Table 3.7-2 Game Fisheries in Waterbodies Crossed or Downstream of the Proposed Keystone Pipeline Project

State/Waterbody	County	Fishery Class[1]	Number of Crossings
Deer Creek	Clinton	WW	1
Plum Creek	Clinton	WW	1
Unnamed tributary to Plum Creek	Caldwell	WW	1
Log Creek	Caldwell	WW	2
Unnamed tributary to Log Creek	Caldwell	WW	2
Long Creek	Caldwell	WW	1
Unnamed tributary to Long Creek	Caldwell	WW	2
Brush Creek and unnamed tributary	Caldwell	WW	1 each
Crabapple Creek	Caldwell	WW	1
Unnamed tributaries to Mud Creek	Caldwell	WW	8
Mud Creek	Caldwell	WW	1
Willow Creek	Caldwell	WW	1
Turkey Creek	Caldwell	WW	1
Big Creek	Caldwell	WW	1
Unnamed tributaries to Big Creek	Carroll	WW	10
Wolf Branch Creek	Carroll	WW	1
Grand River	Carroll/Chariton	WW	1
Unnamed Slough	Chariton	WW	1
Salt Creek	Chariton	WW	1
Lake Creek	Chariton	WW	1
Palmer Creek	Chariton	WW	1
Unnamed tributaries	Chariton	WW	2
Mussel Fork Creek	Chariton	WW	1
Long Creek	Chariton	WW	1
Chariton River	Chariton	WW	1
Puzzle Creek	Chariton	WW	1
Middle Fork Little Chariton River	Chariton	WW	1
East Fork Little Chariton River	Chariton	WW	1
Unnamed tributary	Rand	WW	2
Unnamed lake	Rand	None	1
Unnamed ponds	Rand	None	2
Big Creek	Randolph	WW	1
Saline Creek	Audrain	WW	1
Long Branch Creek	Audrain	WW	1
Goodwater Creek	Audrain	WW	1
Youngs Creek	Audrain	WW	1
Skull Lick Creek	Audrain	WW	1
Salt Creek	Audrain	WW	1
South Fork Salt River	Audrain	WW	1
Bean Branch Creek	Audrain	WW	1
Unnamed tributary to Bean Branch Creek	Audrain	WW2	1
Littleby Creek	Audrain	WW	1
West Fork Cuivre River	Audrain	WW	1

Table 3.7-2 Game Fisheries in Waterbodies Crossed or Downstream of the Proposed Keystone Pipeline Project

State/Waterbody	County	Fishery Class[1]	Number of Crossings
Unnamed tributary to West Fork Cuivre River	Audrain	WW2	1
Coon Creek	Montgomery	WW	1
Elkhorn Creek	Montgomery	WW	1
Brush Creek	Montgomery	WW	1
Bear Creek	Montgomery	WW	1
Camp Creek	Lincoln	WW	1
Cuivre River	Lincoln	WW	2
Turkey Creek	Lincoln	WW	
Sugar Creek	Lincoln	WW	
Unnamed tributary to Glassy Lake	St. Charles	WW	2
Peruque Creek	St. Charles	WW	1
Belleau Creek	St. Charles	WW	2
Dardenne Creek	St. Charles	WW	1
Mississippi River	St. Charles	WW	1
ILLINOIS			
Mississippi River	Madison	Fully Supporting	2
Indian Creek	Madison	Partially Supporting	1
Cahokia Canal	Madison	Fully Supporting or Not Assessed	3
Mooney Creek	Madison	Not Assessed	1
Unnamed tributaries to Sugar Creek	Madison	Partially Supporting	3
Silver Creek	Madison	Partially Supporting	1
Sugar Fork	Madison	Partially Supporting	4
Sand Creek	Madison	Not Assessed	1
Silver Lake	Madison	Not Assessed	1
Unnamed tributary to Shoal Creek	Fayette	Not Assessed	3
Shoal Creek	Fayette	Fully Supporting or Partially Supporting	1
Beaver Creek	Fayette	Not Assessed	1
Tributary to Little Beaver Creek	Fayette	Not Assessed	4
Little Beaver Creek	Fayette	Not Assessed	1
Spring Branch	Fayette	Unknown	1
Hurricane Creek	Bond	Not Assessed	1
Kaskaskia River	Bond	Fully Supporting or Partially Supporting	1
CUSHING EXTENSION			
KANSAS			
Coon Creek	Washington	Expected	1
Carter Creek	Clay	Expected	1
West Fancy Creek	Clay	Expected	1
Lincoln Creek	Clay	Expected	1
Republican River	Clay	Special	1
Chapman Creek	Dickinson	Expected	1
Smokey Hill River	Dickinson	Expected	1

Table 3.7-2 Game Fisheries in Waterbodies Crossed or Downstream of the Proposed Keystone Pipeline Project

State/Waterbody	County	Fishery Class[1]	Number of Crossings
Carry Creek	Dickinson	Special	1
West Branch Lyon Creek	Dickinson	Special	1
Mud Creek	Marion	Special	1
Cottonwood River	Marion	Expected	1
Spring Branch	Marion	None	1
Catlin Creek	Marion	Special	1
Doyle Creek	Marion	Expected	1
East Branch Whitewater River	Butler	Expected	1
Diamond Creek	Butler	None	1
Brush Creek	Butler	None	1
Fourmile Creek	Butler	Expected	1
Rock Creek	Butler	Expected	1
Spring Branch	Butler	Expected	1
Whitewater River	Butler	Expected	1
Badger Creek	Butler	Expected	1
Dry Creek	Butler	Expected	1
Fourmile Creek	Butler	Expected	1
Eightmile Creek	Butler	Expected	1
Polecat Creek	Cowley	Expected	1
Stewart Creek	Cowley	Expected	1
Crooked Creek	Cowley	Expected	1
Spring Creek	Cowley	Expected	1
Arkansas River	Cowley	Special	1
OKLAHOMA			
Bois d' Arc Creek	Kay	WW Aquatic Life	8
Salt Fork Arkansas River Creek	Kay	WW Aquatic Life	1
Red Rock Creek	Noble	WW Aquatic Life	1
Black Bear Creek	Noble	WW Aquatic Life	1
Cimarron River	Payne	WW Aquatic Life	1

[1]Fishery classifications, as part of surface water classifications, are defined in **Table 3.7-3.**

Sources for fish occurrence: Bayless and Travnichek (2001); Berry et al. (2004); Cashatt and Neuswanger (2002); Dames and Todd (2004); Illinois Department of Natural Resources (2005); Kansas Department of Wildlife and Parks (2006); Missouri Department of Conservation 2005; Pitchford and Kerns (2005); North Dakota Department of Health (2005); SDGFD (2005); Nebraska Department of Environmental Quality (2005); Illinois Department of Natural Resources (2005); Stark (2006b); and Weirich (2002); Parham (2006).

Table 3.7-3 Surface Water Classification

State	Classification	Definition
North Dakota	I	Quality of waters shall be suitable for propagation and/or protection of resident fish species and other aquatic biota.
	IA	Same as Class I except that treatment for municipal use.
	II	Same quality as Class I except that additional treatment may be required for drinking water requirements. Streams may be intermittent which makes these waters limited for fish life.
	III	Streams have low average flows or no flows. Waters are of limited seasonal value for fish and aquatic biota.
South Dakota	WW Permanent	Warmwater permanent fish life propagation waters.
	WW Semipermanent	Warmwater semipermanent fish life propagation waters.
	WW Marginal	Warmwater marginal fish life propagation waters.
Nebraska	Class A - Warmwater	Waters provide, or could provide, a habitat suitable for maintaining one or more identified key species on a year-round basis. Waters also are capable of maintaining year-round populations of a variety of other warmwater fish and associated vertebrate and invertebrate organisms and plants.
	Class B - Warmwater	Waters where the variety of warmwater biota is presently limited by water volume or flow, water quality (natural or irretrievable human-induced conditions), substrate composition, or other habitat conditions. These waters are only capable of maintaining year-round populations of tolerant warmwater fish and associated vertebrate and invertebrate organisms and plants. Key species may be supported on a seasonal or intermittent basis (e.g., during high flows) but year-round populations cannot be maintained.
Kansas	Special Aquatic Life Use (S)	Surface waters that contain unique habitats or biota that are not commonly found in the state. Surface waters that contain populations of threatened or endangered species will be designated as special aquatic life use waters. Kansas Department of Wildlife and Parks and the USFWS have been consulted in order to determine the presence of threatened and endangered species.
	Expected Aquatic Life Use (E)	Surface waters that contain habitats or biota found commonly in the state.
	Restricted Aquatic Life Use (R)	Surface waters that contain biota in a limited abundance or diversity due to the physical quality or availability of habitat compared to more productive habitats in adjacent waters.

Table 3.7-3 Surface Water Classification

State	Classification	Definition
Missouri	WW Aquatic Life	General warmwater fishery in waters that provide naturally occurring water quality and habitat conditions to allow maintenance of aquatic biota including recreationally important species.
	WW Limited Aquatic Life	Limited warmwater fishery in waters with naturally occurring water quality and habitat conditions that prevent maintenance of aquatic biota including recreationally important species.
Illinois	Fully Supporting (F)	The waterbody attains the designated aquatic life use, and is considered to have "good" resource quality.
	Partially Supporting (P)	The waterbody attains the designated use at a reduced level and is considered to have "fair" resource quality.
	Not Assessed (X)	The waterbody has not been assessed.
Oklahoma	WW Aquatic Life	The waterbody is able to support warmwater aquatic communities.

Table 3.7-4 Game and Commercial Fish Spawning Periods and Habitat

Species or Group[1]	Months[2]												Habitat
	J	F	M	A	M	J	J	A	S	O	N	D	
Burbot													Eggs are scattered over sand or gravel substrates.
Basses													Shallow areas over clean gravel and sand bottoms.
Brown bullhead													Spawn in shallow areas by building nests in mud substrate.
Bullheads (yellow and black)													Usually spawn in weedy or muddy shallow areas by building nests.
Buffalos													Spawn at depths of four to 10 feet over gravel or sand substrates.
Carp													Adhesive eggs scattered in shallow water over vegetation, debris, logs, or rocks.
Catfishes (flathead and blue)													Nest builders with habitat similar to channel catfish.
Channel catfish													Prefers areas with structure such as rock ledges, undercut banks, logs, or other structure where it builds nests.
Crappies													Eggs deposited in depressions on bottom in cove or embayments.
Freshwater drum													Buoyant eggs drift in river currents during development.
Muskellunge													Spawn in tributary streams and shallow lake channels.
Northern pike													Small streams or margins of lakes over submerged vegetation.
Paddlefish													Moves into rivers and spawns over flooded gravel bars.
Sauger													Moves into tributary streams or backwaters where they spawn over rock substrates.
Shovelnose sturgeon													Spawning occurs in open water channels of large rivers over rocky or gravelly bottoms.
Sunfishes													Nest builders in diverse substrates and shallow depths.
Walleye													Spawn in lakes and streams in shallow water over rock substrates.
White bass													Egg masses deposited over sand bars, submerged vegetation, or other instream debris.
Yellow perch													Shallow open water over weedy areas.

[1]Rainbow trout is not included because the species does not spawn in streams crossed by the pipeline route.

[2]Spawning periods are approximate and could occur in only a portion of a particular month.

Sources: Eddy and Underhill (1974); Harlan et al. (1987); and Pflieger (1975).

these waters includes northern pike in the Sheyenne River in 2005 (North Dakota Game and Fish Department [NDGFD] 2005). No information is available on possible fish occurrence in Crow Lake or the numerous small ponds located within the proposed route.

South Dakota

Four perennial streams and one lake (Amsden) are located within the South Dakota portion of the proposed pipeline route. The Missouri River is the largest waterbody and is classified as a warmwater permanent fishery. Of the other streams that have been classified, habitat is considered more limited as indicated by a warmwater semi-permanent (James River) or warmwater marginal (Wolf and Beaver Creeks) classification. However, the proposed crossing areas for Wolf Creek and the James River show flow levels that appeared to be perennial in nature. The Missouri River contains the most diverse list of game fish with 19 species or groups, while the James River contains five game species. The Missouri River is approximately 2,000 feet wide at the crossing with deep water habitat and two channels adjacent to an island. The other smaller streams support two to six game fish species. The most popular game fish species include catfish, northern pike, and bass species. State record catfish have been caught in the Missouri and James River. The only known stocking efforts in these waterbodies consist of paddlefish in the Missouri River (SDGFP 2003). This indicates that game fish populations are sustained by natural reproduction. No information is available on possible fish occurrence in Amsden Lake or the numerous small ponds located within the proposed route.

Nebraska

Of the 22 perennial streams crossed in the Nebraska portion of the proposed route, eight are considered Class A warmwater fisheries that support one or more key species on a year-round basis (**Table 3.7-2**). Thirteen of the other 14 streams are Class B warmwater fisheries that support key species on a seasonal or intermittent basis. The highest number of game fish species occurs in the Missouri River with 19 species or groups. Habitat at the Missouri River crossing is described above for the South Dakota segment. The primary game fish species in the Missouri River include catfishes, yellow perch, sauger, walleye, northern pike, and basses. The other streams contain one to five game fish species, with primary game fish species consisting of catfishes, bass, or sunfishes. Forage fish species in the Platte River also are considered an important food source for the interior least tern, a federally listed bird species. Channels at the Missouri and Platte River crossings are the widest (approximately 1,500 feet each) but the wetted width usually is considerably less in the Platte River where braided, meandering channels shift in response to flows and sand bottoms. Widths at the other crossings vary from less than 20 feet to approximately 400 feet. The most diverse types of fish habitat are present in the Elkhorn River, Shell Creek, and the West Fork Big Blue River and its tributaries, where a mixture of pools, riffles, and runs with riparian vegetation along the channel. Two unnamed ponds also are located within the pipeline ROW, but no information is available on possible fish presence.

Kansas

The Kansas portion of the proposed route crosses 33 perennial streams, most of which are classified as warmwater fisheries with "expected use" for common species in the state. Two streams, the South Fork Nemaha River and Missouri River, are classified as "special use" waters due to the presence of special status species (see Section 3.7.3). Based on available fish occurrence information, all of the streams contain at least four game fish species or species groups. The number of game fish species in these streams ranges from one to 18 species or groups, with the highest number occurring in the Missouri River. The Missouri River supports both warmwater game and commercial fish species (catfishes, buffalofishes, carp, freshwater drum, and shovelnose sturgeon) (Pflieger 1975). Channel catfish and flathead catfish are the primary species in the Big Blue River, Robidoux Creek, Delaware River, and Missouri River. Walleye also are important in the Middle Fork Wolf River.

Missouri

Approximately 113 perennial streams and four unnamed perennial lakes or ponds are crossed by the Missouri portion of the proposed route. Stream classifications for these streams do not distinguish differences in habitat quality, as they all are considered warmwater fisheries. The larger streams crossed in Missouri include the Missouri River, Platte River, Grand River, Chariton River, Cuivre River, and the Mississippi River. The other smaller streams are tributaries of these drainages. The highest number of game fish species occurs in the Mississippi and Missouri Rivers with 17 and 18, respectively, followed by the Grand River with 12. The other rivers and streams contain one to nine game fish species or groups (e.g., sunfishes). The most popular game fish species include catfishes, walleye, sauger, largemouth bass, and white bass. In addition, the pipeline route crosses the Jentell Brees Access in Buchanan County, which was developed with Sport Fish Restoration federal monies.

The Missouri and Mississippi River crossings also contain commercial fish species. Channel catfish, blue catfish, flathead catfish, paddlefish, and shovelnose sturgeon are primary commercial species in both rivers. Freshwater drum, black buffalo, smallmouth buffalo, bigmouth buffalo, common carp, and carpsuckers also are commercially harvested in the Mississippi River. A commercial fishing permit is required for the shovelnose sturgeon.

The Missouri Department of Conservation has inventoried a number of the watersheds crossed by the proposed route. These studies provide information on habitat quality, as summarized below.

- Platte River – Habitat throughout the drainage has been degraded as a result of channelization and erosion. Exceptions include Castile Creek, which is considered an exceptional prairie stream due to relatively clear water and abundance of gravel substrates (Bayless and Travnichek 2001).
- Grand River – Although much of the Grand River Basin has been degraded through channelization and impoundments, some unique habitats still exist such as the upper 35 miles of the Grand River, Sugar Creek, Shoal Creek, and Crabapple Creek (Pitchford and Kerns 2005).
- Chariton River – Most of the Chariton River is channelized from Putnam County to its confluence with the Missouri River in Clariton County. Widespread channelization has led to unstable channels and most tributary streams have been impacted by head cuts originating in the mainstem portion of the river. No unique habitat is located at or downstream of the proposed crossing (Cashatt and Neuswanger 2002).
- Cuivre River – The lower reaches of the Cuivre River were substantially altered by channelization prior to 1927. No unique habitat is located at or downstream of the proposed crossing (Weirich 2002).
- Salt River – Relatively short channelized reaches are scattered throughout the basin especially in the lower portion. The most prevalent habitat problem is erosion, which is the result of agriculture land. No unique habitat is located at or downstream of the proposed crossing (Dames and Todd 2004).

Illinois

The Illinois portion of the proposed route crosses 36 perennial streams (including the Kaskaskia River) plus Silver Lake. The portion of the Kaskaskia River that is crossed by the proposed route is located in the headwaters of Carlyle Lake, which is a flooded impoundment. The stream classifications for Illinois are based on an assessment of aquatic biology and habitat parameters to determine if a stream is fully or partially supporting aquatic life. One stream, the Mississippi River, is considered to be fully supporting aquatic life. Two of the waterbodies, Shoal Creek and the Kaskaskia River, contain both fully and partially supporting segments at or downstream of the proposed pipeline crossings. The other streams that have been assessed are considered partially supporting aquatic life (**Table 3.7-3**). Index of Integrity (IBI) scores, which evaluate 10 aquatic biotic metrics, have been determined for some of the streams crossed by the pipeline route. Scores can range from 0 to 60, with values over 50 representing high quality streams (Smogor 2000). Mean IBI scores

for project area streams were 32 for Silver Creek, 49 for Shoal Creek, 45 for Beaver Creek, and 54 for Cahokia Canal.

