in trenches and strung pipeline to facilitate drainage;
- Discharge trench water in a manner that avoids damage to adjacent agricultural land, crops, and pasture;
- Install trench breakers on slopes where required to minimize potential water movement down the ditch and subsequent erosion;
- Minimize the duration of construction-related disturbance within wetlands to the extent possible; and
- Repair and restore land productivity to pre-construction levels.

Keystone would compensate agricultural landowners for actual crop losses resulting from removal of standing crops, disruption of planned seeding activity, disruption of general farming activities, or other losses resulting from construction of the pipeline—as negotiated in individual easements with the landowners. This includes compensation for direct yield payments from FSA. Standard damage remedies included in Keystone's CMR Plan stipulate that Keystone would agree to pay the landowner for any physical damages that arise from Keystone's use of the easement. In addition, any crop reductions related to the pipeline construction, whether on or off the construction and permanent ROWs, would be compensated to the landowner. Keystone would conduct post-construction monitoring to examine the revegetation in affected agricultural areas. Restoration is considered successful in agricultural areas if crop yields are similar to adjacent undisturbed portions of the same field. Affected areas would be

restored, and Keystone would compensate landowners for any verifiable losses or damages both on and off the ROW that may result from pipeline construction. As noted in Section 3.9.1, crop loss compensation would be determined on a case-by-case basis. Keystone would obtain from the USDA current information regarding commodity prices and yields; these data would be supplemented by property-specific yield and price data supplied by the landowner. Landowners would be compensated at 100 percent for the year of construction, with diminishing percentages over the next 2 years.

Construction impacts on general agricultural activities are expected to be temporary and minor. Operations impacts on general agricultural activities are expected to be permanent but minor, consisting of the conversion of a small amount of agricultural acreage to industrial use for permanent aboveground facilities.

Soil Compaction

Construction of the Mainline Project could affect agricultural lands through soil compaction and decreased soil productivity. As outlined in its CMR Plan, Keystone proposes to avoid some initial soil compaction impacts by only using vehicles with low ground weight or wide tracks. Keystone would set restrictions upon construction during excessively wet periods to prevent compaction and rutting. Top soil would be stripped and segregated from sub soil. All affected land would be returned to original levels of compaction through ripping and discing prior to replacement of top soil. The restored ROW would be tested at regular intervals along the construction ROW. In the event that a landowner disagrees with Keystone's restoration methods, Keystone would consult the appropriate county Soil and Water Conservation District. Construction-related soil compaction impacts are expected to be short term and minor. Operation of the pipeline would not affect soil compaction.

Construction Schedule

Public comments questioned how the construction schedule might affect agricultural activities. Keystone proposes to begin construction of the pipeline in April 2008, with the construction period continuing for approximately 18 months, and operation beginning by November 30, 2009. Construction of the Cushing Extension section would proceed after this initial period, in late 2009 or early 2010, beginning service by 2010. The pipeline would be constructed in 11 spreads, eight for the Mainline Project and three for the Cushing Extension, proceeding north to south. The Mainline Project spreads would be constructed concurrently, and the Cushing extension spread would commence construction thereafter.

As described in Section 2.2, the typical pipeline construction period would include surveying and staking; clearing and grading; trenching; pipe stringing, bending, and welding; lowering-in and backfilling; hydrostatic testing; pipe geometry inspection; final tie-in welding; commissioning; and cleanup and restoration. In some areas, special construction techniques may be used for rugged or steep terrain, waterbodies, wetlands, paved roads, and railroads. Typical construction at one point would last for only a few days.

Keystone has made several schedule commitments in its CMR Plan. Landowners would be provided a minimum of 24 hours notice that Keystone intends to access their land for construction purposes. Notice would be made via personal or telephone contact, or by mail or hand delivery if a landowner cannot be reached. During construction, Keystone would provide access across the ROW to landowners at locations requested by the landowners, if practicable. Any restricted activity would continue for the duration of construction activities on any particular parcel of land and is not expected to last for more than a few days**.** Construction activities are expected to cause temporary and minor impacts to landowners.

Center Pivot Irrigation

Pivot irrigation systems typically involve an overhead irrigation mechanism consisting of several segments of pipe mounted on wheeled towers, with a row of sprinklers attached. The system moves in a circular pattern and is fed with water from the pivot point at the center, with crops planted in a circle to conform to the system geometry. Center pivot equipment also can be configured to move in a straight line, where the water is pulled from a central ditch.

The proposed pipeline crosses primarily agricultural lands, some of which use pivot irrigation systems. During scoping, public comments indicated concerns regarding the potential for pipeline installation to disrupt ongoing pivot irrigation.

While disruption of irrigation may occur during construction due to the location of trenching activity in relation to the pivot/tower system, these impacts would be temporary, and operations would return to normal following final restoration of the ROW. Keystone proposes to work with landowners to allow pivot irrigation to continue, as feasible and mutually acceptable, across land on which a pipeline is being constructed. If use of the irrigation system must be disrupted for pipeline construction, Keystone would establish with a landowner the acceptable amount of time that the system can remain out of operation. If interrupted irrigation due to pipeline construction would adversely affect agricultural production, Keystone would reasonably compensate the landowner for damages both on and off the ROW. Construction impacts on irrigation systems are anticipated to be temporary and minor. Pipeline operation is not expected to affect irrigation systems of any type.

Surface and Subsurface Drainage, Ponds, Waterlines, and Drainage Ditches

During scoping, commentors sought clarification concerning impacts to subsurface drainage, ponds, waterlines, and drainage ditches. In its CMR Plan (Appendix B), Keystone proposes to avoid initial disruption of surface drainage and to reestablish all original contours and drainage patterns following construction. For subsurface drainage, a major concern is migration of water within the pipeline trench. This would be prevented by installation of trench breakers on slopes at regular intervals to prevent water movement and subsequent erosion.

During land acquisition and permitting, Keystone would identify the locations of potentially affected public and private waterlines. No water lines would be cut without the permission of the landowner or public agency. Waterlines would merit the same treatment as irrigation systems—Keystone would attempt to allow continued operation of waterlines during construction and would establish with the landowner an acceptable amount of time that the waterline could be out of service, in the event that operation must be temporarily interrupted. If interruption of waterline service were to lead to damages to agricultural resources, Keystone would provide reasonable compensation to the landowner for lost productivity. The pipeline would be installed beneath the waterline in most cases, leaving a minimum of 12 inches of clearance between the waterline and the Keystone pipeline. If there is sufficient depth of cover available, in some areas, the Keystone pipeline could cross above the waterline with 12 inches of clearance and the additional 4 feet of cover on the oil pipeline (TransCanada 2007c).

During construction, a small backhoe or hand excavation would be used to expose the waterline, which then would be left exposed and flagged. The pipeline section to be installed beneath the waterline would be welded and left adjacent to the exposed waterline for installation by the tie-in crew. During connection, the waterline would be supported across the trench to prevent it from breaking. During backfilling of the trench, native material would be used and care would be taken to prevent damage to the waterline (TransCanada 2007c).

Underground drainage tiles would be repaired by Keystone if damaged during construction, either through settlement with the landowner or the county (in the case that a drainage tile system is publicly owned), or by directly repairing the system. In the CMR Plan (Appendix B), Keystone has adopted a set of guidelines and procedures for managing impacts to drainage tile systems. Keystone intends to avoid interrupting irrigation ditch flows, except for the time required for trenching, lowering-in pipe, and backfilling (typically 1 day or less).

Keystone proposes to avoid agricultural ponds by adjusting the pipeline route as necessary. If it is not possible to avoid a pond, Keystone would work with the landowner to remove or lower the water level in the agricultural pond prior to construction, to allow dry terrain installation (TransCanada 2007c). Where dry installation is not practical or acceptable to the landowner, the open-cut wet crossing method would be used to cross the pond. This method entails trenching through the water body, depositing trench spoils at least 10 feet from the edge of the water, installing pipeline that was previously assembled next to the pond, and backfilling with native material. The pipe would be weighted with concrete to provide negative buoyancy, and the banks would be restored. For a full description of this construction method, see Section 2.2. Cleanup of the adjacent banks and restoration, which would include installing temporary erosion controls and re-seeding the banks, would be completed following construction (TransCanada 2007c).

Construction impacts related to drainage systems, ponds, ditches, and waterlines would be temporary and minor, and Keystone would fully compensate or remediate any resulting damages. Operation of the underground pipeline is not expected to affect surface or subsurface drainage, water delivery, or water storage systems. (See Section 3.3.1.2 for a discussion of impacts on surface waters in the project area.)

Conservation Reserve Program Lands

Several scoping comments requested information about impacts on lands in the CRP. In reviewing the proposed alignment, FSA determined that there are landownership tracts along the proposed corridor that total 16,648 acres that have some portion of the tract enrolled in the CRP program. The FSA is unable to determine based on existing information how many acres of actual CRP lands within these tracts are impacted by the proposed corridor. However, the actual potentially affected acreage of CRP land is likely to be a small percentage of the total acreage within these landownership tracts.[2] Those CRP acres that are directly crossed by the corridor could be required to exit the program, and in this case the landowner would be required to pay liquidated damages equal to 25 percent of the annual rental payment, in addition to the federal cost-shares received, all annual rental payments, and interest. Keystone and FSA would determine the actual amount of enrolled acres that would be affected by the ROW through site visits. These visits would document whether the ROW crosses CRP acreage and the site-specific impact based on the type of affected habitat. Keystone would work with landowners and local FSA and NRCS officials to develop restoration programs that would ensure that any affected enrolled CRP acreage would be eligible to continue participation in the program.

Certain CRP lands, such as grasslands (approximately 80 percent of the potentially affected acreage reported by FSA), that would be affected by the construction period would require up to 5 years to fully regenerate to pre-construction conditions. Nevertheless, these areas could be managed in the same manner and for the same priorities following restoration. Enrolled CRP land containing woody

[2] FSA is unable release the precise location of acreage enrolled in its programs. The analysis that generated the amount of 16,648 acres affected during construction and 6,595 acres affected during operation was created by calculating the acreage of tracts *on which enrolled CRP acreage exists* that would be intersected by the proposed ROW. The ROW could intersect tracts of land with enrolled acreage and still avoid intersecting the enrolled acreage.

vegetation and trees would be more intensively affected, because the permanent ROW would need to be cleared and maintained in an open condition for the life of the pipeline. The construction ROW also would be affected over the long-term in woodlands, due to the long regeneration times for these cleared areas. Tree conservation acres represented less than 1 percent of the potentially affected acres reported by FSA. Impacts on CRP would be long term but minimal and localized.

To mitigate the impacts of land disturbance in CRP and other FSA conservation program areas, Keystone has committed to the following mitigation measures, in addition to those included in the CMR Plan:

- Assisting all appropriate landowners with contacting their local FSA offices concerning construction across lands covered by CRP contracts, for all verified enrolled acreage in CRP and other FSA conservation program areas.

- Conferring with all appropriate FSA offices to ensure that these consultations meet FSA requirements.

- Complying with remediation and restoration requirements required by FSA.

- Utilizing the state-specific NRCS Field Office Technical Guide (Appendix M) for mitigation and revegetation of areas damaged by construction.

- Consulting with the local NRCS representatives to determine the adequacy of Keystone's CMR Plan and supplement the plan as needed during construction and reclamation.

In the event that a landowner with current CRP contracts would need to remove land from the program because of pipeline construction and operation, Keystone would be responsible for covering all agricultural losses incurred because of pipeline construction and operation, as described in its CMR Plan (Appendix B). Keystone would restore the ROW to its original condition following construction.

Farmable Wetland Program Lands and Other FSA Programs

Some scoping comments asked about potential impacts on farmers who are currently eligible for federal payments from FSA associated with protection of wetlands on their farmland. The FWP is a voluntary program improving the land's hydrology and vegetation on no more than 100,000 acres per state.. Eligible producers in all states can enroll eligible land in the FWP through the CRP. Eligible acreage includes farmed and prior converted wetlands that have been affected by farming activities. The maximum acreage for enrollment of wetlands and buffers is 40 acres per tract (FSA 2007b). Pipeline construction in these areas would follow Keystone's guidelines for wetlands construction (see Section 2.2.2.4 for more information).

As with CRP lands, impacts on enrolled FWP lands and all FSA programs would be determined by site-specific visits. The CRP mitigation listed above also would apply to these lands. Keystone would be responsible for any agricultural impact resulting from pipeline construction and would restore the ROW to its original condition following construction.

NRCS Programs

NRCS determined that the Mainline Project would affect one WRP easement in Missouri. The WRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. NRCS provides technical and financial support to help landowners with their wetland

restoration efforts. The goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, establishing long-term conservation and wildlife practices and protection.

Keystone agreed to re-route the ROW to avoid an easement in South Dakota but determined that relocating the alignment at the Missouri site would result in greater potential impacts than crossing the easement. NRCS agreed with this rationale for crossing the easement. To minimize the potential impacts of crossing this WRP easement Keystone would utilize the state-specific NRCS Field Office Technical Guide (Appendix M) for mitigation and revegetation of areas damaged by construction. Keystone would mitigate impacts to NRCS WRP easement lands to the greatest extent possible, according to a subordination agreement and the accompanying site restoration plan developed by NRCS. Ecological site conditions (including vegetation and hydrology) would be reestablished to the "future with no action condition" for all affected areas outside of the area to be maintained. Restoration of the site may take up to 5 years. Maintenance of vegetation would be specified in the maintenance plan developed with NRCS over the full width of permanent ROW. Keystone would consult with the local NRCS representatives to determine the adequacy of Keystone's CMR Plan and supplement the plan as needed.

Implementation of this measure would reduce potential impacts to agriculture on the one NRCS easement that would be crossed by the Mainline Project. The effect of the crossing would be considered long term but minor, with revegetation requiring up to 5 years to reestablish itself to pre-construction conditions. Maintenance of vegetation would not be conducted over the full width of the permanent ROW in non-forested areas, and no permanent impacts would result in this instance. Keystone would compensate the affected landowner for construction or operations impacts that affect the easement's continued enrollment in the WRP.

Access to Farmland

During construction of the pipeline, landowners may be temporarily unable to access farmland for agricultural activities. Keystone proposes to inform landowners a minimum of 1 day in advance of accessing their lands for construction purposes. In addition, Keystone would provide access during construction across the ROW, at locations requested by the landowners, if practicable. Construction impacts on farmland access would be temporary and minor, and Keystone would compensate landowners for any damage due to construction-related restriction of access. Operation of the pipeline would not affect access, as full access to the ROW would be restored to landowners following the construction period.

During construction, Keystone anticipates that farmers would be able to access farmlands that are surrounded by wetlands because Keystone would coordinate with the landowner to maintain access using the existing access roads. Access would be maintained by leaving hard plugs or soft plugs, or by creating temporary bridges using mats or other bridging materials where needed (TransCanada 2007c).

Windbreaks, Shelterbelts, and Living Snow Fences

Windbreaks, shelterbelts, and living snow fences are important resources in the Plains states for preventing soil erosion, reducing evaporation from soils, increasing crop yields, and providing habitat and wind protection for livestock (Haugen et al. 2002). The Mainline Project would intersect many windbreaks planted on private lands. At these intersection points, Keystone would need to remove trees and brush to provide access for construction equipment. During the operational life of the Keystone Project, the ROW would be maintained in an open condition, and trees and brush would not be allowed to revegetate the permanent ROW. Keystone has pledged that the construction ROW would be reduced to the minimum necessary width to construct the pipeline when crossing a shelterbelt.

To ensure that impacts on windbreaks, shelterbelts, and living snow fences are minimized, Keystone would address mitigation, reclamation, and remediation measures, including the possible use of non-vegetative remediation, pertaining to impacts to windbreaks, shelterbelts, and living snow fences with individual landowners and would comply with any applicable state requirements.

Revegetation with trees or woody vegetation would not be possible within the permanent ROW for the life of the Keystone Project, and revegetation within the construction ROW would take many decades to mature. Construction and operation of the pipeline, even with implementation of preventive and remedial measures, would result in permanent, but localized impacts to vegetative windbreaks, shelterbelts, and living snow fences.

3.9.3.3 Rangeland

Construction of Mainline Project facilities would affect about 3,051 acres of rangeland/grassland, representing approximately 17 percent of the total acres affected by the Mainline Project.[3] Missouri has the highest percentage of affected rangeland/grassland acres of all states (22 percent), and Illinois has the lowest (about 12 percent). Affected rangeland acreage in other states along the Mainline Project alignment ranges between 13 and 20 percent (TransCanada 2007c).

Potential Impacts and Mitigation

Construction activities would displace or halt grazing activities and would disturb the surface of livestock foraging areas. In addition, construction activities such as trenching could put livestock at risk of falling or being trapped in open trenches.

During the scoping period, the public asked how cattle would be protected during construction. To reduce overall risks to livestock grazing in rangelands, Keystone has proposed to work with the individual landowners to reach mutually agreeable terms regarding exclusion of livestock from construction work areas. These measures may include installation of fencing or use of hard (short lengths of unexcavated trench) or soft trench plugs (areas where the trench is excavated and replaced with minimal compaction) at agreed-upon livestock crossing intervals. Soft plugs would be constructed with a ramp on each side to allow a means of exit for animals that fell into the trench. In addition, Keystone has agreed to install temporary gates for livestock fences that must be breached. The following rangeland-specific mitigation measures are outlined in Keystone's CMR Plan:

- Access across the ROW during construction shall be provided at locations requested by landowners, if practicable;
- Bevel shavings during pipe bevel operations shall be removed immediately to ensure that livestock and wildlife do not ingest this material;
- Litter and garbage shall be collected and removed from the construction site at the end of the day's activities;
- Temporary gates shall be installed at fence lines for access to the construction ROW; gates shall remain closed at all times and shall be removed and replaced with permanent fencing upon completion of construction;
- Feeding or harassment of livestock or wildlife is prohibited;

[3] Rangeland includes tall grass prairie, mid-grass prairie, short grass prairie, sand prairie, non-native grassland, deciduous shrubland, mixed native and non-native grasslands and mixed prairie, improved and unimproved pasture, and lands that appear to be used for cattle or other livestock grazing—with or without a shrub component.

- Construction personnel shall not be permitted to have firearms or pets on the construction ROW;
- All food and wastes shall be stored and secured in vehicles and/or appropriate facilities;
- Areas of disturbance in native rangelands shall be seeded with a native seed mix after top soil replacement; and
- Improved pasture shall be seeded with a seed mix approved by individual landowners after top soil replacement.

Keystone has proposed to avoid impacts to livestock and to restore disturbed areas according to its CMR Plan (Appendix B), which requires grading and revegetation in rangelands to be conducted in consultation with landowners and land managing agencies. Following restoration, affected rangelands would be restored and reseeded, and rangeland activities may resume. Implementation of the proposed rangeland-specific mitigation measures discussed above would reduce potential impacts to minimal levels. Although restoration activities would begin soon after the end of construction in rangeland areas, herbaceous grasslands may take up to 5 years to recover to the point where visual scarring is no longer evident. The magnitude of construction and operational impacts could include changes from native to non-native species at a landowner's request, which would result in conversion of the original resource to a different habitat type. Therefore, construction impacts to rangelands are expected to be long term, but minor.

For the Mainline Project, approximately 109 acres would be set aside for permanent aboveground facilities (such as for pump stations and permanent access roads). At this time, it is not possible to determine the percentage of this acreage that would be located within rangeland land use areas; however, rangeland is a widespread land use along the Project route, and displacement of some rangeland acreage for permanent facility construction is likely. Construction and operation of aboveground facilities on rangeland/grassland would result in permanent conversion of rangeland to industrial/commercial use. Rangeland affected by operation of the aboveground facilities would be purchased or leased from the current landowners. Keystone would attempt to locate facilities to be as unobtrusive as possible to ongoing agricultural activities, and to cause the least disturbance to adjacent agricultural operations. In addition, Keystone would attempt to locate aboveground facilities near public roads to allow year-round access and would construct short permanent access roads to these facilities within the permanent ROW only when necessary. Operations impacts from aboveground facilities are considered permanent but minor, as the amount of land to be converted from rangeland to industrial land uses is small in comparison to the amount of productive rangeland in the region. Other pipeline operational activities are not expected to affect rangeland.

3.9.3.4 Forestland

Construction and operation of the Mainline Project facilities would affect about 867 acres of forestland of both upland and wetland types. This represents about 5 percent of the total acres affected by the Mainline Project. The majority of affected forestland is located in Missouri (600 acres) and Kansas (115 acres). Forest vegetative types are discussed in Section 3.5. None of the forested land that would be crossed by the pipeline is used for timber or Christmas tree production (TransCanada 2007c).

Mainline construction would affect forested wetlands in Missouri. Forested wetlands were once a dominant component of Missouri's landscape but are now considered at risk (Missouri Department of Conservation 2007d). The Mainline Project would cross approximately 2.6 miles of this community in Missouri, and 4.1 miles of forested wetlands over its entire length (TransCanada 2007d). Table 3.4.3-1 details the numbers of acres of forested wetlands that would be affected during construction and operation of the pipeline.

Potential Impacts and Mitigation

Construction activities would remove trees and brush from forested areas. During operation, the permanent ROW would be maintained, and revegetation of these types of woody materials would be prevented. This would result in a permanent loss of tree growth within the permanent ROW.