The most diverse fishery exists in the Mississippi River, based on the presence of 19 game fish species or groups and commercial species represented by three buffalo species, common carp, carpsuckers, and catfishes (see Missouri River discussion) (Illinois DNR 2005). Mussel harvests have occurred in the past, but the area has been closed due to concerns with the nuisance zebra mussel.

Recreational fisheries also occur in Cahokia Canal and Shoal and Silver Creeks, but fishing pressure is considerably lower than the Mississippi River. Catfishes are the primary game fish species in these streams. Sauger and bass also are present in Cahokia Canal.

CUSHING EXTENSION

The Cushing Extension will cross 48 perennial streams in Kansas and 10 perennial streams in Oklahoma. No perennial streams are crossed in the Nebraska portion of this route. The Kansas portion of the route will cross five larger rivers, the Little Blue, Republican, Smokey Hill, Whitewater, and Arkansas. The remaining streams are relatively small in terms of width. Stream classifications for the Kansas portion of the proposed route include six "special" waters (Republican River, Cary Creek, West Branch Lyon Creek, Mud Creek, Catlin Creek, and the Arkansas River), which contain unique habitat for aquatic species (**Tables 3.7-2** and **3.7-3**). The other Kansas streams are classified as "expected" (i.e., common aquatic species). Game fish species in the Kansas streams consist of a variety of warmwater species or groups (**Table 3.7-2**). The most diverse game fisheries exist in the larger streams listed above. Streams crossed by the Oklahoma portion of the proposed route are relatively small in size except for the Cimarron River. Those streams that have been classified are considered warmwater aquatic life (**Tables 3.7-2** and **3.7-3**).

3.7.3 Sensitive Terrestrial and Aquatic Wildlife Species

Coordination with state wildlife agencies (i.e., North Dakota Game and Fish Department [NDGFD], South Dakota Game, Fish, and Parks [SDGFP], Nebraska Game and Parks Commission [NGPC], Kansas Department of Wildlife and Parks [KDWP] Missouri Department of Conservation [MDC], Illinois Department of Natural Resources [IDNR]), and the USFWS was initiated in January 2006, in a project overview and information request letter. A similar letter was sent to Oklahoma Department of Wildlife Conservation in October 2006. A species list and occurrence data was obtained from state and federal agencies, state natural heritage programs, agency websites, and other applicable websites (e.g., NatureServe). State agency meetings were held in February and March of 2006. Following consideration of agency comments and compilation of available data, biological packages summarizing potential habitat for special status species and species of special concern were sent to state and federal agencies for their review and input in June 2006. Follow-up agency meetings were held in July and October 2006.

Based on the input from the USFWS as well as state agencies, work plans were developed for surveys in North Dakota, South Dakota, Nebraska, Kansas, Missouri, and Illinois. The work plans for each state include the species to be surveyed, locations (mileposts and maps), survey periods, and survey requirements. Proposed surveys are described for 2006, 2007, and pre-construction in 2008.

USFWS Consultation

The USFWS provided a draft project comment letter followed by a final project letter dated April 28, 2006. John Cochnar of the Nebraska, Grand Island USFWS Field Office was named as the USFWS project point of contact for the Keystone Project. A follow-up meeting with the USFWS was held on July 19, 2006.

On June 8, the USFWS provided a letter regarding several segments of the proposed pipeline route that cross USFWS grassland and wetland easements in North and South Dakota. The letter included maps and

descriptions of potential reroute recommendations that would reduce the extent of wetland and grassland impacts. Proposed reroute areas included the Hecla Sandhills, Raymond Prairie Chicken Leks, Nelson and Steele County Wetlands, Miner County Grassland Easement, and Day County Grassland Easements. The USFWS indicated that crossing USFWS refuge lands and easements would require right-of-way permits, and that cultural resources surveys would be required across lands where the USFWS has purchased easement interests.

In response to the USFWS June 8 letter, a reroute proposal was developed and presented to the USFWS refuge staff in a meeting in Fargo on July 18. The results of the meeting were: 1) Keystone would further refine a route west of the Hecla Sandhills to avoid the grassland easements; 2) Keystone would further refine its route in Nelson and Steele County to reduce the number and extent of wetland crossings; 3) Keystone would refine its route to move the route onto farmlands away from the Day County Grasslands and Raymond Chicken Leks; and 4) Keystone would make a minor reroute to avoid the Miner County Grassland. On September 11, Keystone provided revised route maps for the entire segment in southern North Dakota and South Dakota to the USFWS for its review and comment. These reroutes are described in Section 2.4.1.4.

3.7.3.1 Terrestrial Species

Based upon data obtained from agency websites and agency contacts, a total of 69 terrestrial wildlife species (29 special status species and 40 species of special concern) were identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the proposed route are listed and summarized in Appendix G, Tables G-1 and G-2. Occurrence potential along the proposed route was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, eight terrestrial species (five special status species and three species of special concern were eliminated from detailed analysis. Of the remaining 61 terrestrial species that are analyzed in detail, 24 are special status species and 37 are species of special concern. The habitat requirements of a majority of these species are satisfied by wetland, aquatic, woodland, or native prairie habitats. The potential occurrences of these species along each state segment of the proposed route are presented in **Table 3.7-5** and **Table 3.7-6**. A summary of sensitive species that could occur along the proposed route are provided below by state.

North Dakota

A total of five special status wildlife species (gray wolf, bald eagle, greater prairie chicken, whooping crane, and Dakota skipper) and four wildlife species of special concern (Sprague's pipit, Baird's sparrow, swamp sparrow, and northern prairie skink) potentially could occur within suitable habitat along the proposed route in North Dakota.

Based on correspondence and consultations with the NDGFD and the USFWS, respectively, species surveys would only be required for breeding and roosting bald eagles and the Dakota skipper. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

Surveys for nesting and roosting bald eagles would occur at all river crossings, if construction were to occur during the breeding and roosting periods.

Potential Dakota skipper habitat was identified during grassland surveys that were conducted in North Dakota and South Dakota from September 11 to September 16, 2006. A total of 1.2 miles of potential Dakota skipper habitat was identified at two locations in North Dakota (MP 203.6 to MP 203.9 and MP 204.1 to MP 205.0). Occurrence surveys for this species will occur in 2007.

Table 3.7-5 Special Status Wildlife Species Potentially Occurring Within the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Mammals								
Indiana bat *Myotis sodalis*	FE; MO-E; IL-E					X	X	
Gray wolf *Canis lupus*	FT; ND-SC	X						
Eastern spotted skunk *Spilogale putorius*	KS-T: SD-SC; MO-E		X		X	X		
River otter *Lontra canadensis*	NE-T; IL-E			X			X	
Birds								
Least bittern *Ixobrychus exilis*	MO-SC; IL-T					X	X	
Bald eagle *Haliaeetus leucocephalus*	FT; ND-SC; SD-T; NE-T; KS-T; MO-E; IL-T; OK-T	X	X	X	X	X	X	X
Greater prairie-chicken *Tympanuchus cupido*	MO-E: ND-SC	X				X		
King rail *Rallus elegans*	MO-E; NE-SC			X		X		
Whooping crane *Grus americana*	FE; ND-SC; SD-E; NE-E; OK-E; KS-E	X	X	X	X			X
Snowy plover *Charadrius alexandrinus*	KS-T				X			
Piping plover *Charadrius melodus*	FT; ND-SC; SD-T; NE-T; KS-T		X	X				X
Interior least tern *Sterna antillarum athalassos*	FE; SD-E; NE-E; MO-E; OK-E; KS-E		X	X				X
Barn owl *Tyto alba*	MO-E; IL-E					X	X	
Loggerhead shrike *Lanius ludovicianus*	MO-SC; IL-T	X				X	X	
Henslow's sparrow *Ammodramus henslowii*	KS-SC; MO-SC; IL-E				X	X	X	

Table 3.7-5 Special Status Wildlife Species Potentially Occurring Within the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Yellow-crowned night heron *Nyctanassa violacea*	IL-E						X	
Pied-billed grebe *Podilymbus podiceps*	IL-T						X	
Northern harrier *Cicus cyaneus*	MO-E					X		
Fish								
Chestnut lamprey *Ichthyomyzon castaneus*	KS-T				X			
Pallid sturgeon *Scaphirhynchus albus*	FE; SD-E; NE-E; KS-E; MO-E; IL-E		X	X	X	X	X	
Lake sturgeon *Acipenser fulvescens*	NE-T; MO-E; IL-E		X	X				
Flathead chub *Platygobio gracilis*	KS-T				X			
Silver chub *Macrhybopsis storeriana*	MO-SC KS-E				X	X		
Sturgeon chub *Macrhybopsis gelida*	NE-E; KS-T; MO-SC			X	X	X		
Sicklefin chub *Macrhybopsis meeki*	NE-T; KS-E ; MO-SC			X	X	X		
Western silvery minnow *Hybognathus argyritis*	NE-SC; KS-T; MO-SC				X	X		
Blacknose shiner *Notropis heterolepis*	ND-SC; NE-E; MO-SC	X		X	X			
Silverband shiner *Notropis shumardi*	KS-T							
Topeka shiner *Notropis topeka*	FE; SD-SC; KS-T; MO-E		X	X	X			
Northern redbelly dace *Chrosomus eos*	NE-T			X				
Finescale dace *Phoxinus neogaeus*				X				

Table 3.7-5 Special Status Wildlife Species Potentially Occurring Within the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Amphibians								
Illinois chorus frog *Pseudacris strecheri illino*	IL-T						X	
Reptiles								
Western fox snake *Elaphe vulpine vulpina*	MO-E					X		
Massasauga *Sistrurus catenatus spp.*	FC; MO-E; IL-E			X		X	X	
False map turtle *Graptemys pseudogeo-graphica*	SD-T		X					
Kirtland's snake *Clonophis kirtlandi*	IL-T						X	
Invertebrates								
Dakota skipper *Hesperia dacotae*	FC; SD-SC	X	X					
Spectaclecase *Cumberlandia monodonta*	FC; MO-SC					X		
Scaleshell mussel *Leptodea leptodon*	FE; SD-SC; NE-E		X	X				
Higgins' eye pearlymussel *Lampsilis higginsi*	FE; SD-SC		X				X	
Winged mapleleaf *Quadrula gragosa*	FE; SD-SC		X					
Plants								
Decurrent false aster *Boltonia decurrens*	FT; MO-E; IL-T					X	X	
Small white lady's-slipper *Cypripedium candidum*	NE-T			X				
Eastern prairie fringed orchid *Platanthera leucophaea*	FT; IL-E						X	
Western prairie fringed orchid *Platanthera praeclara*	FT; SD-SC; NE-T	X	X	X	X			X
Prairie bush-clover *Lespedeza leptostachya*	FT; IL-E						X	

Table 3.7-5 Special Status Wildlife Species Potentially Occurring Within the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Running buffalo clover *Trifolium stoloniferum*	FE; MO-E					X		
Royal Catchfly *Silene regia*	IL-E						X	
Prairie Spiderwort *Tradescantia bracteata*	IL-T						X	
Spring Ladies' Tresses *Spiranthes vernalis*	IL-E						X	

FE = Federally endangered.

FT = Federally threatened.

FC = Federal candidate.

ND-SC = North Dakota Species of Conservation Priority.

SD-E = South Dakota endangered.

SD-T = South Dakota threatened.

SD-SC = South Dakota Species of Concern.

NE-SC = Nebraska species of special concern.

KS-E = Kansas endangered.

KS-T = Kansas threatened.

KS-SC = Kansas species in need of conservation.

MO-E = Missouri endangered.

MO-SC = Missouri species of conservation concern.

IL-E = Illinois endangered.

IL-T = Illinois threatened.

OK-E = Oklahoma endangered.

OK-T = Oklahoma threatened.

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Mammals								
Long-tailed weasel *Mustela frenata*	MO-SC					X		
Southern flying squirrel *Glaucomys volans*	KS-SC				X			
Southern bog lemming *Synaptomys cooperi*	KS-SC				X			
Birds								
Red-necked grebe *Podiceps grisegena*	SD-SC		X					
Pied-billed grebe *Podilymbus podiceps*	MO-SC					X		
American white pelican *Pelecanus erythrorhynchos*	SD-SC		X					
Great egret *Ardea alba*	MO-SC					X		
Cooper's hawk *Accipiter cooperii*	SD-SC MO-SC		X			X		
Red-shouldered hawk *Buteo lineatus*	MO-SC					X		
Broad-winged hawk *Buteo platypterus*	SD-SC		X					
Sora *Porzana carolina*	MO-SC					X		
Black tern *Chlidonias niger*	SD-SC; KS-SC		X					
Common tern *Sterna hirundo*	SD-SC		X					
Short-eared owl *Asio flammeus*	KS-SC; MO-SC				X	X		
Whip-poor-will *Caprimulgus vociferus*	KS-SC				X			

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Sprague's pipit *Anthus spragueii*	ND-SC	X						
Cerulean warbler *Dendroica cerulea*	KS-SC				X			
Baird's sparrow *Ammodramus bairdii*	ND-SC	X						
Bobolink *Dolichonyx oryzivorus*	KS-SC				X			
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	MO-SC					X		
Swamp sparrow *Melospiza georgianan*	ND-SC	X						
Fish								
Hornyhead chub *Nocomis biguttatus*	ND-SC	X						
Spotted sucker *Minytrema melanops*	KS-SC				X			
Blue sucker *Cycleptus elongatus*	KS-SC; MO-SC				X	X		
Pugnose shiner *Notropis anogenus*	ND-SC	X						
River shiner *Notropis blennius*	KS-SC				X			
Ghost shiner *Notropis buchanani*	MO-SC					X		
Brassy minnow *Hybognathus hankinsoni*	KS-SC; MO-SC				X	X		
Plains minnow *Hybognathus placitus*	KS-SC				X	X		
Blacknose dace *Rhinichthys atratulus*	KS-SC				X			
Plains killifish *Fundulus zebrinus*	MO-SC					X		

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Western sand darter *Etheostoma clarum*	MO-SC					X		
American eel *Anguilla rostrata*	SD-SC		X					
Trout-perch *Percopsis omiscomaycus*	ND-SC	X						
Rosyface shiner *Notopis rubellus*	ND-SC	X						
Amphibians								
Great Plains toad *Bufo cognatus*	MO-SC					X		
Northern cricket frog *Acris crepitans*	SD-SC		X					
Northern crawfish frog *Rana areolata circulosa*	MO-SC					X		
Reptiles								
Blanding's turtle *Emydoidea blandingii*	SD-SC MO-SC		X			X		
Spiny softshell *Apalone spinifera*	SD-SC		X					
Smooth softshell *Apalone spinifera*	SD-SC		X					
Northern prairie skink *Eumeces septentrionalis*	ND-SC	X						
Eastern hognose snake *Heterodon platirhinos*	KS-SC				X			
Timber rattlesnake *Crotalus horridus*	KS-SC				X			
Ringneck snake *Diadophis punctatus*	SD-SC		X					
Fox snake *Elaphe vulpine*	SD-SC		X					

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Invertebrates								
Ottoe skipper *Hesperia ottoe*	SD-SC		X					
Powesheik skipperling *Oarisma powesheik*	SD-SC		X					
Regal fritillary *Speyeria idalia*	MO-SC					X		
Prairie mound ant *Formica montana*	MO-SC					X		
Wallace's deepwater mayfly *Raptoheptagenia cruentata*	KS-SC				X			
Round hickorynut *Obovaria olivaria*	MO-SC					X		
Fat mucket mussel *Lampsilis siliquoidea*	KS-SC				X			
Creeper mussel *Strophitus undulates*	KS-SC				X			
Threeridge *Amblema plicata*	SD-SC		X					
Rock pocketbook *Arcidens confragosus*	SD-SC		X					
Plain pocketbook *Lampsilus cardium*	SD-SC		X					
Black sandshell *Ligumia recta*	SD-SC		X					
Yellow sandshell *Lampsilis teres*	SD-SC		X					
Mapleleaf *Quadrula quadrula*	SD-SC		X					
Deertoe *Truncilla truncata*	SD-SC		X					
Wabash pigtoe *Fusconaia flava*	SD-SC		X					

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Hickorynut *Obovaria olivaria*	SD-SC		X					
Pimpleback *Quadrula pustulosa*	SD-SC		X					
Fawnsfoot *Truncilla doniciformis*	SD-SC		X					
Plants								
Indian rice grass *Achnatherum hymenoides*	KS-SC				X			
Wooley milkweed *Asclepias lanuginosa*	SD-SC		X					
Subarctic lady-fern *Athyrium filix-femina*	ND-SC	X						
Texas bergia *Bergia texana*	MO-SC					X		
Earlyleaf brome *Bromus latiglumis*	MO-SC					X		
Nottoway Valley brome *Bromus nottowayanus*	MO-SC					X		
Bellow-beaked sedge *Carex albicans* var. *australis*	MO-SC					X		
Bauxbaum's sedge *Carex Buxbaumii*	ND-SC	X						
Creseted sedge *Carex cristatella*	KS-SC				X			
Raven-foot sedge *Carex crus-corvi*	KS-SC				X			
Bristly-stalk sedge *Carex leptalea*	ND-SC	X						
Blue cohosh *Caulophyllum thalictroides*	ND-SC	X						
Coast sandbur *Cenchrus incertus*	KS-SC				X			

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Lanceleaf coreopsis *Coreopsis lanceolata*	KS-SC				X			
American yellow lady's-slipper *Cypripedium parviflorum*	ND-SC	X						
Showy lady's-slipper *Cypripedium reginae*	ND-SC	X						
Spinulose woodfern *Dryopteris carthusiana*	ND-SC	X						
Crested woodfern *Dryopteris cristata*	ND-SC	X						
Walter's barnyard grass *Echinochloa walteri*	MO-SC					X		
Small spikerush *Eleocharis parvula*	ND-SC	X						
Green keeled cottongrass *Eriophorum viridi-carinatum*	ND-SC	X						
Spotted Joe-pye-weed *Eupatorium maculatum* var. *bruneri*	KS-SC				X			
Fringed gentian *Gentianopsis crinita*	ND-SC	X						
Plains frostweed *Helianthemum bicknellii*	ND-SC	X						
Greater Canadian St. John's wort *Hypericum majus*	KS-SC				X			
Narrow leaf morning glory *Ipomoea shumardiana*	KS-SC				X			
Butternut *Juglans cinerea*	MO-SC					X		
Star duckweed *Lemna trisulca*	MO-SC					X		
Loesel's twayblade *Liparis loeselii*	ND-SC	X						
Prairie loosestrife *Lysimachia quadriflora*	SD-SC		X					

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Yellow false mallow *Malvastrum hispidum*	MO-SC					X		
Tender creeping-cucumber *Melothria pendula*	KS-SC				X			
Naked Bishop's cap *Mitella nuda*	ND-SC	X						
Adder's tongue *Ophioglossum vulgatum*	MO-SC					X		
Lanceolateleaf rock moss *Orthotrichum elegans*	MO-SC					X		
Pendant-pod point vetch *Oxytropis deflexa*	ND-SC	X						
Oklahoma phlox *Phlox oklahomensis*	KS-SC				X			
Heart-leaved plantain *Plantago cordata*	MO-SC					X		
Jacon's ladder *Polemonium reptans*	KS-SC				X			
Prickly gooseberry *Ribes cynosbati*	ND-SC	X						
Prairie Willow *Salix humilis*	SD-SC		X					
Rocky Mountain bulrush *Schoenoplectus saximontanus*	MO-SC					X		
Oval ladies' tresses *Spiranthes ovalis* var. *erostellata*	MO-SC					X		
Goat's-rue *Tephrosia virginiana*	NE-SC			X				
Nodding pogonia *Triphora trianthophora*	KS-SC				X			
Rock elm *Ulmus thomasii*	MO-SC					X		
Flatleaf bladderwort *Utricularia intermedia*	ND-SC	X						

Table 3.7-6 Species of Special Concern Identified for the Keystone Pipeline Project

Species	Status	ND	SD	NE	KS	MO	IL	OK
Lesser bladderwort *Utricularia minor*	ND-SC	X						
Bird's-foot violet *Viola pedata*	NE-SC			X				

ND-SC = North Dakota Species of Conservation Priority.

Level I - Species in greatest need of conservation.

Level II - Species in need of conservation, but that have had support from other wildlife programs.

Level III - Species in moderate need of conservation, but that are on the edge of their range in North Dakota.

SD-SC = South Dakota Species of Concern.

S1 Critically imperiled because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

S2 Imperiled because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

S3 Either very rare and local throughout its range, or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction throughout its range because of other factors; in the range of 21 of 100 occurrences.

IA-SC = Iowa special concern species.

NE-SC = Nebraska species of special concern.

KS-SC = Kansas species in need of conservation.

MO-SC = Missouri species of conservation concern.

South Dakota

A total of seven special status wildlife species (eastern spotted skunk, bald eagle, whooping crane, piping plover, interior least tern, false map turtle, and Dakota skipper) and 14 wildlife species of special concern (red-necked grebe, American white pelican, Cooper's hawk, broad-winged hawk, black tern, common tern, northern cricket frog, Blanding's turtle, spiny softshell, small softshell, ringneck snake, fox snake, Ottoe skipper, and Poweshiek skipperling) potentially could occur within suitable habitat along the proposed route in South Dakota.

Based on correspondence and consultation with the SDGFD and the USFWS, respectively, species surveys would only be required for breeding and roosting bald eagles, interior least tern, piping plover, and Dakota skipper. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

Surveys for nesting and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods. Two active bald eagle nest sites were identified within 0.25 mile from the Missouri River crossing.

Surveys for the interior least tern and piping plover will occur at the Missouri River, if construction were to occur during the breeding period.

A total of 3.7 miles of potential Dakota skipper habitat was identified at six locations in South Dakota (MP 265.2 to MP 266.2, MP 296.9 to 297.9, MP 390.9 to MP 391.7, MP 419.6 to MP 420.0, MP 420.6 to MP 420.8, and MP 421.8 to MP 422.1). Occurrence surveys for this species will occur in 2007.

Nebraska

A total of seven special status wildlife species (river otter, bald eagle, king rail, whooping crane, piping plover, interior least tern, and massasauga) could potentially occur within suitable habitat along the proposed route in Nebraska. No wildlife species of special concern have been identified for the Nebraska portion of the proposed route.

Based on correspondence and consultation with the NGPC and the USFWS, respectively, species surveys would be required for the river otter, breeding and roosting bald eagles, interior least tern, and piping plover. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

Surveys for river otter den sites will occur at the Elkhorn and Platte river crossings, if construction were to occur during the breeding period.

Surveys for nesting and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods.

Surveys for the interior least tern and piping plover will occur at the Missouri, Platte, and Elkhorn rivers, if construction were to occur during the breeding period.

Kansas

A total of five special status wildlife species (eastern spotted skunk, bald eagle, whooping crane, snowy plover, and Henslow's sparrow), and nine wildlife species of special concern (southern flying squirrel, southern bog lemming, short-eared owl, whip-poor-will, Cerulean warbler, bobolink, eastern hognose snake, timber rattlesnake, and Wallace's deepwater mayfly) could potentially could occur within suitable habitat along the proposed route in Kansas.

Based on correspondence and consultation with the KDWP and the USFWS, respectively, species surveys would be required for breeding and roosting bald eagles. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

Surveys for nesting and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods. The pipeline route would cross state-designated critical habitat for the bald eagle at the Big Blue and Missouri river crossings in Kansas.

Missouri

A total of 12 special status wildlife species (Indiana bat, eastern spotted skunk, least bittern, bald eagle, greater prairie chicken, king rail, barn owl, loggerhead shrike, Henslow's sparrow, northern harrier, western fox snake, and massasauga) and 13 wildlife species of special concern (long-tailed weasel, pied-billed grebe, great egret, Cooper's hawk, red-shouldered hawk, sora, short-eared owl, yellow-headed blackbird, great plains toad, northern crawfish frog, Blanding's turtle, regal fritillary, and prairie mound ant) potentially could occur within suitable habitat along the proposed route in Missouri.

Based on correspondence and consultation with the MDC and the USFWS, respectively, species surveys would be required for Indiana bat, breeding and roosting bald eagles, barn owl, king rail, massasauga, western fox snake. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

A total of 34.8 miles of potential forested woodlands that meet the Missouri USFWS criteria for Indiana bat habitat was identified for Missouri (Buchanan County – 5.0 miles, Clinton County – 1.8 miles, Caldwell County – 2.7 miles, Carroll County – 2.3 miles, Chariton County – 1.5 miles, Randolph County – 2.1 miles, Audrain County – 1.1 miles, Montgomery County – 5.5 miles, and Lincoln County – 12.8 miles). Potential habitat along the proposed pipeline route represent estimates based on GIS interpretation. Habitat field verifications surveys are planned to occur in fall 2006.

Surveys for breeding and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods. One active bald eagle nest was observed within the project vicinity at the Mississippi River crossing.

Surveys for breeding barn owls and king rails will occur, if construction were to occur during the nesting period.

A total of 12.2 miles of potential massasauga rattlesnake and western fox snake habitat was identified at 88 sites in Missouri (Buchanan County – 2.5 miles, Carroll County – 1.7 miles, Chariton – 3.4 miles, and St. Charles County – 4.6 miles). Potential habitat along the proposed pipeline route represent estimates based on GIS interpretation. Habitat field verification surveys are planned to occur in fall 2006.

Illinois

A total of 12 special status wildlife species (Indiana bat, river otter, least bittern, bald eagle, barn owl, loggerhead shrike, Henslow's sparrow, yellow-crowned night heron, pied-billed grebe, Illinois chorus frog, massasauga, and Kirtland's snake) potentially could occur within suitable habitat along the proposed route in Illinois. No wildlife species of special concern have been identified for the Illinois portion of the proposed route.

Based on correspondence and consultation with the IL DNR and the USFWS, respectively, species surveys would be required for the river otter, Indiana bat, breeding and roosting bald eagle, barn owl, Henslow sparrow, least bittern, loggerhead shrike, pied-billed grebe, massasauga, Kirtland's snake, and Illinois chorus frog. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

A total of 12.8 miles of potential Indiana bat habitat was identified for Illinois (Madison County – 7.7 miles, Bond County – 2.8 miles, Fayette County – 1.9 miles, and Marion County – 0.4 mile). Potential habitat along the proposed pipeline route represent estimates based on GIS interpretation. Habitat field verifications surveys are planned to occur in fall 2006.

Surveys for the river otter, barn owl, Henslow sparrow, least bittern, loggerhead shrike, and pied-billed grebe will occur, if construction were to occur during the nesting period.

Surveys for breeding and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods.

Pre-construction surveys for Illinois chorus frog surveys will occur in suitable habitat in Madison County.

A total of 6.4 miles of potential massasauga rattlesnake habitat was identified at 22 locations in Illinois (Madison County – 1.5 miles, Bond County – 1.7 miles, Fayette County – 3.2 miles). Potential habitat along the proposed pipeline route represent estimates based on GIS interpretation. Habitat field verifications surveys are planned to occur in fall 2006.

Oklahoma

A total of four special status wildlife species (bald eagle, whooping crane, piping plover, and interior least tern) potentially could occur within suitable habitat along the proposed route in Oklahoma. No wildlife species of special concern have been identified for the Oklahoma portion of the proposed route.

Based on correspondence and consultation with the ODWC and the USFWS, respectively, species surveys would be required for breeding and roosting bald eagle and interior least tern. Keystone submitted documentation of agency coordination to the Department of State on September 15, 2006.

Surveys for breeding and roosting bald eagles will occur at all river crossings, if construction were to occur during the breeding and roosting periods.

Surveys for the interior least tern will occur at the Cimarron River, if construction were to occur during the breeding period.

3.7.3.2 Aquatic Species

KEYSTONE MAINLINE

Sensitive aquatic species identified as potentially occurring in waterbodies crossed by the proposed route include fish and freshwater mussel species. As identified in **Table 3.7-5**, potential occurrences of federal and state-listed special status species include 13 fish and four mussels. A list of fish and mussel species of concern is provided in **Table 3.7-6**. The lists were based on NHP data for each state, as well as information obtained from state and federal agencies. Habitat information as well as occurrence by state is provided in Appendix G, Tables G-1 and G-2. A summary of sensitive species occurrence by waterbody is provided below for each state.

North Dakota

No federal or state-listed fish or mussel species are known to occur in waterbodies crossed by the North Dakota portion of the proposed route. The only species of concern is blacknose shiner, which could occur in the Sheyenne River.

South Dakota

Seven waterbodies crossed by the proposed route in South Dakota contain known or potential habitat for federally and state-listed species: Foster Creek (Topeka shiner), South Fork Pearl Creek (Topeka shiner), Redstone Creek (Topeka shiner), Rock Creek (Topeka shiner), Wolf Creek (Topeka shiner), James River (pallid sturgeon and winged mapleleaf mussel), and the Missouri River (pallid sturgeon and scaleshell and Higgins' eye mussels). These same streams also contain potential habitat for special concern fish and mussel species.

As part of determining suitable habitat for the federally endangered Topeka shiner, habitat characterization surveys were conducted at 21 stream crossings in South Dakota during September 14 through 17, 2006 (Stark 2006a). Suitable habitat consisting of permanent pools, stable temperatures, and aquatic macrophytes were identified for the following crossings: Foster Creek (MP 298), South Fork Pearl Creek (MP 326.2), Redstone Creek (MP 343), Rock Creek (MP 362.1), and Wolf Creek (MP 384). A mussel survey was conducted at the proposed James River pipeline crossing on September 9, 2006, to determine if two federally listed mussel species, winged mapleleaf (*Quadrula fragosa*) and scaleshell (*Leptodea leptodon*), were present (Perkins 2006). No specimens of either species were collected at the proposed crossing. In total, 288 mussels were collected, which included 49 live specimens representing eight species. The most abundant live mussel species included mapleleaf (*Quadrula quadrula*), fragile heelsplitter (*Potamilus ohiensis*), white heelsplitter (*Lasmigona complanata*), and giant floater (*Pyganodon grandis*). The live mussels were released to similar habitat located upstream of the proposed crossing to avoid construction-related impacts.

Nebraska

Four waterbodies crossed by the Nebraska portion of the proposed route contain known or potential habitat for federally and state-listed species: Platte River (sicklefin chub and sturgeon chub) and the Missouri River (pallid sturgeon, lake sturgeon, sturgeon chub, blacknose shiner, Topeka shiner, northern redbelly dace, and finescale dace, and scaleshell mussel), Elkhorn River (Blacknose shiner), and West Fork Big Blue River (Topeka shiner).

Kansas

Six waterbodies crossed by the Kansas portion of the proposed route contain known populations and critical habitat for numerous federal or state-listed species: Missouri River (chestnut lamprey, pallid sturgeon, flathead chub, sicklefin chub, western silvery minnow, Topeka shiner, and blacknose shiner), South Fork Big Nemaha River (flathead chub and western silvery minnow), North Fork Elm Creek (Topeka shiner), Wolf River (western silvery minnow), and Rock Creek (sicklefin chub). Most of these same streams contain Kansas special concern fish and mussel species. The North Fork Elm Creek contains state critical habitat for Topeka shiner. Based on a habitat characterization survey conducted during September 26 through 28, 2006, marginal habitat was identified in one tributary to North Fork Elm Creek (Stark 2006b). Seining also was conducted in the tributary to North Fork Elm Creek on October 2, 2006. No Topeka shiners were collected.

Missouri

Nine waterbodies crossed by the Missouri portion of the proposed route contain federal or state-listed species. Species known to occur in the Missouri River include the pallid sturgeon, sturgeon chub, sicklefin chub and western silvery minnow. Pallid sturgeon is known to occur in the Mississippi River. Known or potential habitat for Topeka shiner occurs in Brush, Castile, Crabapple, Log, and Shoal creeks and the Little Platte and East Fork Crooked rivers. These streams are considered spawning waters for Topeka shiner, with a timeframe of May 15 through July 3. Special concern species also potentially occur in the Missouri River and streams in Lincoln, Audrain, Montgomery, Clinton, and St. Charles counties.

To provide specific information on Topeka shiner habitat at proposed crossings in Missouri, habitat was characterized at 13 crossings during September 26 through 28, 2006 (Stark 2006b). Topeka shiner habitat

was concluded to be suitable in the Little Platte and Shoal Creek and marginal in Castile Creek. Habitat at other proposed crossings on Little Shoal Creek, Log Creek and tributaries, Brush Creek and tributary, Crabapple Creek and tributary, and East Fork Chariton River and tributary was considered low quality. As a follow-up to the aquatic habitat surveys, seining was conducted at nine proposed crossings on October 2 through 4, 2006 to determine if Topeka shiner were present (Stark 2006b). The surveys focused on all streams with water and allowable access. No Topeka shiners were collected at any of the streams in Missouri. The fish surveys indicated that Topeka shiner is unlikely to occur at the proposed crossings.

Illinois

Two waterbodies crossed by the proposed route in Illinois contain federal or state-listed species: the Mississippi River (pallid sturgeon and lake sturgeon) and Kaskaskia River (western sand darter).

CUSHING EXTENSION

Nebraska, Kansas, and Oklahoma

The Cushing Extension crosses streams that may contain habitat for the federally listed Topeka shiner. No sensitive fish or mussel species occur in the intermittent streams crossed by this route in Nebraska.

3.8 Land Use

3.8.1 Land Ownership and Use

Table 3.8-1 provides the linear mileage crossed by the proposed route, categorized by surface ownership. Lands along the proposed route (shown in **Figure 3.8-1**) are primarily privately owned. No Tribal lands are crossed by the proposed route (see Section 2.4.1.4 under Native American Lands Reroute). Land ownership in the vicinity of the proposed project is shown in **Figure 3.8-1**. In addition to the federal land listed in **Table 3.8-1**, the USFWS holds several wetlands easements intersected by the North and South Dakota portion of the proposed route (see Section 3.8.4, **Table 3.8-5**). State and federal lands of special interest are listed in Section 3.8.4, **Table 3.8-4**.

Table 3.8-1 Surface Ownership Crossed by the Proposed Project

	Miles Crossed	% of Total Length
KEYSTONE MAINLINE		
North Dakota		
Federal	0.0	0.0
State	0.8	0.4
Private	216.1	99.6
ND Subtotal	216.9	100.0
South Dakota		
Federal	0.0	0.0
State	0.5	0.2
Private	218.4	99.8
SD Subtotal	218.9	100.0
Nebraska		
Federal	0.0	0.0
State	0.0	0.0
Private	213.7	100.0
NE Subtotal	213.7	100.0
Kansas		
Federal	0.0	0.0
State	0.0	0.0
Private	98.8	100.0
KS Subtotal	98.8	100.0
Missouri		
Federal	0.1	<0.1
State	1.9	0.7
Private	271.1	99.3
MO Subtotal	273.1	100.0
Illinois		
Federal	3.0	5.3
State	0.0	0.0
Private	53.5	94.7
IL Subtotal	56.5	100.0
Keystone Mainline Subtotal	**1,077.9**	**78.7**

Table 3.8-1 Surface Ownership Crossed by the Proposed Project

	Miles Crossed	% of Total Length
CUSHING EXTENSION		
Nebraska		
Federal	0.0	0.0
State	0.0	0.0
Private	2.4	100.0
NE Subtotal	2.4	100.0
Kansas		
Federal	3.6	1.7
State	0.0	0.7
Private	206.1	98.3
KS Subtotal	209.7	100.0
Oklahoma		
Federal	0.0	0.0
State	5.2	6.5
Private	74.5	93.5
OK Subtotal	79.7	100.0
Cushing Extension Subtotal	**291.8**	**21.3**
PROJECT TOTAL	**1,369.7**	**100.0**

Table 3.8-2 provides the miles crossed, categorized by land use, by the proposed route. The majority of the land in the project area is agricultural. Land uses crossed by the proposed route are shown in **Figure 3.8-2.** Land cover types not specifically described here are discussed in the vegetation and water resources section.