Keystone has proposed to minimize impacts to affected forested areas in several ways, as outlined in its CMR Plan (Appendix B). Trees would be felled such that they fall toward the center of the ROW, to minimize disturbance and limb breakage outside of the ROW. Tree stumps would not be grubbed beyond 5 feet on either side of the trench line and only where necessary for grading a level surface for construction equipment to operate safely. All debris would be recovered and landowners would be given the option of salvaging any materials removed; all unsalvaged materials would be properly disposed of. Disposal may not take place in wooded areas along the ROW; however, chipped material may be spread and incorporated with mineral soil over the forest floor at a density that would not prevent grass revegetation. See Section 2.2.2.8 for a more thorough discussion of forest construction methods and mitigation measures.

These measures would reduce impacts on forested lands. However, areas within the permanent ROW would not be allowed to regenerate as forested land over the life of the Keystone Project, and cleared areas in the construction ROW would not regenerate for many decades. Therefore, pipeline construction in forested areas would cause a long-term but localized impact on forestland. Pipeline operations in forested areas would constitute a permanent but localized impact on forestland. Section 3.5 describes potential impacts on forests and applicable mitigation measures.

3.9.3.5 Residences and Planned Development

The Mainline Project would cross and affect residential land. Based on 2006 aerial photography and ground truthing surveys conducted during summer 2007, Keystone identified 465 potential residential structures within 500 feet of the proposed Mainline Project ROW. The majority of potential residential structures are in Missouri (284) and Nebraska (60). Most structures in Missouri are situated where the Mainline Project route would collocate with the existing Platte pipeline. Three public assembly places are within 500 feet of the Mainline Project ROW. Keystone identified 20 residential structures located within 25 feet of the Mainline Project construction ROW, 16 of which are located in Missouri (TransCanada 2007d). Keystone has provided site-specific construction plans for each of the residential structures within 50 feet of the construction workspace.

Potential Impacts and Mitigation

The principal measures proposed by Keystone to mitigate impacts in existing residential areas include ensuring that construction proceeds quickly through such areas and limiting the hours during which activities with high-decibel noise levels could be conducted. Landowners would be notified at least 24 hours prior to construction. As specified in its CMR Plan (Appendix B), Keystone has proposed several mitigation measures for construction in all residential areas:

- Develop site-specific construction plans to mitigate the impacts of construction on residential and commercial structures;
- Notify landowners prior to construction;
- Post warning signs as appropriate;

- Reduce the construction ROW width, if practicable, by eliminating the construction equipment passing lane, reducing the size of work crews, or utilizing "stove pipe" or "drag section" construction techniques (stove pipe construction consists of welding pipe sections together away from residences, with trenching, pipeline lower in, and backfilling proceeding quickly to minimize construction duration; drag section construction techniques consist of layout and pre-assembly of the pipeline, followed by pull back of the assembled pipe to its proper position);
- Remove fences, sheds, and other improvements as necessary for protection from construction activities;
- Preserve mature trees and landscaping to the extent possible, while ensuring safe operation of the construction equipment;
- Fence the edge of the construction work area adjacent to a residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area;
- Limit the hours during which construction activities with high-decibel noise levels can be conducted;
- Limit dust impacts through prearranged work hours and by implementing dust minimization techniques;
- Ensure that construction proceeds quickly through residential and developed areas;
- Maintain access and traffic flow during construction activities, particularly for emergency vehicles;
- Clean up construction trash and debris daily;
- Fence or plate open ditches during non-construction activities;
- Restore all lawn areas, shrubs, specialized landscaping, fences, and other structures consistent with its pre-construction appearance or the requirements of the landowner immediately after backfilling; and
- Ensure that the pipe is ready for installation if the pipeline centerline is within 25 feet of a residence prior to excavating the trench; backfill immediately following pipe installation.

Construction of the pipeline and aboveground facilities may cause minor interference with the use of residential properties and other uses near the ROW, mainly from increased noise, heavy vehicle traffic, and dust. The adverse effects would be short term, lasting 2 to 3 months on any particular property, depending on weather and terrain. Equipment would be required to have effective mufflers installed to minimize construction noise. Access, including emergency access, to residences would be maintained at all times during construction. Keystone has not yet developed site-specific plans for residential structures in proximity to the pipeline. The potential impacts in residential areas are accentuated on weekends, when individuals and families are more likely to be at the residence throughout the day. Keystone has indicated that construction must proceed on weekends and possibly on holidays. If an individual landowner is concerned with noise levels associated with weekend construction, mitigation of those concerns may be discussed with Keystone's land agents. Based on these measures, construction-related effects on residences would be temporary and minor.

Operation of the pipeline has the potential to interfere with the long-term use of residential property and may result in ongoing noise impacts. Refer to Section 3.12.2 for a discussion of potential noise impacts and mitigation. Dwellings and ancillary structures would not be permitted to be placed over the permanent ROW for the operational life of the proposed Project. Prohibiting placement of structures

above the permanent ROW would be a substantial constraint on landowners' property usage in the vicinity of the 50-foot-wide permanent ROW. Therefore, operations impacts on residential land uses would be permanent and significant.

Keystone contacted planning and development departments in each of the counties that would be crossed by the proposed Mainline Project facilities to determine whether any residential or commercial development is planned within 0.25 mile of the proposed construction ROW. Planned development projects would include those that are permitted and not yet constructed and those with permit applications that have been filed but have not yet been approved. Keystone's initial consultations indicate that no known planned residential or commercial developments are within 0.25 mile of the proposed Mainline Project facilities; consequently, construction and operation of the Mainline Project would not affect planned development. Keystone would meet with landowners as part of the easement negotiations. Discussions would include whether residential and commercial developments are planned in close proximity to the ROW. Keystone then would determine whether minor property-specific adjustments to the route are feasible (TransCanada 2007c).

3.9.3.6 Commercial and Industrial Land

Construction of the Mainline Project facilities would affect about 506 acres of developed land. Table 3.9.3-6 provides a breakdown of developed land by state for the Keystone Mainline Project.

TABLE 3.9.3-6
Developed Land by State for the Keystone Mainline Project

State	Total Developed (acres)
North Dakota	90
South Dakota	88
Nebraska	50
Kansas	25
Missouri	182
Illinois	71
Mainline Project total	**506**

Source: TransCanada 2007d.

With the exception of Kansas on the low end and Missouri on the high end, affected developed acreage is distributed rather evenly among the states along the Mainline Project. For the Mainline Project route as a whole, developed land represents approximately 3 percent of the affected acres.

Potential Impacts and Mitigation

Ground surveys conducted by Keystone during summer 2007 indicate that the Mainline Project construction ROW would be within 25 feet of 22 outbuildings (19 in Missouri), four commercial, one industrial, and two other structures (TransCanada 2007d).

Construction of the Mainline Project could affect commercial and industrial land through restricted access and the presence of construction activity. Impacts on a specific commercial or industrial area are anticipated to last only for several days. Keystone has adopted mitigation measures for commercial and

industrial land in its CMR Plan. Keystone would mitigate impacts on commercial and industrial landowners by:

- Notifying business owners prior to construction;
- Reducing the construction corridor width to 85 feet, if feasible;
- Removing fences and other improvements as necessary for construction activity;
- Fencing the construction work area adjacent to businesses for approximately 100 feet on either side of a building to keep construction equipment and materials in the work area;
- Preserving mature trees and landscaping to the extent possible, while ensuring safe operation of construction equipment;
- Limiting hours during which construction activities with high-decibel noise levels can be conducted;
- Limiting dust impacts through prearranged work hours and implementing dust minimizing techniques;
- Proceeding quickly with construction through commercial and industrial areas;
- Maintaining access and traffic flow during construction, particularly for emergency vehicles;
- Cleaning up daily after construction;
- Fencing or plating open ditches during non-construction periods;
- Restoring landscaping, fences, and other structures immediately after backfilling;
- Employing site restoration personnel familiar with local horticultural and turf establishment practices; and
- Prefabricating the pipe so it is ready for immediate lowering-in where the pipeline centerline is within 25 feet of a commercial or industrial building.

Given the mitigation procedures described above, construction of the Mainline Project would cause temporary minor impacts on any commercial and industrial land.

Buildings of any type, including commercial and industrial structures, would not be permitted within the permanent ROW for the life of the proposed Keystone Project. This would place a substantial constraint on the use of commercial and industrial property in the vicinity of the 50-foot-wide permanent ROW. Therefore, operations impacts on commercial and industrial land use would be permanent and significant. Keystone would compensate landowners for these impacts on a case-by-case basis (TransCanada 2007c).

Connected Actions

Power Lines and Substations. The Keystone Project will require construction of power lines to service pump stations and other ancillary facilities. These will be permitted and constructed by utility providers; however, this is considered a connected action under NEPA. Keystone assumes that the land required to construct new power lines will generally be within existing county ROWs. It will be the responsibility of utility providers to obtain any necessary easements for the construction process. Construction of power lines would consist of limited clearing, which may result in the removal of some trees to provide adequate clearance between the wire conductors and underlying vegetation. Maintenance would consist of trimming, in some cases, to avoid tree removal. Holes would be excavated for placement of power poles, which would also be anchored as necessary for stability. Temporary pulling or

reeling areas may be needed for installation of the conductor wires; these areas could return to their original condition following construction. Construction and operations activities for power lines would be considered to have a minor impact on land use, because they will be constructed primarily within county road ROWs.

3.9.3.7 Recreation and Special Interest Areas

The proposed Mainline Project facilities would cross various recreation and special interest areas and other recreation areas, resulting in temporary construction impacts and potential permanent impacts. Table 3.9.3-7 details the recreation and special interests lands that would be intersected by the Mainline Project. No other national, state, or local parks or forests are located with 500 feet of the proposed Mainline Project centerline.

As shown in Table 3.9.3-7, the proposed Mainline Project would cross multiple conservation and wildlife reserve easements, the majority of which are privately owned. Several of the areas listed in the table are discussed in further detail below.

Tetrault Woods State Forest and Pembina River, North Dakota

Tetrault Woods is a 432-acre area located along the banks of the Pembina River, in Cavalier and Pembina Counties. It preserves some of the riparian forest typical of the Pembina River Valley, including specimens of oak, ash, birch, elm, and aspen. The forest contains hiking trails and a scenic overlook of the valley (NDFS 2007). Tetrault Woods is one of very few public forest areas in North Dakota. The Mainline Project would cross Tetrault Woods between MP 6.8 and 7.7, traversing 0.8 mile of forestland and the Pembina River. The Pembina River has been classified by the National Rivers Inventory as having outstanding resource values for scenery and geology, although it is not classified as a National Wild and Scenic River (http://www.rivers.gov/agencies.html) or a National Recreation River (NPS 2007b). The Pembina River is a popular paddling and canoeing destination (NDPRD 2007). Keystone proposes to cross the Pembina River using the HDD crossing method (see Section 2.2.3.3), also crossing a public hiking trail south of the river.