Table 3.8-2 Land Uses Crossed by the Proposed Project

	Keystone Mainline (miles)						Cushing Extension (miles)		
	ND	**SD**	**NE**	**KS**	**MO**	**IL**	**NE**	**KS**	**OK**
Developed	1.3	2.8	2.0	0.1	6.8	2.3	0.0	2.3	3.8
Agriculture/Cropland	167.6	158.6	181.0	70.5	148.3	44.4	0.8	136.6	27.7
Grassland/Rangeland	26.3	37.7	24.8	18.5	72.5	1.7	1.2	58.9	41.6
Forest Land	3.0	0.2	2.1	7.5	35.9	4.7	0.4	5.9	2.3
Water	0.6	0.7	1.3	1.3	4.1	1.1	0.0	0.6	0.2
Wetlands	18.1	18.9	2.5	0.9	5.5	2.3	0.0	5.4	4.2
Total	**216.9**	**218.9**	**213.7**	**98.8**	**273.1**	**56.5**	**2.4**	**209.7**	**79.7**

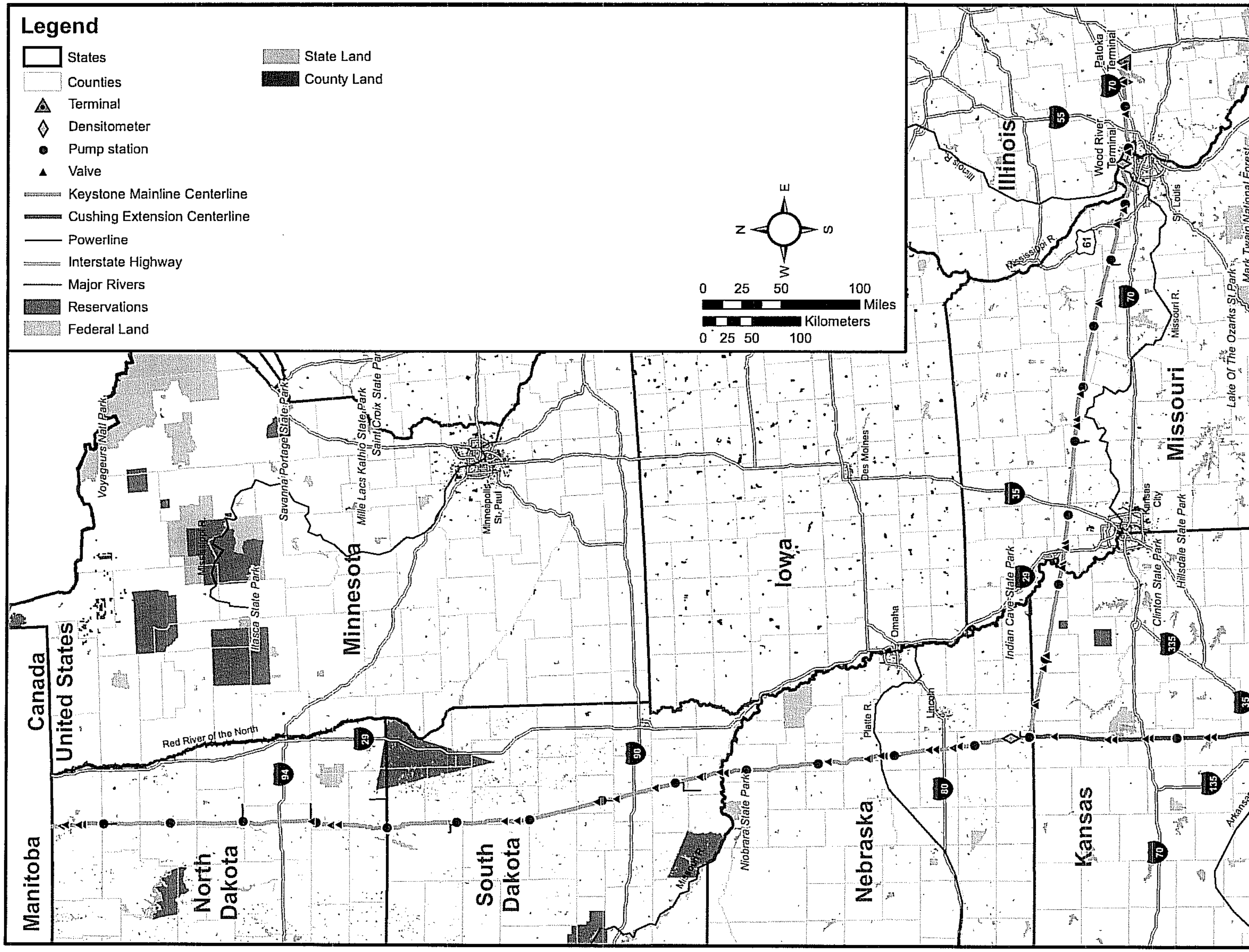

Figure 3.8-1

Land Ownership

Legend
States
Counties
Terminals
Densitometer
Pump Station
Valve
Powerline
Interstates
Major Rivers
Keystone Mainline Centerline
Cushing Extension Centerline
LULC Classification
Developed
Cropland and Pasture
Orchards, Groves, etc.
Confined Feeding Operations
Other Agricultural Land
Herbaceous Rangland
Shrub and Brush Rangeland
Mixed Rangeland
Deciduous Forest
Evergreen Forest
Mixed Forest
Streams and Canals
Lakes
Reservoirs
Bays and Estuaries
Forested Wetlands
Non-forested Wetlands
Barren
N
E
S
W
0 25 50 100
Miles
Kilometers
0 25 50 100
Keystone Pipeline Project
TransCanada
In business to deliver
Figure 3.8-2
Land Use
Canada
United States
Manitoba
North Dakota
South Dakota
Minnesota
Iowa
Nebraska
Kansas
Missouri
Illinois
Arkansas
Oklahoma
Red River of the North
Mississippi R.
Minneapolis-St. Paul
Des Moines
Omaha
Lincoln
Platte R.
Missouri R.
Kansas City
Tulsa
Oklahoma City
Wichita
Arkansas R.
Canadian R.

3.8.2 Rangeland/Agriculture

Approximately 68 percent of the proposed route crosses croplands. Approximately 21 percent of the proposed route crosses grassland/rangeland. With the exception of proposed facilities within existing industrial sites, pump stations will be located on either cropland or grassland/rangeland. Some of this land, the extent of which is currently unknown, may be terraced and/or have subsurface drainage systems installed.

3.8.3 Residential/Commercial Areas

Residential areas, commercial areas, and utility crossings represent about 0.2 percent of the total proposed route. Residential areas located adjacent to the proposed route are single family units located in rural subdivisions on small lots. **Table 3.8-3** provides a summary of the residences/residential areas and the public assembly places (hospitals, churches, assembly halls, government buildings, etc.) within 500 feet of the proposed centerline. The actual number of residences within 500 feet of the proposed pipeline will be somewhat greater, as the number of individual residences at certain locations has not yet been finally determined.

Table 3.8-3 Potential Residences and Public Assembly Places near the Proposed Project

	Potential Residences or Residential Areas (within 500 feet)[1]	Public Assembly Places (within 500 feet)[1]
KEYSTONE MAINLINE		
North Dakota	61	2
South Dakota	69	1
Nebraska	112	3
Kansas	87	0
Missouri	579	3
Illinois	77	1
Keystone Mainline Subtotal	985	10
CUSHING EXTENSION		
Nebraska	1	0
Kansas	134	1
Oklahoma	113	0
Cushing Extension Subtotal	248	1
PROJECT TOTAL	**1,233**	**12**

[1]To be confirmed with field surveys within 500 feet of the proposed centerline.

3.8.4 Recreation and Special Interest Areas

Table 3.8-4 lists recreation and special interest areas crossed by the proposed route. No other national, state, or local parks or forests are located within 500 feet of the proposed centerline, other than those listed in **Table 3.8-4**. **Table 3.8-5** lists USFWS Wetland Easements crossed by the proposed route in South Dakota. These are areas having permanent protection from conversion of natural land cover for the majority of the

area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging) or localized intense type (e.g., mining). It also confers protection to federally listed endangered and threatened species throughout the area.

Table 3.8-4 Recreation and Special Interest Areas Crossed by the Proposed Project

	Mileposts	Miles Crossed	Name	Ownership
KEYSTONE MAINLINE				
North Dakota	6.9 – 7.7	0.8	Tetrault Woods State Forest	North Dakota Forest Service
	8.0	NA	Pembina River	NA
	10.0 – 10.5	0.5	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	25.0 – 28.5	3.5	Forest	State Forest Service
	77.0 – 78.0	1.0	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	79.5 – 80.0	0.5	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	80.2 – 82.3	2.1	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	83.3 – 84.3	1.0	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	110.1 – 111.1	1.0	Conservation Reserve	Privately Owned North Dakota Game and Fish Easement
	187.2 – 187.7	0.5	Wildlife Preserve	Privately Owned North Dakota Game and Fish Easement
South Dakota	228.4 – 228.9	0.5	Game Production Area	South Dakota Game, Fish, and Parks Department (SDGFD)
	433.5 – 435.8	2.3	Missouri National Recreational River	Privately Owned Designated Wild and Scenic NPS
Nebraska	435.8 – 436.2	0.4	Missouri National Recreational River	NPS
Kansas	NA	0.0	None Identified	NA
Missouri	748.5 – 748.6	0.1	Pigeon Hill Conservation Area	USACE
	748.35 – 752.8	4.45	Western Missouri River Alluvial Plain Conservation Opportunity Area (COA)	Private & MCD
	758.4 – 759.1	0.6	Pigeon Hill Conservation Area	Missouri Conservation Department (MCD)
	767.4 – 769.0	1.4	Platte River Loess Prairie/ Woodland Hills COA	Private

Table 3.8-4 Recreation and Special Interest Areas Crossed by the Proposed Project

	Mileposts	Miles Crossed	Name	Ownership
	771.0 – 772.25	1.25	Little Platte River Woodland COA	Private
	779.3 – 781.5	2.2	Cameron Upland Prairie Plain COA	Private
	823 – 823.8	0.8	Shoal Creek Prairie	Private
	825.9 – 826.5	0.6	Shoal Creek Prairie/ Woodland Scarped Plain COA	Private
	838.8 – 841.6	2.8	Lower Grand River Lowland Plains/ Missouri – Grand River Lowland Plains COA	Private
	867.7 – 869	1.3	Lower Chariton Woodland/ Forest Hills COA	Private
	871.4 – 872.2	0.8	Lower Chariton Woodland/ Forest Hills COA	Private
	923.4	NA	West Fork Cuivre River	NA
	961.1 – 963	1.9	Cuivre River Woodland/ Forest Hills COA	Private
	970.5 – 972.8	2.3	Cuivre River Woodland/ Forest Hills COA	Private
	983 – 983.2	0.2	Cuivre River Woodland/ Forest Hills COA	Private
	983.7 – 984.3	0.6	Cuivre River Woodland/ Forest Hills COA	Private
	984.9-1019.9	35	St Charles County Prairie/ Woodland Low Hills, St Charles/ Lincoln Alluvial Plain, Mairas Temp Clair Alluvial Plain, West Allan Alluvial Plain, St Louis County Prairie/Savannah Dissected Karst Plain COA	Private
	1019.9 – 1021.1	1.2	Edward "Ted" & Pat Jones-Confluence Point State Park	Missouri Department of Natural Resources
Illinois	1069.6 – 1072.7	3.1	Carlyle Lake	USACE
CUSHING EXTENSION				
Nebraska			None identified	
Kansas	50.0 – 51.8	1.8	Milford Wildlife Area	USACE
	52.2 – 52.7	0.5	Milford Wildlife Area	USACE
	52.8 – 53.3	0.5	Milford Wildlife Area	USACE
	53.7 – 54.3	0.6	Milford Wildlife Area	USACE
Oklahoma			None identified	

Table 3.8-5 USFWS Easements Crossed by the Proposed Project

	Mileposts	Miles Crossed	Survey Target Description
KEYSTONE MAINLINE			
North Dakota	76.0 - 77.0	1.0	USFWS Wetland Easement
	79.1 - 79.6	0.5	USFWS Wetland Easement
	80.1 - 82.3	2.2	USFWS Wetland Easement
	85.8 - 86.5	0.7	USFWS Wetland Easement
	87.0 - 88.1	1.1	USFWS Wetland Easement
	89.6 - 89.9	0.3	USFWS Wetland Easement
	91.7 - 92.7	1.0	USFWS Wetland Easement
	97.7 - 98.3	0.6	USFWS Wetland Easement
	100.9 - 101.2	0.3	USFWS Wetland Easement
	109.6 - 110.1	0.5	USFWS Wetland Easement
	110.6 - 111.1	0.5	USFWS Wetland Easement
	117.3 - 117.7	0.4	USFWS Wetland Easement
	118.9 - 119.2	0.3	USFWS Wetland Easement
	121.8 - 122.3	0.5	USFWS Wetland Easement
	127.6 – 127.9	0.3	USFWS Wetland Easement
	128.3 – 128.6	0.3	USFWS Wetland Easement
	137.3 – 138.2	0.9	USFWS Wetland Easement
	138.9 - 140.0	1.1	USFWS Wetland Easement
	169.3 -170.3	1.0	USFWS Wetland Easement
	172.5 - 173.0	0.5	USFWS Wetland Easement
	170.5 – 170.8	0.3	USFWS Wetland Easement
	174.0 – 174.5	0.5	USFWS Wetland Easement
	175.5 – 176.0	0.5	USFWS Wetland Easement
	176.5 - 177.0	0.5	USFWS Wetland Easement
	177.6 – 179.1	1.5	USFWS Wetland Easement
	180.6 - 183.2	2.5	USFWS Wetland Easement
	183.2 - 183.4	0.3	USFWS Conservation or FHA Easement
	186.7 - 187.2	0.5	USFWS Wetland Easement
	187.7 – 189.2	1.5	USFWS Wetland Easement
	198.8 – 199.1	0.3	USFWS Wetland Easement
	214.9 - 216.9	2.0	USFWS Wetland Easement
South Dakota	216.9 - 218.8	1.9	USFWS Wetland Easement
	219.3 - 219.8	0.5	USFWS Grassland Easement
	222.3 - 222.8	0.5	USFWS Grassland Easement
	261.3 – 261.6	0.3	USFWS Wetland Easement
	210.5 – 311.0	0.5	USFWS Conservation or FHA Easement
	316.4 - 316.9	0.5	USFWS Wetland Easement
	318.8 - 319.3	0.5	USFWS Wetland Easement
	321.9 - 322.4	0.5	USFWS Wetland Easement
	324.4 – 324.6	0.2	USFWS Wetland Easement
	325.5 – 326.5	1.0	USFWS Wetland Easement
	329.2 - 329.6	0.4	USFWS Wetland Easement
	332.2 – 332.7	0.5	USFWS Wetland Easement
	333.7 – 334.7	1.0	USFWS Wetland Easement
	334.9 – 335.2	0.3	USFWS Wetland Easement
	338.9 – 340.0	1.1	USFWS Wetland Easement

Table 3.8-5 USFWS Easements Crossed by the Proposed Project

	Mileposts	Miles Crossed	Survey Target Description
	349.2 – 349.8	0.6	USFWS Wetland Easement
	355.5 – 356.0	0.5	USFWS Wetland Easement
	360.5 – 361.7	1.2	USFWS Wetland Easement
	363.4 - 364.7	1.3	USFWS Wetland Easement

The Missouri River has been designated a National Recreational River at the proposed crossing and the Niobrara/Missouri National River Area is crossed at this location. The Pembina River from Red River to the Canadian border has been classified by the National Rivers Inventory (NRI) as having outstanding resource values (ORVs) for scenery, geology, and being a wild river. The West Fork of the Cuivre River has been classified by the NRI as having ORVs for scenery, geology, and fish.

No designated wilderness or Wilderness Study Areas are crossed by the proposed project.

3.8.5 Noise

The existing noise environment is characterized by determining ambient noise levels, identifying existing noise sources, identifying noise sensitive receptors in the vicinity of project noise sources, and evaluating local terrain features that may affect noise transmission.

The Keystone Pipeline Project will occur primarily in rural agricultural areas. Because of the primarily agricultural and rural land uses, existing ambient noise levels along the pipeline route are quite low. It is estimated that day-night average levels (L_{dn})[1] on the A weighted scale (dBA)[2] range between 40 dBA (rural residential) and 45 dBA (agricultural cropland) (USEPA 1978). Ambient (background) noise levels occur from roadway traffic, farm machinery on a seasonal basis, pets, and various other household noises. Pipeline areas along major highways and Interstates may experience higher ambient noise levels of approximately 68 to 80 dBA (USEPA 1978).

[1] L_{dn} is the A-weighted equivalent sound level for a 24-hour period with 10 decibels added to nighttime sounds to adjust for increased sensitivity to noise at night.

[2] The A-weighted scale adjusts for the sensitivity of the human ear to different sound frequencies.

3.9 Cultural Resources

Cultural resources are protected by a series of federal laws enacted to protect these resources from damage or loss due to federally funded or permitted activities. These include the Antiquities Act of 1906, Historic Sites Act of 1935, EO 13007, the National Historic Preservation Act (NHPA) of 1966, as amended, Archaeological and Historic Preservation Act of 1974, and Archaeological Resources Protection Act of 1979. EO 11593 also provides necessary guidance on protection and enhancement of cultural resources.

In compliance with the mandates listed above, cultural resources investigations for the proposed Keystone Pipeline Project were started in November 2005 and currently are ongoing in each state crossed by the proposed route. The description and results of the investigations as of this date are summarized below by state.

KEYSTONE MAINLINE

North Dakota

In January 2006, Metcalf Archaeological Consultants, Inc. (Metcalf) prepared a research design for the cultural resources field inventory conducted along the proposed route in North Dakota (Stine 2006a). The ideas and concept underlying the research design were the result of informal discussions with the Chief Archaeologist of the North Dakota State Historic Preservation Office (SHPO). The research design included a sampling strategy comprised of five levels of investigation. Two of these levels applied to the entire proposed route through North Dakota, while the remaining three applied only to selected areas. The first level, a literature and files search of an area one mile wide centered on the proposed route, was completed in January 2006 and the results are presented in the following paragraphs. The second level of investigation was a reconnaissance of the proposed route by a geomorphologist in order to identify areas that required closer investigation and conversely areas that were not archaeologically sensitive. The third level was an intensive pedestrian field survey of selected segments of the proposed route in areas with high potential to contain archaeological resources. The fourth level was a reconnaissance survey of approximately 41 miles of the proposed route. The fifth level was no survey, which applied only to areas determined to have essentially no potential for the presence of cultural resources. These areas were determined by the results of the previous four types of investigations. In a letter dated February 23, 2006, the North Dakota SHPO concurred with the proposed cultural resources survey protocol as presented in the research design (Paaverud 2006). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal to the Department of State.