Game Production Area, South Dakota

The SDGFP manages game production areas around the state to create habitat for game species and provide hunting opportunities (SDGFP 2007). The Mainline Project would intersect a game production area at MP 358.0, traversing a distance of 0.1 mile.

Missouri National Recreational River

The section of the Missouri River south of Yankton, South Dakota is designated a National Recreational River by the NPS. Rivers selected for this designation are to be preserved for having remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values (NPS 2007a). The Mainline Project would intersect the Missouri River and surrounding recreation lands at MP 435.8, and would traverse approximately 2.3 miles in South Dakota and Nebraska.

Keystone proposes using HDD (see Section 2.2.2.3) to cross the Missouri River. This method is not expected to affect the bed, banks, or water quality of the Missouri River. Additionally, this method would not interrupt recreational activity on the river or on its banks.

TABLE 3.9.3-7
Special Interest Areas Crossed by the Keystone Mainline Project

Site Name	Milepost	Miles Crossed	Ownership
North Dakota			
Tetrault Woods State Forest	6.8–7.7	0.8	North Dakota Forest Service
South Dakota			
Game Production Area	358.0–358.1	0.1	South Dakota Game, Fish and Parks Department
Missouri National Recreational River	435.8–437.5	2.3	Privately owned Designated Wild and Scenic (National Park Service)
Nebraska			
None identified	NA	NA	NA
Kansas			
None identified	NA	NA	NA
Missouri			
Western Missouri River Alluvial Plain/Missouri River Loess Woodland Conservation Opportunity Area (COA)	750.9–755.2	4.1	Private and Missouri Department of Conservation
Jentell Brees Access	751.0–751.1	0.1	Missouri Department of Conservation
Pigeon Hill Conservation Area	760.9–761.3	0.4	Missouri Department of Conservation
Little Prairie River Woodland/Forest Scarped Hills COA	770.0–771.4	1.4	Private
Little Platte River Woodland/Forest Scarped Hills COA	773.5–775.0	1.0	Private
Cameron River Upland Prairie Plain COA	781.9–784.0	2.1	Private
Shoal Creek Prairie/Woodland Scarped Plain COA	825.8–829.2	1.3	Private
Lower Grand River Lowland Plains/Missouri Grand River Alluvial Plain COA	841.6–844.4	2.8	Private
Chariton River Alluvial Plains COA	870.6–871.8	1.3	Private
Chariton River Alluvial Plains COA	874.3–875.2	0.9	Private
West Fork Cuivre River	931.8	NA	NA
Veronica Baier – The Nature Conservancy	958.3–959.7	1.4	The Nature Conservancy
Cuivre River Woodland/Forest Hills COA	964.3–966.2	1.9	Private

TABLE 3.9.3-7 (Continued)

Site Name	Milepost	Miles Crossed	Ownership
Missouri (continued)			
Cuivre River Woodland/Forest Hills COA	973.8–976.0	2.2	Private
St. Charles/Lincoln Alluvial Plain, Mairas Temp Clair Alluvial Plain, West Alton Alluvial Plain COA	987.7–1,024.9	37.2	Private
Edward “Ted” & Pat Jones–Confluence Point State Park	1,023.5–1,024.7	1.2	Missouri Department of Natural Resources
Illinois			
Carlyle Lake Wildlife Management Area	1,073.5–1,076.6	3.1	U.S. Army Corps of Engineers
Mainline Project total		**65.6**	

NA = Not available.

Sources: ENSR 2006a, TransCanada 2007d.

Keystone's preliminary HDD plan would avoid direct land disturbance within the NPS National Recreational River administrative boundary. The HDD entry point would be on City of Yankton land on the north shore, and the exit would be on privately owned land on the south shore. NPS administers land at the crossing location, but it does not own this land. Keystone conducted preliminary discussions with NPS and the City of Yankton in February 2006, and provided the proposed HDD procedure at a May 19, 2006 meeting in Yankton.

Jentell Brees Access, Missouri

The Jentell Brees Access is owned and managed by the MDC. The site consists mostly of fields and grasslands, and includes a boat ramp with access to the Missouri River (MDC 2007c). The Mainline Project would intersect this area at MP 751.0, traversing 0.1 mile.

Pigeon Hill Conservation Area, Missouri

The Pigeon Hill Conservation Area is owned and managed by the MDC. Pigeon Hill is a 424-acre conservation area with a shooting range and hunting and fishing opportunities. Most of the acreage is forested (MDC 2007d), consisting of 250 acres of upland forest that includes areas of improved and high-value forest stands. The Mainline Project would intersect this area at MP 760.9, traversing 0.4 mile.

Conservation Opportunity Areas, Missouri

The Mainline Project would cross numerous privately owned Conservation Opportunity Areas (COAs), including approximately 56 miles in 17 separate COAs located throughout Missouri. The MDC partners with stakeholders and landowners to identify places where partners can best apply technology, expertise, and resources for conservation efforts (MDC 2007a). See Table 3.9.3-7 for the specific locations and names of COAs in Missouri.

West Fork Cuivre River, Missouri

The National Rivers Inventory has classified the West Fork of the Cuivre River as having outstanding resource values for scenery, geology, and fish; however, it is not classified as a National Wild and Scenic River (http://www.rivers.gov/agencies.html). The West Fork can be navigated by canoe or small johnboat during normal flows (MDC 2007b). The Mainline Project would cross the West Fork of the Cuivre River at MP 938.1, using the HDD drilling method.

Edward and Pat Jones–Confluence Point State Park, Missouri

This state park is situated at the confluence of the Missouri and Mississippi Rivers; work is ongoing to restore the natural floodplain of the area. The restored 1,118-acre park will include native vegetation, natural wetlands, forests, prairies, and marshes. Visitors can engage in high-quality bird watching and native plant species viewing (MSPHS 2007). The Lewis and Clark National Historic Trail begins inside the park, with the site where the Lewis and Clark expedition originally disembarked up the Missouri River. Keystone's Mainline Project would intersect Jones–Confluence State Park at MP 1,023.5 and would traverse approximately 1.2 miles of the park. Several other utility corridors, including another pipeline, currently traverse the park. In addition, the pipeline ROW would traverse 37 miles of private COA land prior to entering state park lands.

Carlyle Lake Wildlife Management Area, Illinois

Carlyle Lake, managed by COE, is the largest reservoir in Illinois, with 26,000 surface acres of water and 11,000 acres of adjacent public land. It is a major recreation destination for residents in the St. Louis metropolitan area. Recreation activities include fishing, hunting, wildlife viewing, boating, swimming, camping, and golfing. The Carlyle Lake Wildlife Management Area (WMA) is located at the north end of the reservoir and is managed by the IDNR under a 25-year lease from COE. The WMA includes 2,000 acres of woodland, 5,800 acres of open water and wetlands, 200 acres of grassland, and 1,500 acres of cropland planted for wildlife food and cover (IDNR 2007). The Mainline Project would cross approximately 3 miles of the WMA between MP 1,073.5 and 1,076.6.

U.S. Fish and Wildlife Service Wetland Easements

The proposed Mainline Project route also would cross multiple USFWS easements in North Dakota and South Dakota. Table 3.9.3-8 shows the location of USFWS wetland easements. USFWS easements and wetlands of special concern or value are discussed in depth in Section 3.4.2. Wetland easements are signed agreements with private landowners to permanently protect valuable wetlands as waterfowl production areas. The landowner receives a one-time payment. Protected wetland basins cannot be drained, burned, filled, or leveled.

When these wetlands naturally dry up, they can be farmed, grazed, or hayed. The land remains in private ownership, remains on the tax rolls, and the landowner controls access (USFWS 2007b). USFWS wetland easements are important habitat areas for a variety of flora and fauna, and they serve as private hunting areas. The Mainline Project would cross approximately 30.7 miles of USFWS wetland easements (see Table 3.9.3-8).

Wildlife Management Areas and Hunting

Hunting occurs on publicly and privately owned lands along the proposed Mainline Project route. Most affected cover for game species would be located on private land that would require landowner permission for access; however, two public wildlife areas (Pigeon Hill Conservation Area, Missouri at MP 760.9 and Carlyle Lake WMA, Illinois at MP 1,073.5) would be crossed by the pipeline route. The Mainline Project also would cross a South Dakota game production area at MP 358 that is owned and managed by SDGFP. Hunting also is permitted in Tetrault Woods State Forest (North Dakota, MP 6.8).

Wilderness Areas

The proposed Mainline Project route would not cross any designated Wilderness Areas or Wilderness Study Areas.

TABLE 3.9.3-8
U.S. Fish and Wildlife Service Wetland Easements Crossed by the Keystone Mainline Project

North Dakota		South Dakota	
Milepost	Miles Crossed	Milepost	Miles Crossed
76.2–77.2	1.0	179.3–179.8	0.5
79.3–79.9	0.5	182.4–183.4	1.0
80.4–81.0	0.6	183.4–183.9	0.5
81.0–81.5	0.5	183.9–184.1	0.3
81.5–82.0	0.5	185.1–185.4	0.3
82.0–82.5	0.5	187.4–187.9	0.5
86.0–86.7	0.7	188.5–189.0	0.5
87.2–87.8	0.5	189.0–189.5	0.5
87.8–88.3	0.5	189.5–190.0	0.5
89.7–89.8	0.1	218.8–219.3	0.5
89.8–90.1	0.3	219.3–219.8	0.4
91.9–92.4	0.5	219.8–219.9	0.1
92.4–92.9	0.5	311.7–312.2	0.5
98.0–98.5	0.6	317.6–318.1	0.5
101.1–101.4	0.3	320.1–320.6	0.5
109.8–110.3	0.5	322.7–323.2	0.5
110.8–111.3	0.5	326.8–327.8	1.0
117.5–118.0	0.5	327.8–328.0	0.2
119.1–119.4	0.3	332.1–332.1	0.0
122.0–122.6	0.5	333.7–334.2	0.5
127.9–128.1	0.3	335.2–335.7	0.5
128.2–128.4	0.2	335.7–336.2	0.5
137.6–138.1	0.5	339.2–339.3	0.1
138.1–138.4	0.3	340.3–341.3	0.9
139.2–140.3	1.1	341.3–341.4	0.1
169.9–170.9	1.0	350.6–351.3	0.7
171.2–171.6	0.4	365.5–365.6	0.2
172.8–173.2	0.4	365.6–366.1	0.5
173.2–173.5	0.3	368.8–369.3	0.5
173.5–173.6	0.1	380.2–380.6	0.4
173.9–174.0	0.1	387.1–387.3	0.3
174.7–175.3	0.5	387.6–387.8	0.3
176.3–176.8	0.5	395.0–395.3	0.3
178.5–178.8	0.3		

Sources: ENSR 2006a, TransCanada 2007d.