The literature and files search conducted at the State Historical Society of North Dakota identified 117 previously documented cultural resources within the one-mile-wide study corridor. The identified cultural resources included 16 prehistoric sites, seven historic sites, five multi-component sites containing both prehistoric and historic components, 25 architectural sites, 31 historic/archaeological site leads, 24 prehistoric site leads, and nine isolated finds. A "lead" refers to an unmapped site that was reported to the SHPO by an individual (e.g., amateur archaeologist) and the site was subsequently documented in the SHPO database with that designation.

The geomorphological investigation consisted of a study of existing geologic and soil maps and a review of the literature and file search data followed by a windshield survey of the entire proposed route in order to determine areas that had the potential for archaeological sites, in particular, buried sites. At the time of the windshield survey, specific areas were identified where more detailed investigations (e.g., intensive pedestrian survey, soil coring) were recommended.

Approximately 49 miles of the proposed 217-mile route in North Dakota were selected for intensive field inventory. These areas were identified based on the results of the literature and files search and review of the various land forms crossed by or adjacent to the proposed route. The inventory included areas recognized to be archaeologically sensitive, including river crossings and areas with previously documented sites.

Approximately 41 miles of the proposed route were subjected to a reconnaissance drive-by inventory. In forested areas or where the proposed route was generally over 0.25 mile from the road, the proposed route was inspected with a single transect (i.e., archaeologist). Specific areas that appeared to be sensitive (e.g., locally prominent rises, areas near good sources of potable water) were subjected to an intensive field inventory.

Results of Field Investigations

Cultural resources field surveys within selected survey areas consisted of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline. The initial field survey of selected survey areas was completed in August 2006. Approximately 26 miles of reroutes and USFWS easements remain to be surveyed. These are scheduled for completion by November 2006, weather permitting.

To date, 16 cultural resources, one prehistoric lead, one historic lead, and eight isolated finds were located during the field surveys. These included prehistoric lithic and cultural material scatters, historic railroads, and a historic foundation. Shovel probes were conducted at nine locations. The purpose of the shovel probes was to augment the pedestrian survey in areas where surface visibility was inadequate and/or where cultural material was suspected to be within three feet of the ground surface. Major stream crossings with minimal ground surface visibility were the focus of the shovel probes. As a result of the shovel probes, material was recovered from four of the nine locations. The material included ceramics, small animal bone fragments, and charcoal.

As a result of the field surveys and shovel probes, four sites were recommended as potentially eligible for the NRHP. Two of the sites were avoided by a reroute. The remaining two sites are located in an area known to contain archaeological sites; therefore, testing was the preferred alternative because of the high likelihood that rerouting around the recorded sites would result in the discovery of additional sites that also would require testing. The purpose of evaluative testing was to 1) determine the extent of the site, both horizontally and vertically, through shovel probing and test excavation units; 2) collect sufficient information to evaluate the site's eligibility for the NRHP; and 3) collect sufficient information to formulate a data recovery plan, if needed. As a result of the testing, both sites were determined not eligible for listing on the NRHP.

During the windshield survey, 52 localities were selected for geomorphological core sampling. The rationale for using sampling tube cores is two-fold. In small valleys, coring is used to determine the presence or absence of buried soils; thus, either confirming a significant distribution of buried soils with the potential for containing cultural deposits or eliminating the location from consideration for backhoe trenching. Second, in the larger valleys, cores are used to narrow the areas that are expected to contain paleosols and buried resources. Paleosols are "fossil" soils found buried within either sedimentary or volcanic deposits. The core sampling currently is underway and expected to be completed in November, weather permitting.

A preliminary survey report, which will include the results of the field surveys, evaluative testing, and geomorphological investigations, will be submitted to the North Dakota SHPO and Department of State in December 2006.

South Dakota

In January 2006, Metcalf prepared a research design for the cultural resources field inventory conducted along the proposed route in South Dakota (Stine 2006b). The ideas and concept underlying the research design were the result of informal discussions with the Review and Compliance Officer at the South Dakota SHPO. The research design included a sampling strategy comprised of five levels of investigation. The five levels of investigation are similar to those described for North Dakota with the exception of the number of miles recommended for the intensive pedestrian field survey and reconnaissance drive-by survey. Approximately 38 miles of the proposed 219-mile route in South Dakota were selected for an intensive pedestrian field survey and approximately 52 miles of the proposed route were subjected to a reconnaissance drive-by survey. These areas were identified based on the results of the literature and files search. In a letter dated March 28, 2006,

the South Dakota SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Hoskinson 2006). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

In January 2006, Metcalf conducted a literature and files search of an area one mile wide, centered on the proposed pipeline centerline at the South Dakota Archaeological Research Center in Rapid City and the Department of Tourism and State Department in Pierre. The search identified 30 previously documented cultural resources within the one-mile-wide study corridor. The identified cultural resources included 10 prehistoric sites, 17 historic sites, and three site leads.

Additionally, there were 243 architectural sites on record at the Department of Tourism and State Department that were located within the one-mile-wide study corridor. The sites included several architectural properties in the communities of Iroquois and Yankton, plus farms and homesteads scattered throughout various counties.

Results of Field Investigations

Cultural resources field surveys within selected survey areas consisted of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline. The initial field survey of selected survey areas in South Dakota was completed in August 2006. Approximately 15 miles of reroutes and USFWS easements remain to be surveyed. These are scheduled for completion by November 2006, weather permitting.

To date, nine cultural resources and two isolated finds were located during the field surveys. Site records for five previously recorded historic railroads located within the project area were updated. The nine cultural resources included prehistoric lithic scatters, two rock cairns, historic foundations, a house, shed, and farmstead. Of these, only the two rock cairns were recommended as potentially eligible for the NRHP. Both of the rock cairns will be avoided by rerouting the proposed pipeline centerline.

Shovel probes were conducted at five locations. One prehistoric artifact scatter was recorded as a result of the shovel probes. Evaluative testing was recommended for the site in order to determine the site's NRHP eligibility, however, the proposed pipeline centerline has been rerouted to avoid the site.

During the windshield survey, 56 localities were selected for geomorphological core sampling. The core sampling currently is underway and expected to be completed in November 2006, weather permitting.

A preliminary survey report, which will include the results of the field surveys, evaluative testing, and geomorphological investigations, will be submitted to the South Dakota SHPO and Department of State in December 2006.

Nebraska

In Nebraska, approximately 12 miles of the proposed Keystone pipeline corridor will parallel the recently surveyed Rockies Express Pipeline Project (REX) corridor; therefore, the cultural resources information presented below for the proposed Keystone pipeline route in Nebraska includes data found in the draft REX Phase I survey report prepared for the REX project (Schwegman et al. 2006). REX submitted the draft survey report to the Nebraska SHPO in May 2006. In a letter dated July 14, 2006, the Nebraska SHPO concurred with the findings in the draft survey report (Steinacher 2006a). The REX Phase I survey report and concurrence letter are being submitted to the Department of State.

In February 2006, SWCA Environmental Consultants (SWCA) prepared a research design for the cultural resources field inventory conducted along the proposed route in Nebraska (SWCA 2006a). The ideas and concept underlying the research design were the result of informal discussions with the Historic Preservation Officer at the Nebraska SHPO. The review of the files and records maintained by the SHPO indicated that one percent of the Nebraska segment of the proposed pipeline corridor had been previously surveyed;

therefore, the SHPO recommended an intensive pedestrian field survey of the entire proposed route in Nebraska. In a letter dated March 8, 2006, the Nebraska SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Steinacher 2006b). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

In January 2006, SWCA conducted a literature and files search of an area two miles wide centered on the proposed pipeline centerline through the Nebraska SHPO. The search identified 40 previously documented cultural resources within the two-mile-wide study corridor. Of the 40 previously recorded sites, 10 are prehistoric, one is multi-component, one contains either Late Prehistoric or Early Historic components, 27 are historic, and one is of unknown cultural affiliation. One of the sites was recorded as a prehistoric isolate consisting of a single documented flake and the remaining site was recorded as one or more burials of unknown age. Four of the 40 previously recorded sites are within 150 feet of the proposed pipeline centerline. The four sites include a prehistoric campsite or village, burial(s), historic cabin, and possible historic trail ruts.

In February 2006, the General Land Office (GLO) files also were reviewed as part of the literature and files search. Only 14 GLO references were found for the entire length of the Nebraska portion of the proposed route. Ten of the GLO references are associated with maps dating from 1857 to 1873 and most are affiliated with historic roads and/or forts such as the Fort Leavenworth and Laramie Road, the Northwest-Southeast Fort Kearney and Nebraska City Road, the East-West Fort Kearney and Omaha Road, and the Omaha and Fort Sterling Road. The remaining four GLO references were obtained from 1985 maps that show an existing railroad grade associated with the Union Pacific and the Burlington Railroad systems.

Based on review of USGS topographic maps of the proposed route 37 stream valley locations were evaluated as having the potential for containing buried cultural features. Therefore, they were selected for geomorphological investigations. Five of the selected drainages were rivers: Missouri River, Elkhorn River, Platte River, Big Blue River, West Fork Big Blue River. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location was recommended for further evaluation using backhoe trenching.

Results of Field Investigations

As stated above, the proposed Keystone pipeline corridor in Nebraska will parallel the recently surveyed REX pipeline corridor for approximately 12 miles. The REX cultural resources field surveys along the 12-mile segment consisted of close inspection of a 200-foot-wide corridor. The proposed REX pipeline corridor parallels an existing pipeline, therefore, the edge of the 200-foot-wide survey corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 160 feet from the centerline on the other side. The proposed Keystone pipeline centerline will be located approximately 40 feet from the REX pipeline centerline and within the 160-foot surveyed area. Any ground-disturbing activities associated with construction of the proposed Keystone project will be within the 160-foot-wide surveyed corridor. For any pipeline facilities that fall outside of the survey corridor (e.g., extra workspace areas), additional cultural resource field surveys will be conducted at those locations in early 2007.

The remaining approximately 200 miles of the proposed Keystone pipeline corridor in Nebraska will not parallel an existing pipeline. For this segment of the proposed pipeline route, the field surveys consisted of close inspection of a 300-foot-wide survey corridor centered on the proposed Keystone pipeline centerline. At this time, approximately 85 miles of the proposed pipeline corridor in Nebraska remain to be surveyed.

To date, 20 cultural resource sites have been identified in the survey corridor. These include prehistoric field camps and limited activity sites, historic farmsteads, and a school. Five prehistoric sites were recommended as potentially eligible for the NRHP. All five sites will be avoided by reroutes, therefore, no further work is recommended for these sites.

Geomorphological investigations were conducted at the 37 stream-valley locations identified in the research design. Core samples were taken at all but seven crossings. The seven crossings were not sampled because they were highly disturbed, lacked Holocene surfaces, had a channelized stream, or there was no access. As a result of the core samples, follow-up backhoe trenching is recommended at 15 of the stream crossings. Backhoe trenching also is recommended at one of the drainages that could not be sampled due to lack of survey access.

Backhoe trenching at selected stream crossings will involve the excavation of a trench, which will extend to an average depth of approximately 6 feet below the modern ground surface. One or two of the walls of each of the deep-testing trenches will be scraped and examined for cultural deposits. Any buried soil horizons with the potential for cultural deposits will be investigated further by troweling the walls of the trench. Where buried cultural material is recovered during the troweling of the trench wall, the soil profile will be mapped and recorded. The schedule for backhoe trenching has not been determined at this time.

A preliminary survey report, which will include the results of the field surveys, testing, and geomorphological investigations conducted along the 200 miles of the proposed Keystone pipeline project in Nebraska, will be submitted to the Nebraska SHPO and Department of State in December 2006.

Kansas

The entire proposed Keystone pipeline corridor in Kansas will parallel the recently surveyed REX project corridor, therefore, the cultural resources information presented below is taken from the draft REX Phase I survey report prepared for the REX project (Myers et al. 2006a). REX submitted the draft survey report to the Kansas SHPO in May 2006. In a letter dated June 12, 2006, the Kansas SHPO concurred with the findings in the draft survey report (Weston 2006a). The REX Phase I survey report and concurrence letter are being submitted to the Department of State.

In November 2005, American Resources Group, Ltd. (ARG) prepared a research design for the cultural resources field inventory to be conducted along the proposed REX pipeline route in Kansas (ARG 2005). ARG developed the research design in consultation with the Kansas SHPO. The sampling strategy proposed in the research design included a probabilistic survey of a random transect of the proposed route through Kansas. Those areas to be surveyed were identified through a literature and files search, an examination of the site distribution patterns documented by previous archaeological research conducted in the region, past geomorphological investigations in the project area, and topographic map review. Approximately 36 miles of the approximately 99-mile route in Kansas were selected for intensive field survey. In a letter dated December 14, 2005, the Kansas SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Weston 2005). The research design and SHPO concurrence letter are being submitted to the Department of State.

During the week of November 14, 2005, ARG conducted a literature and files search of an area two miles wide, centered on the proposed pipeline centerline through the Kansas State Historical Society's website. Historic maps, atlases, and GLO plats also were consulted in order to identify potential historic sites within the pipeline corridor. The literature and files search identified 29 previously documented cultural resources within the two-mile-wide study corridor; however, none of the sites were located within 500 feet of the proposed pipeline centerline. The identified cultural resources included 24 prehistoric sites, two historic sites, and three multi-component sites. Review of the historic maps, GLO plats, and atlases indicated the presence of 87 potential historic sites within the proposed pipeline corridor. The sites included a variety of potential site types, including farmsteads, rural households, roads, railroads, and towns.

Based on review of USGS topographic maps of the proposed route, 25 stream valley locations on 23 different drainages were evaluated as having the potential for containing buried cultural features; therefore, they were selected for geomorphological investigations. Five of the selected drainages are rivers: Big Blue River, South Fork Big Nemaha River, Middle Fork Wolf River, Missouri River, and Delaware River. Nineteen of the remaining drainages are perennial streams and one is an intermittent creek. The geomorphological

investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

Results of Field Investigations

As stated above, the proposed Keystone pipeline corridor in Kansas will parallel the recently surveyed REX pipeline corridor. The REX cultural resources field surveys consisted of close inspection of a 200-foot-wide corridor within selected survey areas. The proposed REX pipeline corridor parallels an existing pipeline, therefore, the edge of the 200-foot-wide survey corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 160 feet from the centerline on the other side. The proposed Keystone pipeline centerline will be located approximately 40 feet from the REX pipeline centerline and within the 160-foot surveyed area. Any ground-disturbing activities associated with construction of the proposed Keystone project will be within the 160-foot-wide surveyed corridor. For any pipeline facilities that fall outside of the survey corridor (e.g., extra workspace areas), additional cultural resource field surveys will be conducted at those locations in early 2007. Approximately one mile of selected survey areas in Kansas was not surveyed due to lack of survey access.

As a result of the field surveys, 23 cultural resource sites were identified in the survey corridor. These included prehistoric field camps and limited activity sites, historic farmsteads, and debris scatters. Three prehistoric sites were recommended as potentially eligible for the NRHP. Avoidance or evaluative testing in order to make a definitive determination of NRHP eligibility is recommended for these sites. At this time, it is unknown whether or not the sites will be avoided or tested.

In February 2006, geomorphological investigations were conducted at the 25 stream-valley locations identified in the research design. Two of the 25 identified streams were crossed twice by the proposed pipeline corridor; therefore, 27 stream crossings were analyzed. Core samples were taken at all but five crossings. The five crossings were not sampled because they were highly disturbed, lacked Holocene surfaces and/or had a channelized stream. As a result of the core samples, follow-up backhoe trenching is recommended at 12 of the stream crossings. At this time, the schedule for backhoe trenching has not been determined.

Missouri

In Missouri, approximately 172 miles of the proposed 273-mile Keystone pipeline corridor will parallel the recently surveyed REX project corridor, therefore, the cultural resources information presented below for the proposed Keystone pipeline project in Missouri includes data found in the draft REX Phase I survey report prepared for the REX project (Myers et al. 2006b). REX submitted the draft survey report to the Missouri SHPO in May 2006. In a letter dated May 31, 2006, the Missouri SHPO concurred with the findings in the draft survey report (Miles 2006a). The REX Phase I survey report and concurrence letter will be included in the November 15, 2006 submittal.

In January 2006, ARG prepared a research design for the cultural resources field inventory conducted along the proposed route in Missouri (ARG 2006a). ARG developed the research design in consultation with the Missouri SHPO. The sampling strategy proposed in the research design is the same as described above for the proposed route in Kansas with the exception of the number of miles selected for the intensive pedestrian field survey. Approximately 154 miles of the 273-mile proposed route in Missouri were selected for intensive field survey. In a letter dated March 15, 2006, the Missouri SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Miles 2006b). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

During January and February 2006, ARG conducted a literature and files search of an area two miles wide centered on the proposed pipeline centerline through the Archaeological Survey of Missouri. Historic maps, atlases, and GLO plats also were consulted in order to identify potential historic sites within the proposed pipeline corridor. The literature and files search identified 72 previously documented cultural resources within

the two-mile-wide study corridor. Forty-nine of the 72 cultural resources were identified within 0.25 mile of the proposed pipeline centerline.

The 49 cultural resources previously documented within 0.25 mile of the proposed pipeline corridor include prehistoric lithic scatters, camps, habitation areas, mounds, and historic debris scatters and farmsteads. Review of the historic maps, GLO plats, and atlases indicated the presence of 169 potential historic sites within the proposed pipeline corridor. The sites included 155 structures (i.e., homesteads and farmsteads), six schools, one church, three cemeteries, one barn, two railroad sidings/stations, and one post office. In addition to the 169 individual potential historic sites, a six-mile-long section of the proposed pipeline corridor lies within the 1830s Allred and Log Creek Mormon settlements and an approximate two-mile-long area was inhabited in part by Bohemian settlers in the 19th Century.

Based on review of USGS topographic maps of the proposed route, 52 stream valley locations on 49 different drainages were evaluated as having the potential for containing buried cultural features, therefore, they were selected for geomorphological investigations. Eleven of the selected drainages are rivers: Missouri River, Platte River, Little Platte River, Grand River, Mussel Fork River, Chariton River, Middle Fork Little Chariton River, East Fork Little Chariton River, South Fork Salt River, West Fork Cuivre River, and Mississippi River. All of the remaining drainages are perennial streams. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

Results of Field Investigations

As stated above, the proposed Keystone pipeline corridor in Missouri will parallel the recently surveyed REX pipeline corridor for approximately 172 miles. The REX cultural resources field survey consisted of close inspection of a 200-foot-wide corridor within selected survey areas. The proposed REX pipeline corridor parallels an existing pipeline, therefore, the edge of the 200-foot-wide survey corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 160 feet from the centerline on the other side. The proposed Keystone pipeline centerline will be located approximately 40 feet from the REX pipeline centerline and within the 160-foot surveyed area. Any ground-disturbing activities associated with construction of the proposed Keystone project will be within the 160-foot-wide surveyed corridor. For any pipeline facilities that fall outside of the survey corridor (e.g., extra workspace areas), additional cultural resource field surveys will be conducted at those locations in early 2007.

The remaining approximately 100 miles of the proposed Keystone pipeline corridor in Missouri parallels an existing pipeline. Survey within selected survey areas included close inspection of a 200-foot-wide corridor. The edge of the 200-foot-wide survey corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 160 feet from the centerline on the other side. At this time, approximately 42 miles of selected survey areas in Missouri remain to be surveyed.

To date, 55 cultural resource sites have been located within the 200-foot-wide survey corridor. These include prehistoric field camps and limited activity sites, and historic farmsteads. Seventeen are prehistoric sites that are potentially eligible for the NRHP. Avoidance or evaluative testing was recommended for these 17 potentially eligible sites. Five of the sites are located along the segment of the proposed pipeline route that parallels the REX pipeline. At this time, it is unknown whether or not these five sites will be avoided by reroutes or tested. For 11 of the sites, avoidance was not feasible, therefore, in September 2006, evaluative testing was started at eight of the 11 sites. As a result of the testing, five of the eight sites were determined not eligible for listing on the NRHP; testing is ongoing at the remaining three sites. Testing at three of the 11 sites will begin once access is obtained from the landowners. The remaining potentially eligible site recently was located during field surveys. It is not known at this time whether the site can be avoided by a reroute. If avoidance is not feasible, the site will be tested.

Geomorphological investigations were conducted at the 52 stream-valley locations identified in the research design. Core samples were taken at 38 crossings; core sampling at the remaining locations is ongoing. To

date, follow-up backhoe trenching is recommended at 18 of the stream crossings as a result of the core sampling. At this time, the schedule for the backhoe trenching has not been determined.

A preliminary report on the field surveys and evaluative testing conducted to date as part of the proposed Keystone pipeline project was submitted to the Missouri SHPO on October 17, 2006, and is being provided to the Department of State.

Illinois

In January 2006, ARG prepared a research design for the cultural resources field inventory conducted along the proposed route in Illinois (ARG 2006b). ARG developed the research design in consultation with the Illinois SHPO. The survey strategy proposed in the research design included an intensive field survey and geomorphological investigations of the entire 56 miles of proposed route in Illinois. In a letter dated May 18, 2006, the Illinois SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Haaker 2006). The research design and SHPO concurrence letter were included in the September 15, 2006 submittal.

During the week of January 5, 2006, ARG conducted a literature and files search of an area two miles wide centered on the proposed pipeline centerline, through the Illinois Historic Preservation Agency (IHPA). Historic maps and atlases also were examined in order to identify potential historic sites within the proposed pipeline corridor. Due to the large number of sites located within the two-mile-wide study corridor, only those sites within 0.25 mile of the proposed pipeline centerline are discussed here. The literature and files search identified 49 previously documented cultural resources within 0.25 mile of the proposed pipeline centerline; 20 of these extend into the proposed pipeline corridor. The majority of the previously documented sites were recorded more than 30 years ago, therefore, there is little available information for many of the sites.

Of the 20 cultural resources located within 0.25 mile of the proposed pipeline centerline, 17 are prehistoric sites, one is a historic site, and two are of unknown age or cultural affiliation. Review of historic maps indicated the presence of 45 potential historic sites within the proposed pipeline corridor. These included 42 structures, two schools, and one church and cemetery. In addition to reviewing the historic maps, early 19th Century GLO plats were examined in order to determine if any cultural features are present in the proposed pipeline corridor; however, none were identified.

Based on review of USGS topographic maps of the proposed route, 18 stream valley locations were evaluated as having the potential for containing buried cultural features, therefore, they were selected for geomorphological investigations. Two of the selected stream valleys are rivers: Mississippi River and Kaskaskia River. Thirteen of the remaining drainages are perennial streams and three are intermittent tributaries. The geomorphological investigations entailed visiting the identified locations and testing the soil with a sampling tube. For those areas that produced evidence of buried cultural deposits, the location will be further evaluated using backhoe trenching.

Results of Field Investigations

The entire length of the proposed Keystone pipeline corridor in Illinois parallels an existing pipeline. Field survey included close inspection of a 200-foot-wide corridor along the proposed pipeline route. The edge of the 200-foot-wide survey corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 160 feet from the centerline on the other side. Approximately eight miles in Illinois remain to be surveyed.

To date, 33 cultural resource sites and one isolated find have been located within the 200-foot-wide survey corridor. These included prehistoric field camps and limited activity sites, historic farmsteads, and debris scatter. Of these, 10 are prehistoric sites that are potentially eligible for the NRHP. Avoidance or evaluative testing was recommended for the 10 potentially eligible sites. Two of the 10 sites may be avoided by rerouting the proposed pipeline centerline, therefore, testing is on hold until the reroutes are confirmed.

Avoidance was not feasible for the remaining eight sites, therefore, in September 2006, evaluative testing was started at the eight sites. As a result of the testing, one of the sites was determined eligible for listing on the NRHP, three of the sites were determined not eligible for the NRHP, and eligibility of the remaining four sites is pending completion of the testing.

Core sampling at the 18 stream-valley locations identified in the research design is currently ongoing. Results of the coring are being submitted to the Department of State.

A preliminary survey report, which will include the results of the field surveys, testing, and geomorphological investigations, will be submitted to the Illinois SHPO and Department of State in December 2006.

CUSHING EXTENSION

Nebraska

In February 2006, SWCA prepared a research design for the cultural resources field inventory to be conducted along the Nebraska segment of the proposed Cushing Extension (SWCA 2006b). The cultural resources investigations to be conducted along the proposed extension will be the same as described above for the proposed mainline route in Nebraska. In a letter dated March 8, 2006, the Nebraska SHPO concurred with the proposed cultural resources inventory protocol as defined in the research design developed for the Nebraska segment of the proposed Keystone pipeline project (Steinacher 2006b). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

In March 2006, SWCA conducted a literature and files search of an area two miles wide centered on the proposed pipeline centerline through the Nebraska SHPO. As a result of the literature and files search, one previously documented archaeological site was identified within the two-mile-wide study corridor. The site was identified as a historic water-powered mill built around 1881.

Results of Field Investigations

Approximately two miles of the proposed Cushing Extension will cross Nebraska. At this time, cultural resources field surveys and geomorphological investigations have not been conducted along this segment of the proposed extension. It is anticipated that field surveys and geomorphological investigations will start in February 2007, weather permitting, and be completed by summer 2007. Results of the field surveys and geomorphological investigations will be documented in a survey report and submitted to the Nebraska SHPO and Department of State.

Kansas

In March 2006, ARG prepared a research design for the cultural resources inventory and geomorphological investigations to be conducted along the Kansas segment of the proposed Cushing Extension (ARG 2006c). The inventory and geomorphological investigations proposed in the research design are the same as those described above for the proposed mainline route through Kansas with the exception of the number of miles recommended for intensive pedestrian field survey and number of stream valley locations identified for geomorphological investigations. Approximately 85 miles of the approximately 210-mile pipeline extension in Kansas have been selected for an intensive pedestrian field survey and 39 stream valley locations have been selected for geomorphological investigations. In a letter dated March 17, 2006, the Kansas SHPO concurred with the proposed cultural resources inventory protocol as defined in the research design (Weston 2006b). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

ARG conducted a literature and files search of an area two miles wide centered on the proposed pipeline centerline through the Kansas State Historic Society's website during the week of February 20, 2006. The 1887 atlas of the state of Kansas and mid-19th Century GLO plats also were consulted in order to identify potential historic sites within the proposed pipeline corridor. The literature and files search identified

66 previously documented cultural resources within the two-mile-wide study corridor; eight of the resources are within 500 feet of the proposed pipeline centerline. The eight cultural resources include a historic village, camp, and artifact scatter, and five prehistoric camps/sites. Review of the GLO plats and state atlas indicated the presence of 29 potential historic sites within and adjacent to the proposed pipeline corridor. The sites include seven schools, one church, two cemeteries, six towns, two mills, and 11 roads.

A number of important historic trails spanned northeastern Kansas, many of which played important roles in facilitating western expansion in the mid-19th Century. Two of these trails will be crossed by the proposed Cushing Extension: Mormon Trail and Santa Fe and Westport Road (Santa Fe Trail). Prior to the Civil War, Westport, which is located near present-day Kansas City, was a popular shipping and travel stop on the route to Santa Fe. The Gold Rush of the late 1840s to 1850 increased the importance of Westport as an outfitting and trade port. In the 1850s, Mormon emigrants traveled to the Kansas Territory and stopped at Westport to purchase wagons, oxen, and supplies for the trip across the plains to Utah.

Results of Field Investigations

Approximately 210 miles of the proposed Cushing Extension will cross Kansas. At this time, cultural resources field surveys and geomorphological investigations have not been conducted along this segment of the proposed extension. It is anticipated that field surveys and geomorphological investigations of selected survey areas will start in February 2007, weather permitting, and be completed by summer 2007. The results of the field surveys and geomorphological investigations will be documented in a survey report and submitted to the Kansas SHPO and Department of State.

Oklahoma

In February 2006, GeoMarine, Inc. prepared a research design for the cultural resources inventory and geomorphological investigations to be conducted along the Oklahoma segment of the proposed Cushing Extension (Jones and Kuehn 2006). The research design was developed in consultation with the Oklahoma SHPO. Preparation of the research design involved the identification of previously recorded sites and previously conducted inventories in the vicinity of the proposed pipeline corridor, a geomorphological reconnaissance along the proposed route, construction of a GIS layer including topographic features, and probability modeling. In a letter dated March 28, 2006, the Oklahoma SHPO concurred with the proposed cultural resources survey protocol as defined in the research design (Brooks 2006). The research design and SHPO concurrence letter are included in the September 15, 2006 submittal.

GeoMarine conducted a literature and files search of an area one mile wide centered on the proposed pipeline centerline through the Oklahoma SHPO, Oklahoma Archaeological Survey (OAS), and the NRHP database for Kay, Noble, Osage, Payne, and Pawnee counties. GLO maps currently on microfiche also were examined. The literature and files search identified 61 cultural resources in the one-mile-wide study corridor; 16 of the resources are located with 250 feet of the proposed pipeline centerline. Of the 16 cultural resources, two are prehistoric lithic scatters, four are prehistoric open habitation sites, one is a prehistoric open camp, six are historic farmsteads, one is a historic homestead and associated scatter, one consists of historic stone mounds/rock piles, and one is an original aircraft maintenance site. No GLO structures were identified in or near the proposed pipeline corridor.

On February 22 through 24, 2006, GeoMarine conducted a geomorphological windshield reconnaissance along the proposed route for the purposes of assessing the potential for buried cultural resources, to identify areas of heavy cultural disturbance, and identify areas that may require backhoe trenching. Access to the proposed route was not obtained at the time of the reconnaissance, therefore, the reconnaissance consisted of driving state, county, and local farm roads with the goal of intersecting the proposed route as frequently as possible. As a result of the geomorphological reconnaissance, 15 areas were identified as having "good" potential for buried archaeological sites, 14 were identified as having "good to fair" potential, 25 were identified

as having "fair" potential, and 20 areas along the proposed route were identified as having "poor" potential for buried archaeological sites.

Thirteen of the 15 areas identified during the geomorphological reconnaissance as having "good" potential for buried archaeological sites are recommended for backhoe trenching. These areas correspond with the floodplains of Bois d' Arc Creek, the Salt Fork River, Red Rock Creek, Black Bear Creek, Long Branch Creek, and Cimarron River. The total number of miles recommended for backhoe trenching is approximately 9.4 miles or 11.8 percent of the total distance of the proposed Cushing Extension in Oklahoma.

Based on the results of the literature and files search and geomorphological reconnaissance, an intensive cultural resources field inventory is recommended for the entire approximately 80 miles of the proposed Cushing Extension in Oklahoma. The intensive field inventory will consist of close inspection of a 300-foot-wide corridor centered on the proposed pipeline centerline. Shovel testing is recommended along moderate probability segments (approximately 16.5 miles) of the proposed pipeline corridor. Moderate probability segments are defined as those areas that are within 650 feet of a previously identified site and/or 1,312 feet of a secondary tributary crossing. During the field inventory, the field archaeologist may recommend additional shovel testing in other areas.

Results of Field Investigations

Approximately 80 miles of the proposed Cushing Extension will cross Oklahoma. At this time, cultural resources field surveys have not been conducted along this segment of the proposed extension. It is anticipated that field surveys will start in February 2007, weather permitting, and be completed by summer 2007. Results of the field surveys will be documented in a survey report and submitted to the Oklahoma SHPO and Department of State.

3.10 Native American Consultation

Various federal statutes require consultation with Native American tribes concerning the identification of cultural values, religious beliefs, and traditional practices of Native American people that may be affected by federally approved actions. These federal statutes are interrelated regarding Native American consultation and include Section 106 NHPA of 1966, as amended; EO 13007; The AIRFA of 1978; and the NAGPRA of 1990.

Section 106 of NHPA requires all federal agencies to take into account the effects of their actions on historic properties and provide the Advisory Council on Historic Preservation (ACHP) with an opportunity to comment on those actions and the manner in which federal agencies are taking historic properties into account in their decisions.

EO 13007 requires federal agencies to accommodate access to and ceremonial use of Native American sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

AIRFA established federal policy of protecting and preserving the inherent right of individual Native Americans to believe, express, and exercise their traditional religions. The legislation established that laws passed for other purposes were not meant to restrict the rights of Native Americans.

NAGPRA established a means for Native Americans, including Indian Tribes, to request the return of human remains and other sensitive cultural items held by federal agencies or federally assisted museums or institutions. NAGPRA also contains provisions regarding the intentional excavation and removal of, inadvertent discovery of, and illegal trafficking in Native American human remains and sensitive cultural items.

Consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to Native American tribes. Places that may be of traditional cultural importance to Native American people include, but are not limited to, locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken. Additionally, some of these locations may be considered sacred to particular Native American individuals or tribes. The Department of State must take into account the effects of the proposed Keystone Project on these types of locations.

If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a traditional cultural property (TCP). The term "traditional cultural property" first came into use within the federal legal framework for historic preservation and cultural resource management in an attempt to categorize historic properties containing traditional cultural significance. National Register Bulletin 38: *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1989) defines a TCP as "one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identify of the community." To qualify for nomination to the NRHP, a TCP must be more than 50 years old, must be a place with definable boundaries, must retain integrity, and meet certain criteria as outlined in National Register Bulletin 15 (NPS 1995).

KEYSTONE MAINLINE

In compliance with the above-mentioned federal laws, Metcalf and ARG initiated Native American consultation by sending letters to the Native American tribes listed below. These tribes were identified as potentially falling within the consultation requirements of the above discussed statutes. The letters were sent to inform the

various tribes of the proposed undertaking and solicit their concerns regarding the possible presence of properties of cultural, religious, and/or traditional importance to the tribes in the proposed project area. **Table 3.10-1** lists the Native American tribes that have been contacted and the status of consultation.

Table 3.10-1 Keystone Tribal Contact List

State	Tribe	Date of Contact	Status
Illinois	Peoria Tribe of Indians of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Iowa Tribe of Kansas and Nebraska	June 13, 2006	No reply at this time.
Missouri	Iowa Tribe of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Sac and Fox of the Missouri in Kansas and Nebraska	June 13, 2006	No reply at this time.
Missouri	Sac and Fox Nation of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Sac and Fox Tribe of the Mississippi in Iowa	June 13, 2006	No reply at this time.
Missouri	Choctaw Nation of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Jena Band of Choctaw Indians	June 13, 2006	No reply at this time.
Missouri	Eastern Shawnee Tribe of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Miami Tribe of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Muscogee (Creek) Nation of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Kaw Indian Tribe of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Delaware Nation	June 13, 2006	No reply at this time.
Missouri	Cherokee Nation of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Quapaw Tribe of Oklahoma	June 13, 2006	No reply at this time.
Missouri	Absentee-Shawnee Tribe of Indians of Oklahoma	June 13, 2006	No reply at this time.
Nebraska	Omaha Tribe of Nebraska and Iowa	June 14, 2006	No reply at this time.
Nebraska	Pawnee Nation of Oklahoma	June 14, 2006	No reply at this time.
Nebraska	Santee Sioux Nation	June 14, 2006	No reply at this time.
Nebraska	Delaware Nation	June 14, 2006	No reply at this time.
Nebraska	Iowa Tribe of Kansas and Nebraska	June 14, 2006	No reply at this time.
Nebraska	Iowa Tribe of Oklahoma	June 14, 2006	No reply at this time.
Nebraska	Kaw Indian Tribe of Oklahoma	June 14, 2006	No reply at this time.
Nebraska	Ponca Tribe of Nebraska	June 14, 2006	No reply at this time.
Nebraska	Sac and Fox of the Missouri in Kansas and Nebraska	June 14, 2006	No reply at this time.
Nebraska	Sac and Fox Nation of Oklahoma	June 14, 2006	No reply at this time.
Nebraska	Sac and Fox Tribe of the Mississippi in Iowa	June 14, 2006	No reply at this time.
Nebraska	Winnebago Tribe	June 14, 2006	No reply at this time.
Nebraska	Otoe-Missouria Tribe of Indians, Oklahoma	June 14, 2006	No reply at this time.
North Dakota	Three Affiliated Tribes	June 13, 2006	On July 6, 2006, Elgin Crows Breast and Calvin Grinnel of the Three Affiliated Tribes contacted Metcalf Archaeological Consultants. See below for expanded discussion.
North Dakota	Spirit Lake	June 13, 2006	No reply at this time.
North Dakota	Standing Rock Sioux	June 13, 2006	No reply at this time.
North Dakota	Turtle Mountain Chippewa	June 13, 2006	No reply at this time.