Potential Impacts and Mitigation

General Recreation Activities

For recreation areas and special management areas, the Keystone Project is expected to cause temporary impacts to recreational traffic and use patterns during construction. Sightseers, hikers, wildlife viewers, and other recreationists would be displaced from the immediate area during construction. Keystone would continue to coordinate with agency managers to minimize conflicts between construction activities and recreational uses for which these special areas were established. Following construction, all affected recreational lands would return to previous uses; Keystone would restore any affected trails or bicycle routes that cross the construction and permanent ROWs, and pipeline operation would not be expected to impact recreational activities. Construction impacts on general recreation activities are considered temporary and minor. Pipeline operation is not expected to affect general recreation.

Missouri National Recreational River

The Mainline Project would cross the Missouri National Recreational River at Yankton, South Dakota. Approximately 2.3 miles of land would be affected by this crossing. Keystone has developed a site-specific crossing plan for the Missouri River, which details the HDD methods to be used (Drawing K-31-P-6001-A-1.06, ENSR 2006a). The site plan shows that the HDD entry and exit points would be set well back from the river banks (more than 500 feet, in each case), and that views from the river of the entry and exit points would be shielded by vegetation. In addition, the site plan specifies that the water quality of the Missouri would not be affected by hydrostatic test water or excess drilling mud, which may not be disposed of in the water body or in existing wetlands but must be deposited in upland erosion control structures or as directed under conditions of the permit to conduct the HDD. The HDD drilling process would have the potential to create frac-outs, or a rupture of drilling mud to the surface or riverbed, where it could affect water quality and recreation on the Missouri River. Keystone proposes to contain and collect any inadvertently released drilling mud to the extent possible, and to dispose of it in compliance with the drilling permit. Keystone has received a Special Use Permit to conduct geotechnical drilling near the banks of the Missouri River.

Construction activities are anticipated to cause only temporary impacts, such as noise and dust from drilling at the entry and exit points for the HDD. Pipeline operation is not expected to affect recreation on the Missouri River or its banks.

Wetland Easements

As mentioned above, the Mainline Project would intersect multiple USFWS wetland easements in North Dakota and South Dakota. Construction in wetland easements would proceed in the same manner as outlined for general wetland areas. All mitigation for pipeline construction in wetlands of all types would apply to wetlands easements. Keystone would use trench construction in wetland areas. Soil stability at the time of construction largely would determine which wetland crossing method would be used. Refer to Section 2.2.2.4 for more information on construction methods in wetlands.

USFWS wetland easements also have a financial component that is paid to the landowner in return for maintaining the wetland (although the land may be grazed, farmed, or hayed if the wetland dries up due to natural causes). USFWS wetlands easements are perpetual, and payment is made to a consenting landowner at one time as a lump sum. Given proposed mitigation measures, construction impacts on wetland easements are expected to be short term and minor. These temporary impacts would be associated with vegetation removal, grading, grubbing, trenching, and soil stockpiling; they would be minimized by following the mitigation measures described in Appendix B (TransCanada 2007c).

Pipeline operation is not anticipated to affect wetland easements. Maintenance of vegetation would not be conducted over the full width of the permanent ROW in these wetland areas. Therefore, no permanent impacts are anticipated from crossing wetlands on USFWS easements (TransCanada 2007c).

Groves and Tree Nurseries

Keystone's proposed mitigation measures would minimize impacts on groves and tree nurseries. For these special interest areas, trees in the path of the construction and permanent ROWs would be removed, and no trees would be allowed to regenerate above the permanent ROW for the life of the Keystone Project. Any construction ROW areas cleared of trees during the construction process would take many decades to regenerate, which would be a long-term, but localized impact. Operations impacts on groves and nurseries, given the need to maintain the permanent ROW in an open condition, would be permanent but localized. The same construction and operation impacts would apply to any Sargent County, North Dakota walnut tree groves or tree nurseries identified in the scoping comments. Review of aerial strip maps of the proposed Keystone Project route indicates that the proposed route may affect small, isolated tree groves and windbreaks, some of which may be walnut trees or nurseries. Based on a review of aerial photography, helicopter reconnaissance, and ground surveys, Keystone has determined that no vineyards, orchards, or hops plantations would be crossed by the proposed Keystone Project (TransCanada 2007c). Additional verification will be accomplished through case-by-case discussions with landowners.

Forests and Woodlands

Some state forestland (Tetrault Woods State Forest, North Dakota), state park land (Jones-Confluence Point State Park, Missouri), state conservation land (game production area, South Dakota; Pigeon Hill Conservation Area, Missouri; Carlyle Lake WMA, Illinois), and private woodlands (COAs in Missouri) would be crossed by the Mainline Project. Recreation activities such as hiking, fishing, and hunting in these areas would be temporarily interrupted during the pipeline construction period, and these activities could resume following construction. The quality of the recreational experience following construction likely would be diminished in some areas due to the permanent clearance of some types of vegetation in the permanent ROW, long-term clearance of some types of vegetation in the construction ROW, and permanent maintenance activities required to maintain the permanent ROW in an open condition. These activities would result in long-term impacts on vegetation and would induce habitat fragmentation, which would decrease enjoyment of private and public recreational resources. Specific impacts and mitigation for forests can be found in Section 3.5. Impacts and mitigation for woodland habitat are discussed in Section 3.6. Permanent clearance of forestland and woodlands would result in permanent but localized impacts on recreation resources.

Keystone has adopted construction, mitigation, and restoration measures for forested land in its CMR Plan (Appendix B) (see Section 2.2.2.8 for more details on construction procedures in forestland areas). To further decrease the impact of forest clearance on recreation, Keystone will consult with land managers on state and federal lands regarding any necessary construction and maintenance restrictions consistent with management and use of such lands. Damages from disruption of recreational uses of private lands will be the subject of compensation negotiations with individual landowners. Where the pipeline follows an existing ROW in forested areas, Keystone will attempt to route the pipeline as close as practical to the existing ROW.

Implementation of these measures would substantially reduce the potential impacts on recreation activities in forested areas; nevertheless, clearance of woodlands would cause a permanent but localized impact in forested areas that would remain throughout the operational life of the pipeline.

Privately Owned Conservation Areas

The Mainline Project would intersect multiple private conservation areas in Missouri. These privately owned conservation areas consist of woodlands, grasslands, and wetlands. The ROW would cross numerous designated COAs. Many COAs in the Missouri-Mississippi River confluence area are managed as hunting grounds for private duck clubs and as conservation land for wildlife habitat and flood control. For all of these areas, recreational activities would be temporarily interrupted during the pipeline construction process and could resume following restoration. As described for recreational resources in forests and woodlands, privately owned conservation areas could be adversely affected by a decline in the recreation experience and enjoyment of recreational resources due to habitat fragmentation, tree removal, and visible scarring from the construction and mechanical maintenance processes.

Impacts to private conservation areas would differ depending on the land use type. For grasslands and wetlands, proposed construction mitigation and restoration measures would reduce effects to minimal levels. Mitigation would include relieving compaction, rock removal, reseeding, erosion control, stream bank stabilization, and repair or replacement fencing (as outlined in Section 4.11 of the CMR Plan, see Appendix B). Even with mitigation, however, grasslands may take up to 5 years to mature to levels where the visible construction scars are no longer evident. Construction impacts on grassland and wetland conservation areas are expected to be long term but minor, while pipeline operation would not affect grassland and wetland conservation areas following restoration, because regular maintenance would not occur above the permanent ROW in these areas.

For wooded conservation areas, impacts associated with pipeline construction and operation would be the same as for forested areas. Construction and operation impacts on wooded conservation areas would be long term or permanent, respectively, but localized.

To mitigate potential impacts on recreational resources in privately owned conservation areas, Keystone would consult with the owners of private conservation areas regarding any concerns related to disruption of recreational uses of such areas. Damages from disruption of recreational uses of private lands would be the subject of compensation negotiations with individual landowners. Where the pipeline follows an existing ROW in privately owned conservation areas, Keystone would attempt to route the pipeline as close as practical to the existing ROW.

Implementation of these measures would reduce potential impacts on recreation resources at privately owned conservation areas; nevertheless, permanent impacts would remain, particularly for forested areas.

Edward and Pat Jones–Confluence Point State Park

A parking lot and kiosk for the Lewis and Clark National Historic Trail is located south of the western HDD site for the Mississippi River crossing. Visitors to the area would be exposed to dust, noise, limited access, and construction activity within the park during the construction period. These conditions would cease following construction and would be short term and minor. Construction and operation activities would impact vegetative communities in the park, which would affect both recreational enjoyment of the site and visual resources. Vegetation clearance within the construction and permanent ROW would result in both long-term and permanent impacts. For grasslands, wetlands, and marshes, plant communities would be allowed to regenerate over the full width of the ROW following construction; however, regeneration may take up to 5 years to occur and would result in long-term minor impacts. For woodlands and forests, trees and brush would be cleared for construction activities. In the construction ROW, regeneration could begin following the construction period, but regrowth of these vegetation types would take many decades, resulting in long-term localized impacts. For the permanent ROW,

regeneration would not occur for the life of the project; therefore, impacts would be permanent but localized.

Keystone has re-routed the pipeline within Confluence State Park from an area of recently planted hardwood trees and an area where decurrent false aster were found (TransCanada 2007d). Keystone also has developed a site-specific crossing plan in conjunction with park managers. This document specifies that Keystone would use a road bore underneath the existing gravel road that traverses the park and provides visitor access. This bore would allow the road to remain open to visitors throughout the construction process. Construction vehicles would access the construction ROW from the gravel road but would be required to park and stow all materials within the construction zone, instead of the gravel access road. Fencing would be installed to ensure public safety and prevent access to the pipeline ROW during the construction period. The anticipated construction period within Confluence Point State Park for both conventional trenching and the HDD crossing of the Mississippi River would be from May 2009 through August 2009 (TransCanada 2007e).

Mitigation for wooded portions of Jones–Confluence Point State Park would be the same as for forests and woodlands, as described above. Adherence to the site-specific construction plan and consultation with park managers would minimize construction impacts.

Wildlife Management Areas and Hunting

The Mainline Project would intersect one public WMA (Carlyle Lake WMA, Illinois), a public conservation area (Pigeon Hill Conservation Area, Missouri), a public game production area (South Dakota), and a public state forest where hunting occurs (Tetrault Woods State Forest, North Dakota). Public access to these areas for hunting and wildlife viewing could be impeded during construction. In addition, the Mainline Project would intersect many private areas regularly used for hunting. The impacts of pipeline construction in any one of these areas would be of limited duration; however, construction during the fall hunting and migratory season, in particular, could create conflicts with hunters and wildlife viewers.

To decrease possible conflicts with hunting and other recreational activities in wildlife management and public conservation areas, Keystone would negotiate with individual land managers. Where the pipeline follows an existing ROW in privately owned conservation areas, Keystone would attempt to route the pipeline as close as practical to the existing ROW

Implementation of this measure would substantially reduce the potential for conflicts with hunting and other recreation activities; nevertheless, some degree of recreational impact would persist throughout the life of the pipeline due to habitat fragmentation and routine maintenance activities.

Pipeline construction and operation activities have the potential to substantially affect forested portions of WMAs, public conservation areas, public game production areas, and public forest lands. Trees would be removed from both the construction and permanent ROWs. Woody vegetation along the permanent ROW would be periodically cleared by mechanical mowing or cutting. Trees would not be allowed to regrow within the permanent ROW for the life of the Keystone Project, and revegetation within the construction ROW would require many decades. For these forested special interest areas, impacts related to construction activities would be long term but localized. Pipeline operation would result in a permanent but localized impact on forested parts of these public areas.

Carlyle Lake WMA (a COE property managed by the IDNR) is subject to the Land and Water Conservation Fund (LWCF) Act. These areas may be funding recipients of the LWCF, which was established to assist states and federal agencies in meeting present and future outdoor recreation demands.

Section 6.f.3 of the LWCF Act states that: "No property acquired or developed with assistance under this section shall, without the approval of the Secretary [of the Interior], be converted to other than public outdoor recreation uses" (16 USC §4601-8[f.3]). Land may be converted, however, if it is deemed that the change is in accordance with existing statewide outdoor recreation plans, and given that the land is substituted for other recreation properties of "at least equal fair market value and or reasonably equivalent usefulness and location." Construction and operation of Keystone Project facilities would affect the recreational use of Carlyle Lake WMA by temporarily disturbing access and recreational activities during construction, and by affecting the overall recreational experience and enjoyment of individuals through habitat fragmentation and visible scarification of the landscape following construction and during operation. Woodlands, grasslands, and wetlands would be affected as described above, and the same mitigation measures would apply.

Off-Road Vehicles and Trespassing

Pipeline projects have the potential to create trespassing problems, particularly when off-road vehicles (ORVs) and snow mobiles use the restored ROW after construction. The construction process creates a cleared, graded route and opens up a potential pathway for ORV use. No designated ORV areas were noted in the vicinity of the proposed route; however, many states allow ORV riders to use rural roadways and road shoulders, which would provide access to points where the pipeline ROW would cross these routes. Snow mobiles also may be permitted to operate on road shoulders, and trespassers could access the pipeline ROW by foot, bicycle, cross-country skis, and snow shoes.

While ROWs would be restored relatively quickly in agricultural areas such as cropland, revegetation would require longer periods in some land use types. In forests, revegetation of trees would not be allowed above the permanent ROW. Grasslands may take up to 5 years for the visible scar from pipeline construction activities to disappear. In forested areas, Keystone has committed to using gates, boulders, or other barriers to minimize unauthorized access, if requested by landowners. Keystone would install and maintain these control measures, as detailed in Section 2.15 of its CMR Plan (Appendix B). Fencing is only likely to work as an access deterrent where fencing is already in existence and in forested areas. However, if requested by a landowner, Keystone would use fencing and gates to prevent unauthorized access to the ROW immediately following the start of construction activities.

Implementation of these mitigation measures would reduce potential trespassing and ORV impacts to minimal levels, and prevent them entirely in most cases. With mitigation, pipeline construction and operation would not create ORV or trespassing problems.

3.9.3.8 Visual Resources

General visual impacts associated with the construction ROW, additional temporary workspaces, and operation of the Cushing Extension pipeline include clearing and removal of existing vegetation; exposure of bare soils; earthwork and grading scars associated with heavy equipment tracks; trenching; rock formation alteration or removal; machinery and pipe storage; landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture; and new aboveground structures.

Potential Impacts and Mitigation

Agricultural Lands and Rangeland

Some of the proposed Mainline Project route would be located within or adjacent to existing ROWS for pipelines, utilities, or roads ROWs—or in previously disturbed agricultural lands and herbaceous

rangeland. The majority of the route, however, would consist of new ROW. Visual impacts associated with pipeline construction in rangeland and agricultural areas along the route would be temporary and would result from the presence of construction equipment and post-construction visual scarring. In cultivated croplands, visual scarring would persist until the ROW is replanted with new crops. Once crops are replanted, only a minor visual impact from pipeline construction would be evident in cultivated croplands. However, visual scarring in herbaceous rangeland and previously disturbed areas may last for 5 or more years in the Keystone Project region.

Temporary minor impacts could result from the presence of construction equipment along the ROW, but the remote location and short duration of the construction sequence in a given area would minimize these potential visual impacts, and they would cease immediately following construction. As scarring in rangeland areas may continue for up to 5 years, visual impacts resulting from construction are expected to be long term but minor in these areas. Construction-based visual impacts on agricultural lands are anticipated to be short term and minor, with the visual ROW impacts fading with subsequent replanting of crops. Visual impacts from pipeline operation in agricultural and rangeland areas would be limited to the introduction of aboveground facilities, discussed below.

In many agricultural and rangeland areas, landowners plant trees or shrubs to act as windbreaks, shelterbelts, or living snow fences; these features reduce wind erosion, reduce evaporation from soils, increase crop yields, provide wildlife habitat and wind protection for livestock, and serve as visual screens. Keystone has proposed mitigation to minimize impacts to these features; however, any access of the pipeline ROW through a windbreak would result in a permanent segmentation of the visual feature (see Section 3.9.3.2 for a detailed discussion of windbreaks). Pipeline construction and operation are expected to result in permanent but minor visual impacts on windbreaks.

The proposed aboveground facilities that are not adjacent to existing crude oil or other industrial facilities could affect visual resources because they would be new permanent industrial facilities located in relatively flat open areas. However, these facilities would primarily be situated in rural herbaceous rangeland and agricultural areas that have not been designated as primary viewsheds or scenic corridors, with only nominal viewer traffic. Keystone proposes to provide a landscaped visual screen for aboveground facilities where appropriate. Construction-based visual impacts on rangeland and agricultural areas from these facilities would be temporary and minor, consisting of the presence of construction equipment and staging areas along the ROW. Aboveground facilities would be permanent landscape fixtures in agricultural and rangeland areas. To further reduce visual impacts from these facilities, Keystone would comply with standard industry painting practices with respect to aboveground facilities. Keystone would address any visual aesthetics issues with landowners in individual consultations.

With implementation of these measures, the operational visual impact of these facilities is expected to be permanent but minor, based on the generally remote location.

Forestland

The Mainline Project would affect approximately 867 acres of forestland (see Table 3.9.3-3); most of these acres are in Missouri and Kansas. Keystone construction standards for forested areas dictate that trees above the permanent ROW would be removed prior to trenching. Removal of additional trees and grubbing of tree stumps would occur along the construction ROW for the safe operation of construction vehicles. Keystone has proposed construction mitigation and restoration measures to reduce potential impacts to forested land to minimal levels; however, trees would not be allowed to regenerate within the permanent ROW for the life of the Keystone Project. In addition, trees likely would not regenerate within the construction ROW for many decades. Removal of trees along both the permanent and construction

ROWs would leave a highly visible deforestation line that would persist for the duration of pipeline operation. The visual impact related to the construction ROW would be long term but localized, while the visual impact related to the permanent ROW would be permanent but localized. No mitigation is feasible to reduce these impacts to lesser levels.

Connected Actions

Power Lines and Substations. The Keystone Project would require construction of power lines to service pump stations and other ancillary facilities. These would be permitted and constructed by utility providers; however, this is considered a connected action under NEPA. Some power lines would consist of service drops from existing distribution power lines and would include several poles and a transformer. For pump stations, larger power line projects are required. These would total approximately 181 miles for the Mainline Project. Power line facilities would cause a visual impact on the landscape, consisting of metal or wooden poles ranging from 40 to 80 feet in height (anchored as necessary to ensure stability), conductor wires, and insulators. Metal poles would result in a greater visual contrast with the landscape than wooden poles, as would taller structures. Although power lines would constitute permanent visual features within the landscape for the life of the project, their impact would be minimal, as they would be of relatively short length and, in many cases, would be connected to existing power lines.

Wood River Refinery Expansion. The Wood River Refinery would undergo numerous upgrades to achieve the capacity to refine the additional crude oil resources from the Project. These upgrades would become permanent visible fixtures within the landscape. Among these, vertical structures would be most visible, including a new water tower and coking flare. The flare also would constitute a visible source of light when it is in use. The upgrades also are likely to include additional facility lighting, which would constitute a permanent addition to the existing amount of light produced by the refinery.

The visual impact of new structures would be permanent but minor, as these new structures would be located near numerous existing industrial features. The visual impact of new lighting also would be permanent but minor, as it would contribute incrementally to an already substantial light source in an industrial setting.

3.9.4 CUSHING EXTENSION

3.9.4.1 General Land Use

As proposed, the approximately 296-mile Cushing Extension would disturb a total of 4,666 acres of land while traversing the states of Nebraska (approximately 3 miles), Kansas (210 miles), and Oklahoma (83 miles); 1,801 acres of this total would be retained as the permanent ROW. All disturbed acreage would revert to previous uses following construction, except for 18 acres to be retained as space for aboveground facilities, including pump stations, MLVs, and a delivery site. Permanent roads to access the construction ROW for the Cushing Extension are not planned (TransCanada 2007c). Existing roads would be used on a temporary basis during construction, and some of these roads may require improvements. Keystone would construct temporary access roads on approximately 22 acres (TransCanada 2007d). (See Section 2.1.2.3 for further discussion of access roads.) Approximately 48 miles of the Cushing Extension pipeline would be located within existing pipeline, utility, or road ROWs (TransCanada 2007d). Co-location with other ROWs would decrease the overall footprint of multiple projects. About 248 miles, or 84 percent, of the 296-mile Cushing Extension would require a new ROW. Table 3.9.4-1 shows the number of acres that would be affected during construction and operation of the Cushing Extension.

TABLE 3.9.4-1
Land Requirements for the Keystone Cushing Extension

State	Land Affected during Construction (acres)	Permanent Right-of-Way (acres)
Nebraska	37	15
Kansas	3,266	1,275
Oklahoma	1,363	502
Cushing Extension total	**4,666**	**1,801**

Note: Discrepancies between acreages for individual features and totals are attributable to rounding.

Sources: ENSR 2006a; TransCanada 2007c, d.

Additional Aboveground Facilities

The Cushing Extension would include three new pump stations, 15 MLVs, and one delivery site. Pigging facilities would be located at some pump stations and delivery sites. Table 3.9.4-2 catalogues the number of acres required to accommodate aboveground facilities during construction and operation, as well as affected acreage for the pipeline ROWs, additional workspaces, contractor and pipe yards, and temporary access roads. No permanent access roads would be required for the Cushing Extension. Some facilities would be located within the affected acreage of other facilities (e.g., all pig launchers and receivers would be located within delivery facilities or pumping stations) or would be located entirely within the 50-foot-wide permanent ROW (the location for all MLVs).