Table 3.10-1 Keystone Tribal Contact List

State	Tribe	Date of Contact	Status
South Dakota	Cheyenne River	June 13, 2006	No reply at this time.
South Dakota	Flandreau Santee Sioux Tribe	June 13, 2006	No reply at this time.
South Dakota	Oglala Sioux	June 13, 2006	No reply at this time.
South Dakota	Rosebud Sioux	June 13, 2006	No reply at this time.
South Dakota	Yankton Sioux	June 13, 2006	No reply at this time.
South Dakota	Sisseton-Wahpeton Oyate	June 13, 2006	On August 14, 2006, James Whitted of the Sisseton Tribal Historic Preservation Office contacted Metcalf Archaeological Consultants. See below for expanded discussion.
South Dakota	Crow Creek Sioux	June 13, 2006	No reply at this time.
South Dakota	Lower Brule Sioux	June 13, 2006	No reply at this time.
Montana tribes with traditional ties to the project area	Crow	June 13, 2006	No reply at this time.
Montana	Fort Peck	June 13, 2006	No reply at this time.
Montana	Northern Cheyenne	June 13, 2006	No reply at this time.

Currently, two of the tribes (Three Affiliated Tribes and Sisseton-Wahpeton Oyate) have responded to the consultation letters. On July 6, 2006, Elgin Crows Breast and Calvin Grinnel of the Three Affiliated Tribes (Fort Berthold Indian Reservation) telephoned Metcalf Archaeological Consultants regarding the proposed project and left a message. The tribe wanted to know if they would be reimbursed for per diem and travel expenses. There was no mention of a site visit or request for additional information. Subsequently, the Department of State has indicated that it will conduct further tribal consultations; Keystone forwarded all information regarding its tribal consultation activities to the Department of State on September 15, 2006. On August 14, 2006, James Whitted of the Sisseton Tribal Historic Preservation Office contacted Metcalf Archaeological Consultants to discuss the proposed project. Mr. Whitted was informed of two possible cairns located in South Dakota and that avoidance of these sites was recommended. He appreciated the information regarding avoidance of these sites and requested a visit to the sites prior to construction and to possibly monitor the sites during construction. Additionally, Mr. Whitted would like to get copies of the survey report and site forms when available, and updates on pipeline progress from time to time. He was told that his concerns would be forwarded to the appropriate people.

CUSHING EXTENSION

The following is a list of the Native American tribes that Keystone will contact regarding cultural resource field surveys prior to their start along the proposed extension:

- Cheyenne-Arapaho Tribes of Oklahoma
- Delaware
- Iowa Tribe of Kansas and Nebraska
- Iowa Tribe of Oklahoma
- Kansa
- Kickapoo Tribe of Indians
- Omaha Tribe of Oklahoma
- Osage Nation

- Otoe-Missouria Tribe of Indians
- Pawnee Indian Tribe of Oklahoma
- Sac & Fox Nation of Oklahoma
- Sac & Fox Tribe of Missouri in Kansas and Nebraska
- Sac & Fox Tribe of the Mississippi Iowa
- Stockbridge-Munsee Tribe
- United Keetoowah Band of Cherokee
- Wichita and Affiliated Tribes
- Caddo Nation
- Cherokee Nation
- Kaw Nation
- Osage Nation
- Otoe-Missouria Tribe of Indians, Oklahoma
- Iowa Tribe of Oklahoma
- Pawnee Nation of Oklahoma
- Ponca Tribe of Indians of Oklahoma
- Tonkawa Tribe of Indians of Oklahoma
- Wichita and Affiliated Tribes

3.11 Social and Economic Conditions

The proposed Keystone Mainline route crosses 48 counties in six states: North Dakota, South Dakota, Nebraska, Kansas, Missouri, and Illinois. The Cushing Extension would add 10 counties in the states of Kansas and Oklahoma. Counties crossed are listed by state in **Table 3.11-1**.

Table 3.11-1 States and Counties Crossed by the Keystone Pipeline Project

State	Number of Counties	Counties
KEYSTONE MAINLINE		
North Dakota	9	Cavalier, Pembina, Walsh, Nelson, Steele, Barnes, Ransom, Sargent, and Dickey
South Dakota	11	Brown, Marshall, Day, Clark, Beadle, Kingsbury, Miner, Hanson, McCook, Hutchinson, and Yankton
Nebraska	10	Cedar, Wayne, Stanton, Platte, Colfax, Butler, Seward, Saline, Jefferson, and Gage
Kansas	4	Marshall, Nemaha, Brown, and Doniphan
Missouri	10	Buchanan, Clinton, Caldwell, Carroll, Chariton, Randolph, Audrain, Montgomery, Lincoln, and St. Charles
Illinois	4	Madison, Bond, Fayette, and Marion
CUSHING EXTENSION		
Nebraska[1]	1	Jefferson
Kansas	6	Washington, Clay, Dickinson, Marion, Butler, and Cowley
Oklahoma	4	Kay, Noble, and Payne

[1]*Addressed in Keystone Mainline.*

A list of communities that may be affected by the proposed project and their respective year 2000 population statistics are shown in **Table 3.11-2**. This list identifies all communities within one-half and two miles of the project.

3.11.1 Population, Employment, and Income

Table 3.11-3 summarizes the population, unemployment rate, and income trends in the counties crossed by the proposed route. The proposed route lies in predominantly rural and sparsely populated areas, with population densities generally ranging from approximately three to 50 people per square mile for the majority of the route. Exceptions to this include Buchanan County, Missouri, which includes the St. Joseph metropolitan area; two Missouri and one Illinois counties in the greater St. Louis metropolitan area; Marion County, Illinois, and Payne County, Oklahoma, on the Cushing Extension, which includes the Stillwater metropolitan area.

In general, populations in affected counties in North Dakota, South Dakota, and Kansas have declined from 1990 to 2000, with North Dakota experiencing the greatest overall loss. The only county in South Dakota with substantial increase in population was Yankton County, which also is the most densely populated county. In contrast, populations in affected counties in Nebraska, Missouri, and Illinois generally have increased from 1990 to 2000, with the greatest overall increase experienced in Missouri, particularly in the two counties in the greater St. Louis metropolitan area.

Table 3.11-2 Affected Communities Along the Keystone Pipeline Project

State / Community[2]	County	Relative Proximity to Project (miles)	Population (2000)
KEYSTONE MAINLINE			
NORTH DAKOTA			
Lankin	Walsh	0.5	131
Walhalla	Pembina	2	1,057
Sharon	Steele	2	109
Fort Ransom	Ransom	2	70
Niagara	Grand Forks	2	57
Sibley	Barnes	2	46
Luverne	Steele	2	44
SOUTH DAKOTA			
Yankton	Yankton	0.5	13,528
Iroquios	Kingsbury	0.5	278
Raymond	Clark	0.5	86
Roswell	Miner	0.5	21
Emery	Hansen	2	439
Carthage	Miner	2	187
Spencer	McCook	2	157
NEBRASKA			
Leigh	Colfax	0.5	442
Richland	Colfax	0.5	89
Garrison	Butler	0.5	67
Sholes	Wayne	0.5	24
Seward	Seward	2	6,319
Stanton	Stanton	2	1,627
Randolph	Cedar	2	955
Dorchester	Saline	2	615
Plymouth	Jefferson	2	477
Bellwood	Butler	2	446
Hoskins	Wayne	2	283
Staplehurst	Seward	2	270
Fordyce	Cedar	2	182
Swanton	Saline	2	106
Steele City	Jefferson	2	84
Harbine	Jefferson	2	56
KANSAS			
Seneca	Nemaha	2	2,122
Fairview	Brown	2	271
Denton	Doniphan	2	186
Severance	Doniphan	2	108
Oketo	Marshall	2	87
Oneida	Nemaha	2	70
MISSOURI			
Troy	Lincoln	0.5	6,737
Moscow Mills	Lincoln	0.5	1,742

Table 3.11-2 Affected Communities Along the Keystone Pipeline Project

State / Community[2]	County	Relative Proximity to Project (miles)	Population (2000)
Salisbury	Chariton	0.5	1,726
Agency	Buchanan	0.5	599
West Alton	St. Charles	0.5	573
Keytesville	Chariton	0.5	533
Cowgill	Caldwell	0.5	247
Renick	Randolph	0.5	221
Chain of Rocks	Lincoln	0.5	91
St. Joseph	Buchanan	2	73,990
St. Charles	St. Charles	2	60,321
St. Peters	St. Charles	2	51,381
Moberly	Randolph	2	11,945
Mexico	Audrain	2	11,320
St. Paul	St. Charles	2	1,634
Gower	Buchanan	2	1,399
Polo	Caldwell	2	582
Bosworth	Carroll	2	382
Portage Des Sioux	St. Charles	2	351
Old Monroe	Lincoln	2	250
Tina	Carroll	2	193
Turney	Clinton	2	155
Fountain N' Lakes	Lincoln	2	129
Truxton	Lincoln	2	96
Triplett	Chariton	2	64
Cave	Lincoln	2	7
ILLINOIS			
Edwardsville	Madison	0.5	21,491
Highland	Madison	0.5	8,438
South Roxana	Madison	0.5	1,888
Roxana	Madison	0.5	1,547
Hartford	Madison	0.5	1,545
Pocahontas	Bond	0.5	727
Grantfork	Madison	0.5	254
Vernon	Marion	0.5	178
Granite City	Madison	2	31,301
Alton	Madison	2	30,496
Godfrey	Madison	2	16,286
Wood River	Madison	2	11,296
East Alton	Madison	2	6,830
Patoka	Marion	2	633
CUSHING EXTENSION			
NEBRASKA			
Steele City[3]	Jefferson	2	84
KANSAS			
Towanda	Butler	0.5	1,338

Table 3.11-2 Affected Communities Along the Keystone Pipeline Project

State / Community[2]	County	Relative Proximity to Project (miles)	Population (2000)
Chapman	Dickinson	0.5	1,241
Potwin	Butler	0.5	457
Greenleaf	Washington	0.5	357
Hollenberg	Washington	0.5	31
Winfield	Cowley	2	12,206
Arkansas City	Cowley	2	11,963
Augusta	Butler	2	8,423
Marion	Marion	2	2,110
Douglass	Butler	2	1,813
Washington	Washington	2	1,223
Wakefield	Clay	2	838
Hope	Dickinson	2	372
Green	Clay	2	147
Ramona	Marion	2	94
OKLAHOMA			
Ponca City	Kay	0.5	25,919
Cushing	Payne	0.5	8,371
Newkirk	Kay	2	2,243
Morrison	Noble	2	636
Marland	Noble	2	280

[1]Affected communities include those communities where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]Communities are listed in order by state as the proposed project crosses from north to south, proximity to proposed project centerline, and descending size based on year 2000 population.

[3]Addressed in Keystone Mainline.

Sources: Census 2000; ESRI 2005.

Table 3.11-3 Socioeconomic Conditions in Affected Counties[1] Along the Keystone Pipeline Project

State / County[2]	Population 1990	Population 2000	% Change in Population 1990-2000	Population Density (per square mile) 2000	Per Capita Personal Income ($) 1999	Median Household Income ($) 1999	Unemployment Rate (%) November 2005
KEYSTONE MAINLINE							
NORTH DAKOTA	**639,005**	**642,200**	**0.5**	**9.3**	**$17,169**	**$34,604**	**4.6**
Cavalier	6,061	4,831	-20.3	3.2	15,817	31,868	2.9
Pembina	9,241	8,585	-7.1	7.7	18,692	36,430	5.9
Walsh	13,842	12,389	-10.5	9.7	16,496	33,845	4.3
Nelson	4,412	3,715	-15.8	3.8	16,320	28,892	3.0
Steele	2,420	2,258	-6.7	3.2	17,601	35,757	2.0
Barnes	12,540	11,775	-6.1	7.9	16,566	31,166	2.5
Ransom	5,920	5,890	-0.5	6.8	18,219	37,672	2.4
Sargent	4,548	4,366	-4.0	5.1	18,689	37,213	2.0
Dickey	6,105	5,757	-5.7	5.1	15,846	29,231	2.3
SOUTH DAKOTA	**695,709**	**754,844**	**8.5**	**9.9**	**$17,562**	**$35,282**	**4.4**
Brown	35,567	35,460	-0.3	20.7	18,464	35,017	2.8
Marshall	4,842	4,576	-5.5	5.5	15,462	30,567	5.0
Day	6,979	6,267	-10.2	6.1	15,856	30,227	5.5
Clark	4,403	4,143	-5.9	4.3	15,597	30,208	4.9
Beadle	18,245	17,023	-6.7	13.5	17,832	30,510	4.6
Kingsbury	5,928	5,815	-1.9	6.9	16,522	31,262	3.9
Miner	3,274	2,884	-11.9	5.1	15,155	29,519	4.9
Hanson	2,995	3,139	4.8	7.2	14,778	33,049	3.1
McCook	5,690	5,832	2.5	10.2	16,374	35,396	3.5
Hutchinson	8,265	8,075	-2.3	9.9	15,922	30,026	3.9
Yankton	19,246	21,652	12.5	41.5	17,312	35,374	3.5
NEBRASKA	**1,578,656**	**1,711,263**	**8.4**	**22.3**	**$19,613**	**$39,250**	**3.5**
Cedar	10,132	9,615	-5.1	13.0	15,515	33,435	2.4
Wayne	9,364	9,851	5.2	22.2	14,644	32,366	2.5
Stanton	6,243	6,455	3.4	15.0	15,511	36,676	3.2
Platte	29,814	31,662	6.2	46.7	18,064	39,359	3.3
Colfax	9,143	10,441	14.2	25.3	15,148	35,849	2.5
Butler	8,604	8,767	1.9	15.0	16,394	36,331	3.2

Table 3.11-3 Socioeconomic Conditions in Affected Counties[1] Along the Keystone Pipeline Project

State / County[2]	Population 1990	Population 2000	% Change in Population 1990-2000	Population Density (per square mile) 2000	Per Capita Personal Income ($) 1999	Median Household Income ($) 1999	Unemployment Rate (%) November 2005
Seward	15,446	16,496	6.8	28.7	18,379	42,700	2.7
Saline	12,712	13,843	8.9	24.1	16,287	35,914	2.9
Jefferson	8,762	8,333	-4.9	14.5	18,380	32,629	3.4
Gage	22,788	22,993	0.9	26.9	17,190	34,908	4.2
KANSAS	**2,477,805**	**2,688,418**	**8.5**	**32.9**	**$20,506**	**$40,624**	**4.2**
Marshall	11,702	10,965	-6.3	12.1	17,090	32,089	4.3
Nemaha	10,445	10,717	2.6	14.9	17,121	34,296	3.9
Brown	11,124	10,724	-3.6	18.8	15,163	31,971	4.6
Doniphan	8,135	8,249	1.4	21.0	14,849	32,537	7.1
MISSOURI	**5,119,132**	**5,595,211**	**9.3**	**81.2**	**$19,936**	**$37,934**	**5.3**
Buchanan	83,090	85,998	3.5	209.9	17,882	34,704	5.6
Clinton	16,590	18,979	14.4	45.3	19,056	41,329	5.0
Caldwell	8,382	8,969	7.0	20.9	15,343	31,240	5.6
Carroll	10,747	10,285	-4.3	14.8	15,522	30,643	5.2
Chariton	9,202	8,438	-8.3	11.2	15,515	32,285	5.8
Randolph	24,371	24,663	1.2	51.1	15,010	31,464	4.9
Audrain	23,589	25,853	9.6	37.3	16,441	32,057	5.4
Montgomery	11,353	12,136	6.9	22.6	15,092	32,772	5.4
Lincoln	28,890	38,944	34.8	61.8	17,149	42,592	4.6
St. Charles	212,806	283,883	33.4	506.6	23,592	57,258	3.9
ILLINOIS	**11,435,813**	**12,419,293**	**8.6**	**223.4**	**$23,104**	**$46,590**	**6.0**
Madison	249,221	258,941	3.9	357.2	20,509	41,541	5.0
Bond	14,994	17,633	17.6	46.4	17,947	37,680	5.1
Fayette	20,883	21,802	4.4	30.4	15,357	31,873	5.7
Marion	41,566	41,691	0.3	72.9	17,235	35,227	5.8
CUSHING EXTENSION							
NEBRASKA[3]							
KANSAS	**2,477,805**	**2,688,418**	**8.5**	**32.9**	**$20,506**	**$40,624**	**4.2**
Washington	7,070	6,483	-8.3	7.2	15,515	29,363	4.0
Clay	9,161	8,822	-3.7	13.7	17,939	33,965	4.2

Table 3.11-3 Socioeconomic Conditions in Affected Counties[1] Along the Keystone Pipeline Project

State / County[2]	Population		% Change in Population	Population Density (per square mile)	Per Capita Personal Income ($)	Median Household Income ($)	Unemployment Rate (%)
	1990	2000	1990-2000	2000	1999	1999	November 2005
Dickinson	19,739	19,344	-2.0	22.8	17,180	35,975	4.4
Marion	12,884	13,361	3.7	14.2	16,100	34,500	4.4
Butler	50,580	59,482	17.6	41.7	20,150	45,474	5.8
Cowley	36,919	36,291	-1.7	32.2	17,509	34,406	5.9
OKLAHOMA	**3,145,537**	**3,450,654**	**9.7**	**50.3**	**$17,646**	**$33,400**	**5.3**
Kay	48,080	48,080	0.0	52.3	16,643	30,762	4.7
Noble	11,046	11,411	3.3	15.6	17,022	33,968	3.7
Payne	61,488	68,190	10.9	99.4	15,983	28,733	3.3

[1]Affected counties include those counties where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]States and counties are listed geographically from north to south as proposed project crosses the area.

[3]Addressed in Keystone Mainline.

Sources: Census 2000.

Populations in affected counties along the Cushing Extension have increased on average by approximately 5.7 percent, although four of the six affected counties in Kansas experienced decreases in population from 1990 to 2000. The overall increase in growth occurred because Butler County, Kansas, which includes the Wichita metropolitan area, experienced a significant increase in growth. Populations in all affected counties in Oklahoma remained unchanged or increased.

Average income levels vary throughout the regions, with the lowest 2000 per capita income levels occurring in Wayne County, Nebraska, Hanson County, South Dakota, and Doniphan County, Kansas. The lowest 2000 median household income levels are found in Nelson and Dickey counties in North Dakota, and Miner County, South Dakota. St. Charles County, Missouri, near St. Louis experienced the highest income levels in terms of both per capita income and median household income.