Turnouts and access roads from public roads would be installed for each aboveground facility. Drainage would be maintained by installing ditches or culverts, and the short access roads would be surfaced with crushed rock. The delivery facility sites would be enclosed with a chain-link security fence. (TransCanada 2007c.)

TABLE 3.9.4-2
Acres Affected by Construction and Operation of Pipeline Facilities for the Keystone Cushing Extension

Pipeline Facility	Construction	Operation
Nebraska		
Pipeline right-of-way (ROW)	34	15
Additional temporary workspaces	4	0
Pipe and contractor yards	0	0
Pump stations and delivery facilities	0	0
Temporary access roads	0	0
Nebraska subtotal	*38*	*15*
Kansas		
Pipeline ROW	2,803	1,275
Additional temporary workspaces	149	0
Pipe and contractor yards	339	0
Pump stations and delivery facilities	10	10
Temporary access roads	15	0
Kansas subtotal	*3,266*	*1,275*
Oklahoma		
Pipeline ROW	1,094	497
Additional temporary workspaces	52	0
Pipe and contractor yards	207	0
Pump stations and delivery facilities	8	8
Oklahoma subtotal	*1,363*	*502*
Cushing Extension		
Total pipeline ROW	3,931	1,787
Total additional temporary workspaces	205	0
Total pipe and contractor yards	546	0
Total pump stations and delivery facilities	18	18
Temporary access roads	7	0
Cushing Extension total	**4,666**	**1,801**

Notes:

Discrepancies between acreages for individual features and totals and subtotals are attributable to rounding.

Affected acreage for densitometer sites and mainline valves is effectively included within the 50-foot-wide permanent ROW of the pipeline and therefore is not listed separately here.

All pig launching and receiving facilities would be located within pump stations and would not require any additional acreage.

Permanent access road acreage calculations assume a 20-foot-wide roadway.

Some temporary access roads are previously existing roads and would not require new construction.

Sources: ENSR 2006a; TransCanada 2007c, d.

Connected Actions

Power Lines and Substations. The Cushing Extension Project would require construction of three electrical power lines to provide energy for pump stations. These would total approximately 11.5 miles in length (the longest spanning about 8 miles, with an average length of 3.8 miles). The power lines would be permitted and built by various utility providers, but would be considered a connected activity under NEPA. Keystone assumes that the majority of required transmission lines would parallel existing county road ROWs, and that no substation construction would be necessary to accommodate Keystone Project power requirements. Either steel or wooden poles would be used for power lines, with wire conductors installed through pulling or reeling, and insulators installed as needed. Poles would vary in height from 40 to 80 feet, depending on transmission line voltage. Additional power lines would be required for valve sites, and would be supplied from distribution service drops from adjacent distribution power lines. Most of these service drops would require installation of one or two poles with a transformer, and would typically be less than 200 feet in length.

Land Use

The Cushing Extension primarily would affect agriculture and grassland/rangeland land uses. Of lands crossed by the Cushing Extension, agriculture and rangeland account for 58 and 35 percent, respectively, of the acres affected by the Cushing Extension pipeline. Table 3.9.4-3 shows affected land use acreage by state for the Cushing Extension.

Rangeland/grassland is the predominant land use that would be affected in Oklahoma (42 percent of the acres affected in that state) and Nebraska (65 percent), while agriculture is the predominant land use that would be affected in Kansas (64 percent). A total of 97 acres (2 percent of the total affected acreage) would consist of developed land.

Ownership

Nearly 98 percent of lands that would be crossed by the pipeline along the Cushing Extension route are privately owned (see Tables 3.9.4-4 and 3.9.4-5). In Nebraska, land along the entire route is privately owned. In Kansas, less than 2 percent of the affected land is federally owned, and the remainder is privately owned. In Oklahoma, approximately 4 percent of the land that would be crossed is owned by the state and the remainder is privately held.

As noted, temporary and permanent ROWs would be acquired through negotiations with private landowners on a case-by-case basis. The Cushing Extension route would cross approximately 3.6 miles of state-owned land in Oklahoma; all applicable state statutes would apply. This land has been identified as state school land.

Where the pipeline would traverse federal land (approximately 3.6 miles in Kansas), all applicable federal statutes would apply. For the Cushing Extension ROW, Keystone would apply in July 2008 for Right-of-Way Grants pursuant to the Mineral Leasing Act, which provides for authorizations for temporary construction use and long-term use of federal land for pipeline purposes. A Right-of-Way Grant is issued for a 30-year term and contains a right of renewal if the project continues to be used for its initial purpose.

TABLE 3.9.4-3
Acres Affected during Construction by Land Use Type for the Keystone Cushing Extension

Land Use Type	Nebraska	Kansas	Oklahoma	Total	Percent of Total (%)
Agriculture/cropland	12	2,097	578	2,687	57.5
Grassland/rangeland	24	934	681	1,639	35.1
Forestland	0	124	39	163	3.5
Wetlands/riparian	0	24	10	34	0.7
Developed	<1	54	43	97	2.1
Water	1	33	12	46	1.0
Cushing Extension total	**37**	**3,266**	**1,363**	**4,666**	

Notes:

Agriculture includes cultivated crops, flood or pivot irrigation crops, and fallow cropland.

Rangeland includes tall grass prairie, mid-grass prairie, short grass prairie, sand prairie, non-native grassland, deciduous shrubland, mixed native and non-native grasslands and mixed prairie, improved and unimproved pasture, and lands that appear to be used for cattle or other livestock grazing—with or without a shrub component.

Forestland includes upland and wetland forested areas.

Wetlands include palustrine forested wetlands and palustrine emergent/scrub-shrub wetlands.

Developed land includes both industrial/commercial and residential uses. Industrial/commercial includes electric power or gas utility stations, manufacturing or industrial plants, livestock feedlots, landfills, mines, quarries, commercial or retail facilities, and roads. Residential includes residential yards, subdivisions, and planned new residential developments.

Sources: ENSR 2006a; TransCanada 2007c, d.

TABLE 3.9.4-4
Ownership of Land Crossed by the Keystone Cushing Extension

Land Owner	Miles Crossed	Percent of Total (%)
Nebraska		
Federal	0.0	0.0
State	0.0	0.0
Private	2.5	100.0
Nebraska subtotal	*2.5*	
Kansas		
Federal	3.6	1.7
State	0.0	0.0
Private	206.8	98.3
Kansas subtotal	*210.4*	
Oklahoma		
Federal	0.0	0.0
State	3.6	4.3
Private	79.5	95.7
Oklahoma subtotal	*83.1*	
Cushing Extension		
Federal	3.6	1.2
State	3.6	1.2
Private	288.8	97.6
Cushing Extension total	**296.0**	

Note: Discrepancies between acreages for individual features and totals and subtotals are attributable to rounding.

Sources: ENSR 2006a; TransCanada 2007b, c, d.

TABLE 3.9.4-5
Ownership of Acres Affected during Construction by the Keystone Cushing Extension

Location	Federal	State	Private	Total
Nebraska	0	0	37	37
Kansas	52	0	3,214	3,266
Oklahoma	0	53	1,310	1,363
Cushing Extension total	**52**	**53**	**4,561**	**4,666**

Sources: ENSR 2006a; TransCanada 2007b, c, d.

3.9.4.2 Agricultural Land

The principal land use that would be affected by the proposed pipeline would be agricultural. The Cushing Extension would cross a substantial amount of agricultural cropland that is presently in private ownership. Construction and operation of the Cushing facilities would affect about 2,687 acres of agricultural land, along approximately 296 miles of the pipeline route. Of this, approximately 214 miles is considered prime farmland by NRCS (this includes land considered potential prime farmland, if adequate protection from flooding and drainage are provided). Prime farmland accounts for 67 percent of the proposed Cushing Extension route mileage in Oklahoma and 75 percent of the route in Kansas. About 1.4 miles of prime farmland would be crossed in Nebraska.

To determine the amount of agricultural land that potentially would be affected, Keystone reviewed aerial photographs and made general observations during reconnaissance activities. Further refinements to the assessment of various types of cover were completed during an August 2006 grassland survey. Based on the aerial photography evaluations and ground surveys, Keystone has indicated that no known orchards would be crossed by the Keystone Project. One landowner indicated in scoping comments that pecan trees would be removed along the Cushing Extension. Further verification of agricultural uses would take place on a case-by-case basis with landowners.

Potential Impacts and Mitigation

Construction-related activities such as grading, trenching, stringing, welding, backfilling, and restoration could impact agricultural lands by leading to soil erosion, interference with and damage to agricultural surface and subsurface drainage and irrigation systems, mixing or loss of fertile topsoil and subsoil, and soil compaction. All of these impacts could result in reduced productivity of agricultural lands or direct crop loss.

During the scoping period for the Keystone Project, concerns were expressed over a number of agricultural issues, as discussed in Section 3.9.3.2. To address impacts on agricultural lands, Keystone has proposed mitigation measures that are discussed in detail in the CMR Plan (Appendix B). Keystone proposes to restore all areas disturbed during construction of the Keystone Project in accordance with the CMR Plan and all other applicable federal, state, and local permit requirements. In particular, Keystone intends to repair or restore drain tiles, fences, and land productivity as these may be affected during the construction process.

Following construction, all agricultural land affected by the Cushing Extension could revert to its previous use, except for 18 acres that would be set aside for permanent aboveground facilities (pump stations and delivery facilities); Keystone would purchase this acreage from landowners. A portion of these 18 acres would be permanently converted from agricultural to industrial land use. When construction and cleanup have been completed, all other affected land along the temporary and permanent ROWs could be returned to agricultural production. The magnitude of construction and operational impacts could include changes from agricultural to non-agricultural uses at the landowner's request, which would constitute a land use change.

Potential agricultural land use impacts and mitigation measures for the Cushing Extension are the same as those for the Mainline Project (see Section 3.9.3.2). Specific agricultural topics discussed in Section 3.9.3.2 include soil compaction; construction schedule; center pivot irrigation; surface and subsurface drainage, ponds, waterlines, and drainage ditches; CRP lands; FWP lands and other FSA programs; NRCS programs; access to farmland; and windbreaks, shelterbelts, and living snow fences. The additional mitigation for CRP lands; FWP lands; NRCS programs; and windbreaks, shelterbelts, and living snow fences would minimize impacts on these features associated with the Cushing Extension.

3.9.4.3 Rangeland

The Cushing Extension would cross substantial amounts of grassland and rangeland. Construction and operation of the Cushing Extension facilities would affect about 1,639 acres of rangeland/grassland along the approximately 296-mile route. Approximately 18 acres would be set aside for permanent aboveground facilities (such as pump stations and delivery facilities); and some percentage of this acreage could be located in rangeland areas. This acreage would be converted permanently from grassland to industrial land uses.

Affected rangeland acres represent about 35 percent of the total acres affected by the Cushing Extension. Grassland acreage represents 65 percent (24 acres) of affected areas of Nebraska, 50 percent (681 acres) in Oklahoma, and 29 percent (934 acres) in Kansas.

Potential Impacts and Mitigation

Construction activities would displace or halt grazing activities and would disturb the surface of livestock foraging areas. In addition, construction activities such as trenching could put livestock at risk of falling or being trapped in open trenches. Land that would be set aside for operation of aboveground facilities would be permanently converted from rangeland to industrial uses.

During the scoping period, commentors questioned how cattle would be protected during construction. To reduce overall risks to livestock grazing in rangelands, Keystone has proposed a number of construction guidelines and mitigation measures that are outlined in its CMR Plan (Appendix B). Potential impacts and mitigation measures related to rangeland for the Cushing Extension are the same as those for the Mainline Project (see Section 3.9.3.3).

3.9.4.4 Forestland

Construction and operation of the Cushing Extension facilities would affect about 163 acres of forestland along approximately 11 miles of the Cushing Extension route. This represents about 3.5 percent of the total acres that would be affected by the Cushing Extension. The majority of affected forestland is located in Kansas (124 acres). Section 3.5 includes a detailed discussion of forest vegetative types. None of the forested land along the Cushing Extension route is used for timber or Christmas tree production (TransCanada 2007c).

Potential Impacts and Mitigation

Construction activities would remove trees and brush from forested areas. For the life of pipeline operation, the ROW would be maintained in an open condition, and woody revegetation would be periodically removed. This would result in a permanent loss of tree growth in the permanent ROW. If any of the 18 acres of permanent aboveground facilities were constructed in forested areas, this would result in permanent conversion from forestland to industrial land uses. To reduce impacts on forestlands, Keystone has proposed a number of construction guidelines and mitigation measures that are outlined in its CMR Plan. Construction and operation impacts and mitigation measures related to forestland are the same for the Cushing Extension as discussed for the Mainline Project (see Section 3.9.3.4).

3.9.4.5 Residences and Planned Development

The Cushing Extension would cross and affect residential land. Based on 2006 aerial photography and ground truthing surveys conducted during summer 2007, Keystone identified 128 potential residential structures within 500 feet of the proposed Cushing Extension ROW. These residences are located in

Kansas (73) and Oklahoma (55), with none in Nebraska. There are no public assembly places identified within 500 feet of the ROW. Keystone identified two residences within 25 feet of the construction ROW in Oklahoma. Keystone has provided site-specific construction plans for each of the residential structures within 50 feet of the construction workplace (TransCanada 2007d).

Potential Impacts and Mitigation

The principal measure proposed by Keystone to mitigate impacts in existing residential areas is to ensure that construction proceeds quickly through such areas and that the hours during which activities with high-decibel noise levels would be conducted are limited. Landowners would be notified at least 24 hours prior to construction. As specified in the CMR Plan (Appendix B), Keystone has proposed mitigation measures for potential impacts on all residential land. These measures, along with potential impacts and additional mitigation, are the same as those discussed in Section 3.9.3.5 for the Mainline Project.

3.9.4.6 Commercial and Industrial Land

Construction and operation of the Cushing Extension facilities would affect about 97 acres of developed land (Table 3.9.4-6). This includes 54 acres in Kansas, 43 acres in Oklahoma, and less than 1 acre in Nebraska. For the Cushing Extension route as a whole, developed land represents approximately 2 percent of total acres affected by the Cushing Extension.

TABLE 3.9.4-6
Developed Land by State for the Keystone Cushing Extension

State	Total Developed (acres)
Nebraska	>1
Kansas	54
Oklahoma	43
Cushing Extension total	**97**

Source: TransCanada 2007d.

Ground surveys conducted by Keystone during summer 2007 indicated that the Cushing Extension construction ROW would be within 25 feet of 15 outbuildings (six in Kansas and nine in Oklahoma) and three industrial structures (in Oklahoma) (TransCanada 2007d).

Potential Impacts and Mitigation

Construction of the Cushing Extension could affect commercial and industrial land through restricted access and the presence of construction activity. Impacts to a specific commercial or industrial area are anticipated to last for only several days. Keystone has adopted mitigation measures for commercial and industrial land in its CMR Plan. Construction and operation impacts and mitigation related to commercial and industrial land is the same for the Cushing Extension as described for the Mainline Project (see Section 3.9.3.6).

Connected Actions

Power Lines and Substations. The Keystone Project would require construction of power lines to service pump stations and other ancillary facilities. These would be permitted and constructed by utility providers; however, this is considered a connected action under NEPA. The land required to construct new power lines will generally be within existing county ROWs. It would be the responsibility of utility providers to obtain any necessary easements for the construction process. Construction of power lines would consist of limited clearing, which may result in removal of some trees to provide adequate clearance between the wire conductors and underlying vegetation. Maintenance would consist of trimming, in some cases, to avoid tree removal. Holes would be excavated for placement of power poles, which also would be anchored as necessary for stability. Temporary pulling or reeling areas may be needed for installation of the conductor wires, which could return to their original condition following construction. Construction and operation activities for power lines would be considered to result in a minor impact on land use because they typically would be constructed within county road ROWs.

3.9.4.7 Recreation and Special Interest Areas

The proposed Cushing Extension facilities would cross only one special interest area, resulting in temporary construction impacts and possible permanent impacts. Table 3.9.4-7 details the recreational and special interests lands intersected by the Cushing Extension route; no other national, state, or local parks or forests are located within 500 feet of the proposed Cushing Extension centerline.

The proposed Cushing Extension would cross the Milford Wildlife Area in Kansas at four points (MPs 50.1, 52.3, 52.9, and 53.8), affecting a total of approximately 3.6 miles along the route (representing 52 affected acres). The Cushing Extension would not intersect any recreational or special interest areas in Nebraska or Oklahoma.

Milford Wildlife Area, Kansas

The Milford Wildlife Area consists of approximately 19,000 acres of public land surrounding the western and northern sides of Milford Reservoir. The Kansas Forestry, Fishing & Game Commission manages the wildlife area, which is owned by COE along with the adjacent Milford Reservoir. The area includes a public hunting area, a wildlife area, and a number of recently created wetlands along the Republican River between the reservoir and Clay Center, Kansas (KDWP 2007).

Wilderness Areas

The Cushing Extension would not cross any designated Wilderness Areas or Wilderness Study Areas.

Potential Impacts and Mitigation

Keystone is currently working with Milford Wildlife Area personnel to develop a site-specific crossing plan for the area. Creation and implementation of this plan with review and approval of Milford managers should alleviate many potential impacts to specific sensitive areas and to important wildlife or hunting seasons.

Construction activities would cause temporary impacts to recreational traffic and use patterns during construction. Sightseers, hikers, wildlife viewers, hunters, and other recreationists would be displaced from the immediate area during construction. Public hunting access to this area could be impeded during construction; disruption of seasonal hunting activities would be the subject of discussion between

Keystone and Milford Wildlife Area managers during development of the site-specific crossing plan. Although impacts of pipeline construction would be of limited duration, construction during the fall hunting and migration season, in particular, could create conflicts with hunters and wildlife viewers. Keystone would continue to coordinate with agency managers to minimize conflicts between construction activities and recreational uses for which these special areas were established. Other temporary and minor construction impacts may occur, including decreased access and closure of trails, parking, and wildlife viewing areas. Following construction, all affected recreational and special interest would return to their previous uses.

TABLE 3.9.4-7
Special Interest Areas Crossed by the Keystone Cushing Extension

Site Name	Milepost	Miles Crossed	Ownership
Nebraska			
None identified	NA	NA	NA
Kansas			
Milford Wildlife Area	50.1–51.9	1.8	U.S. Army Corps of Engineers (COE)
Milford Wildlife Area	52.3–52.8	0.5	COE
Milford Wildlife Area	52.9–53.5	0.6	COE
Milford Wildlife Area	53.8–54.5	0.7	COE
Oklahoma			
None identified	NA	NA	NA
Cushing Extension total		**3.6**	

NA = Not applicable.

Sources: ENSR 2006a, TransCanada 2007d.

Operation of the pipeline would not affect hunting in the Milford Wildlife Area. Milford is primarily a wetland restoration area. Given proposed wetland mitigation measures, construction impacts are expected to be long term but minor. These temporary impacts would be associated with vegetation removal, grading, grubbing, trenching, and soil stockpiling; they would be minimized by following the measures described in Keystone's CMR Plan (Appendix B) (TransCanada 2007c). The ROW may be visible for up to 5 years as wetland and grassland vegetation reestablishes, resulting in a long term, minor impact. Keystone would restore all of these areas following construction.

Maintenance of vegetation would not be conducted over the full width of the permanent ROW in wetland areas. Therefore, no permanent impacts are anticipated from crossing wetlands of the Milford Wildlife Area (TransCanada 2007c).

For the Milford Wildlife Area, the primary concerns would be limited access and conflicts with hunters during construction. Therefore, Keystone would develop a site-specific crossing plan for the Milford Wildlife Area that will address these issues.

As described in Section 3.3.7 for the Carlyle Lake WMA and Riverlands Environmental Demonstration Area, Milford Wildlife Area may be a funding recipient of the LWCF and could be subject to the requirements of Section 6.f.3 of the LWCF Act. Construction and operation of Keystone facilities would

not change the recreational use of Milford Wildlife Area, although temporary and minor recreational impacts would be expected.

Other general impacts related to recreation and special interest areas and associated mitigation measures are the same for the Cushing Extension as discussed for the Mainline Project (see Section 3.9.3.7).

3.9.4.8 Visual Resources

General visual impacts associated with the construction ROW, additional temporary workspaces, and operation of the Cushing Extension pipeline include clearing and removal of existing vegetation; exposure of bare soils; earthwork and grading scars associated with heavy equipment tracks; trenching; rock formation alteration or removal; machinery and pipe storage; landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture; and new aboveground structures.

Potential Impacts and Mitigation

Impacts on visual resources and associated mitigation measures are the same for the Cushing Extension as described for the Mainline Project (see Section 3.9.3.8).

Connected Actions

Power Lines and Substations. The Keystone Project would require construction of power lines to service pump stations and other ancillary facilities. These would be permitted and constructed by utility providers; however, this is considered a connected action under NEPA. Some power lines would consist of service drops from existing distribution power lines and would include several poles and a transformer. For pump stations, larger power line projects are required. Power line facilities would result in a visual impact on the landscape, consisting of metal or wooden poles ranging from 40 to 80 feet in height (anchored as necessary to ensure stability), conductor wires, and insulators. Metal poles would cause a greater visual contrast with the landscape than wooden poles, as would taller structures. Although power lines would constitute permanent visual features within the landscape for the life of the project, their impact would be minimal, as they would be of relatively short length and, in many cases, would be connected to existing power lines.

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