Income levels in affected counties along the Cushing Extension also vary. The lowest year 2000 per capita income level occurred in Washington County, Kansas, and the lowest median household income occurred in Payne County, Oklahoma. Butler County, Kansas, experienced the highest per capita and median household incomes for affected counties along the Cushing Extension.

The most recent civilian unemployment rates (November 2005) were relatively constant throughout the Keystone Mainline project area, ranging from approximately two to seven percent. Steele and Sargent counties in North Dakota experienced the lowest unemployment rate, while Doniphan County, Kansas, had the highest.

Unemployment rates along the Cushing Extension varied from approximately three to six percent with the lowest rate occurring in Payne County, Oklahoma and the highest rate occurring in Cowley County, Kansas.

3.11.2 Infrastructure

3.11.2.1 Housing

Housing availability across the proposed route is a function of the housing stock, recent economic and population growth, the inventory of short-term lodging accommodations, such as recreational vehicle (RV) parks and hotel and motel rooms, and demand for housing from other sources. **Table 3.11-4** summarizes the base housing stock in counties crossed by the project for 2000 and planned development for 2002. Counties in North and South Dakota tended to have the lowest total housing supply and lowest level of new development, while counties in Illinois and Missouri tended to have the highest. The lowest housing supply and growth occurred in Steele County, North Dakota, and Hanson, Miner, and Clark counties in South Dakota. Brown County, South Dakota, had the highest number of total housing units as well as the highest new development in 2002 for these two states.

Table 3.11-4 Housing Assessment for Counties along the Keystone Pipeline Project

State / County[1]	Total Housing Units (2000)	Total Rental Units (2000)	Rental Vacancy Rate (%) (2000)	Building Permits (2002)
KEYSTONE MAINLINE				
NORTH DAKOTA				
Cavalier	2,725	454	17.8	3
Pembina	4,115	902	15.3	3
Walsh	5,757	1,331	12.5	9
Nelson	2,014	373	13.7	4

Table 3.11-4 Housing Assessment for Counties along the Keystone Pipeline Project

State / County[1]	Total Housing Units (2000)	Total Rental Units (2000)	Rental Vacancy Rate (%) (2000)	Building Permits (2002)
Steele	1,231	228	7.9	0
Barnes	5,599	1,574	10.5	15
Ransom	2,604	641	9.5	37
Sargent	2,016	415	13.0	14
Dickey	2,656	779	16.4	1
ND Total in Counties Crossed	**28,717**	**6,697**	**13.0 (avg)**	**86**
SOUTH DAKOTA				
Brown	15,861	5,423	9.0	114
Marshall	2,562	482	15.1	14
Day	3,618	725	14.5	23
Clark	1,880	356	11.5	6
Beadle	8,206	2,731	15.1	48
Kingsbury	2,724	651	10.0	27
Miner	1,408	308	8.1	4
Hanson	1,218	243	4.1	NA
McCook	2,383	512	9.4	33
Hutchinson	3,517	724	6.5	9
Yankton	8,840	2,798	9.7	36
SD Total in Counties Crossed	**52,217**	**14,953**	**10.3 (avg)**	**314**
NEBRASKA				
Cedar	4,200	811	13.4	13
Wayne	3,662	1,278	5.5	10
Stanton	2,452	483	5.0	10
Platte	12,916	3,538	8.8	68
Colfax	4,088	999	8.6	5
Butler	3,901	917	9.7	10
Seward	6,428	1,793	6.2	96
Saline	5,611	1,598	4.8	43
Jefferson	3,942	932	9.4	4
Gage	10,030	2,941	8.7	48
NE Total in Counties Crossed	**57,230**	**15,290**	**8.0 (avg)**	**307**

Table 3.11-4 Housing Assessment for Counties along the Keystone Pipeline Project

State / County[1]	Total Housing Units (2000)	Total Rental Units (2000)	Rental Vacancy Rate (%) (2000)	Building Permits (2002)
KANSAS				
Marshall	4,999	1,047	12.7	6
Nemaha	4,340	821	7.6	11
Brown	4,815	1,342	8.0	2
Doniphan	3,489	886	8.8	9
KS Total in Counties Crossed	**17,643**	**4,097**	**9.3 (avg)**	**28**
MISSOURI				
Buchanan	36,574	11,745	7.4	224
Clinton	7,877	1,627	7.4	185
Caldwell	4,493	853	6.3	0
Carroll	4,897	1,215	10.8	2
Chariton	4,250	817	17.7	4
Randolph	10,740	3,141	18.3	22
Audrain	10,881	2,849	10.5	19
Montgomery	5,726	1,147	10.5	49
Lincoln	15,511	3,010	11.2	186
St. Charles	105,514	19,489	6.1	4,990
MO Total in Counties Crossed	**206,463**	**45,893**	**10.6 (avg)**	**5,681**
ILLINOIS				
Madison	108,942	29,223	8.6	1,575
Bond	6,690	1,342	7.1	59
Fayette	9,053	1,805	8.7	9
Marion	18,022	4,195	7.4	63
IL Total in Counties Crossed	**142,707**	**36,566**	**8.0 (avg)**	**1,706**
Keystone Mainline Subtotal	**504,977**	**123,497**	**10.1 (avg)**	**8,122**
CUSHING EXTENSION				
NEBRASKA[2]				
KANSAS				
Washington	3,142	631	13.0	0
Clay	4,084	973	13.6	20
Dickinson	8,686	2,214	9.9	51

Table 3.11-4 Housing Assessment for Counties along the Keystone Pipeline Project

State / County[1]	Total Housing Units (2000)	Total Rental Units (2000)	Rental Vacancy Rate (%) (2000)	Building Permits (2002)
Marion	5,882	1,153	10.9	44
Butler	23,176	5,327	9.8	408
Cowley	15,673	4,689	12.6	24
KS Total in Counties Crossed	**60,643**	**14,987**	**11.6 (avg)**	**547**
OKLAHOMA				
Kay	21,804	6,117	11.4	32
Noble	5,082	1,268	12.2	6
Payne	29,326	12,680	7.3	167
OK Total in Counties Crossed	**56,212**	**18,287**	**10.3 (avg)**	**205**
Cushing Extension Subtotal	**116,855**	**31,602**	**11.2 (avg)**	**752**
PROJECT TOTAL	**621,832**	**158,549**	**10.3 (avg)**	**8,874**

[1]States and counties are listed geographically from north to south as proposed project crosses area.

[2]Addressed in Keystone Mainline.

NA = Data not available.

Sources: Census 2000a,b.

The greatest housing supply and growth along the route were in Missouri and Illinois, with the majority occurring in counties around the St. Louis, Missouri, and St. Joseph, Missouri, metropolitan areas. Counties throughout central Missouri had the lowest housing supply and development for these two states. Housing supply and new development along the Cushing Extension was lowest in Washington and Clay counties in Kansas and highest in Payne County, Oklahoma, and Butler County, Kansas.

A key indicator of housing availability to meet short-term needs is the number of available rental units. Among the rural counties in the northern portion of the proposed route the number of such units recorded in the 2000 Census was lowest in Steele and Nelson counties in North Dakota and in Hanson, Miner, and Clark counties in South Dakota, all with less than 400 total rental units available. A larger number of rental units was available in the more urban communities, particularly in the more southern portion of the proposed route through Missouri and Illinois near St. Joseph and St. Louis, Missouri. This trend also is true along the proposed Cushing Extension, with the lowest available rental housing occurring in Washington and Clay counties in the more rural northern parts of Kansas and the highest availability occurring near larger metropolitan areas such as Payne County, Oklahoma, near Stillwater.

The most pertinent component of local housing markets for purposes of the Keystone Pipeline Project is the inventory of short-term accommodations. Such accommodations include RV spaces, motel and hotel rooms, and mobile home spaces. In some instances, recreational cabins and seasonal housing for migratory workers also may be available. This data has not yet been collected at this time but will be gathered and assessed as the project progresses in order to determine the best means of accommodating housing needs for pipeline construction crews.

3.11.2.2Public Services and Facilities

Table 3.11-5 outlines selected public services and facilities serving the proposed project area. In general, the public services available are functions of the size and population of the county and the number of larger communities in the county. There are multiple law enforcement providers including the respective state patrols, county sheriffs, local police departments, and special law enforcement services, such as university police. In many instances, mutual aid/cooperative agreements among agencies allow members of one agency to provide support or backup to other agencies in emergency situations.

A network of fire departments and districts provide fire protection and suppression services across the region. Many of the fire districts across the region are staffed by volunteers and are housed in stations located in the larger communities.

Table 3.11-5 lists the critical access facilities for each county that are within approximately 50 miles of the proposed route. Non-federal, short-term, acute care facilities nearest the route also are identified on the table. For each county along the proposed route there is at least one acute care facility either within the county crossed or near the proposed route in a neighboring county, providing emergency medical care and in several cases also serving as the base for local emergency medical response and transport services.

3.11.3 Fiscal Relationships

Employing a cost approach, states generally assess the value of pipelines to facilitate consistent valuation over all the counties crossed within the state. The resultant value is assigned to affected counties and taxing jurisdictions and property taxes are assessed accordingly. The effective property tax rates are then calculated using state property tax levies for pipelines, county property tax levies on pipelines, or a combination of the two. **Table 3.11-6** lists the various property tax mill levy values as well as the effective tax rates for each county along the Keystone Mainline and Cushing Extension.

Property taxes on pipelines in North Dakota are calculated using a five percent state property tax combined with county property taxes ranging from approximately 30 to 40 percent, for effective property tax rates in affected counties of approximately two percent. In South Dakota, a straight 2.15 percent property tax is applied in all counties in the state, while Nebraska uses varying county-based property taxes only, ranging from approximately 1.6 to 2.0 percent. Property taxes on pipelines in Kansas employ a combination of a 33 percent flat state property tax rate and county mill levies of approximately 10 to 14 percent to yield effective property rates ranging from approximately three to five percent in counties crossed by either the Keystone Mainline or the Cushing Extension. Missouri on the Mainline and Oklahoma on the Cushing Extension both employ a combination of a flat property tax rate for the state (32 percent in Missouri and 22.85 percent in Oklahoma) and another flat rate for each county (seven percent in Missouri and 10.5 percent in Oklahoma) for consistent effective tax rates of 2.2 and 2.4 percent, respectively. The State of Illinois does not levy property taxes on pipelines.

Other taxes levied by various state, county, or local taxing jurisdictions may include taxes on gross receipts from the sales of goods and services and corporate income taxes. Federal agencies also assess fees for use of public lands for activities such as pipeline and transmission line ROWs. These taxes and fees vary by region and have not been identified for the Keystone Pipeline Project.

3.11.4 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629) requires that impacts on minority or low-income populations be taken into account when preparing environmental and socioeconomic analyses of projects or programs that are proposed, funded, or licensed by federal agencies. The Environmental Justice Guidance under NEPA prepared by the Council on Environmental Quality (CEQ Guidance) (1997) is commonly used in implementing EO 12898 in preparing NEPA documents.

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
KEYSTONE MAINLINE			
NORTH DAKOTA			
Cavalier	2	4	Cavalier County Memorial Hospital (Langdon)
Pembina	5	8	Pembina County Memorial Hospital (Cavalier)
Walsh	3	10	First Care Health Center (Park River); Unity Med.I Center & Grafton Family Clinic (Grafton); Mercy Hospital (Devils Lake)
Nelson	2	5	Nelson County Health Systems (McVille); Northwood Deaconess Health Center (Northwood); *Altru Hospital (Grand Forks)
Steele	1	2	Copperstown Medical Center (Cooperstown); Union Hospital (Mayville); Hillsboro Medical Center (Hillsboro)
Barnes	3	8	Mercy Hospital (Valley City); Jamestown Hospital (Jamestown); *Dakota Clinic at Innovis Health (Fargo); *MeritCare Hospital (Fargo); *MeritCare South University (Fargo)
Ransom	2	3	Lisbon Area Health Services (Lisbon)
Sargent	4	4	Lisbon Area Health Services (Lisbon); Oaks Community Hospital (Oakes)
Dickey	2	5	Oaks Community Hospital (Oakes)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
SOUTH DAKOTA			
Brown	3	10	*Avera Saint Lukes (Aberdeen); *Marshall County Healthcare Center / Avera Health (Britton); Coteau Des Prairies Hospital (Sisseton)
Marshall	1	5	*Marshall County Healthcare Center / Avera Health (Britton); *Avera Saint Lukes (Aberdeen); Coteau Des Prairies Hospital (Sisseton)
Day	4	5	Lake Area Hospital (Webster)
Clark	2	3	*Prairie Lakes Healthcare Systems – Hospital (Watertown); Community Memorial Hospital (Redfield)
Beadle	3	4	*Huron Regional Medical Center (Huron)
Kingsbury	4	5	De Smet Memorial Hospital (De Smet); *Brookings Hospital (Brookings)
Miner	2	2	Madison Community Hospital (Madison); Avera Weskota Memorial Medical Center (Wessington Springs)
Hanson	1	2	*Avera Queen of Peace Hospital (Mitchell)
McCook	2	3	*Sioux Valley USD Medical Center (Sioux Falls); *Avera McKennan Hospital & University Health Center (Sioux Falls); Dell Area Health Center (Dell Rapids)
Hutchinson	6	4	Freeman Community Hospital & Nursing Home (Freeman); Avera Saint Benedict Health Center (Parkston); Douglas County Memorial Hospital (Armour); Pioneer Memorial Hospital (Viborg); Canton-Inwood Memorial Hospital (Canton)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
Yankton	2	5	Landmann-Jungmann Memorial Hospital (Scotland); Saint Michael's Hospital & Nursing Home (Tyndall); *Avera Sacred Heart Hospital (Yankton); South Dakota Human Services Center (Yankton); *Sioux Valley Vermilion Medical Center (Vermillion); Wagner Community Memorial Hospital (Wagner)
NEBRASKA			
Cedar	4	8	*Avera Sacred Heart Hospital (Yankton, SD); *Sioux Valley Vermilion Medical Center (Vermillion, SD); *Lundberg Memorial Hospital (Creighton); * Mercy Medical Center (Sioux City, IA); *Saint Luke's Regional Medical Center (Sioux City, IA)
Wayne	2	3	Providence Medical Center (Wayne); Plainview Public Hospital (Plainview); Osmond General Hospital (Osmond); Pender Community Hospital (Pender)
Stanton	2	2	*Faith Regional Health Services (Norfolk); Norfolk Regional Center (Norfolk); Saint Francis Memorial Hospital (West Point)
Platte	3	5	*Columbus Community Hospital (Columbus)
Colfax	5	3	Memorial Hospital (Schuyler); Saint Francis Memorial Hospital (West Point)
Butler	2	7	Annie Jeffery Memorial County Health Center (Osceola); Butler County Health Care Center (David City)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
Seward	3	5	*Bryan LGH Medical Center East / West (Lincoln); *Saint Elizabeth Regional Medical Center (Lincoln); Memorial Hospital (Seward); York General Hospital (York)
Saline	4	5	Warren Memorial Hospital (Friend); Crete Area Medical Center (Crete); Fillmore County Hospital (Geneva)
Jefferson	3	5	Jefferson Community Health Center (Fairbury); Thayer County Health Services (Hebron)
Gage	3	6	*Beatrice Community Hospital (Beatrice)
KANSAS			
Marshall	6	6	Washington County Hospital (Washington); Community Memorial Healthcare, Inc. (Marysville)
Nemaha	3	5	Sabetha Community Hospital (Sabetha); Nemaha Valley Community Hospital (Seneca); *Community Hospital Onaga, Inc. (Onaga); Humboldt Health Care Inc. (Humboldt, NE); Pawnee County Medical Center (Pawnee City, NE)
Brown	4	5	Hiawatha Community Hospital (Hiawatha); Holton Community Hospital (Holton); Community Medical Center Inc. (Falls City, NE)
Doniphan	4	4	*Atchison Hospital (Atchison); Jefferson County Memorial Hospital (Winchester)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
MISSOURI			
Buchanan	5	4	*Heartland Regional Medical Center (St. Joseph); *Saint Francis Hospital & Health Services (Maryville); *Saint Luke's Hospital (Kansas City) *Truman Medical Center (Kansas City); *North Kansas City Hospital (North Kansas City); *Baptist-Luthern Medical Center (Kansas City); *Saint Joseph Medical Center (Kansas City); *Saint Luke Hospital (Kansas City); Kindred Hospital (Kansas City)
Clinton	6	2	*Cameron Regional Medical Center (Cameron); *Saint Luke's Northland Hospital (Smithville); *Excelsior Springs Medical Center (Excelsior Springs); *Liberty Hospital (Liberty); *Independence Regional Health Center (Independence); *Medical Center of Independence (Independence)
Caldwell	6	4	*Hedrick Medical Center (Chillicothe); *Ray County Memorial Hospital (Richmond); Wright Memorial Hospital (Trenton)
Carroll	4	4	*Carroll County Memorial Hospital (Carrollton); *Fitzgibbon Hospital (Marshall); *Lafayette Regional Health Center (Lexington)
Chariton	4	6	Pershing Memorial Hospital (Brookfield)
Randolph	5	5	*Moberly Regional Medical Center (Moberly); *Cooper County Memorial Hospital (Boonville); Samaritan Hospital (Macon)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
Audrain	4	5	*Audrain Medical Center (Mexico); *Boone Hospital Center (Columbia); *Columbia Regional Hospital (Columbia); *University of Missouri Hospital (Columbia)
Montgomery	6	8	Hermann Area District Hospital (Hermann)
Lincoln	9	6	Lincoln County Medical Center (Troy); *Pike County Memorial Hospital (Louisiana)
St. Charles	8	11	*Saint Luke Hospital (Chesterfield); *Northwest Healthcare (Florissant); CenterPointe Hospital (St. Charles); *Barnes-Jewish Hospital (St. Louis); *Christian Hospital (St. Louis); *Des Peres Hospital (St. Louis); *Forest Park Hospital (St. Louis); *Missouri Baptist Medical Center (St. Louis); *Saint Alexius Hospital (St. Louis); *Saint Anthony Medical Center (St. Louis); *Saint John Mercy Hospital (St. Louis); *Saint Louis University Hospital (St. Louis); *SSM DePaul Health Center (St. Louis); *SSM Saint Joseph Health Center (St. Charles/Wentzville); *SSM Saint Joseph Hospital (St. Louis/Lake St. Louis); *SSM Saint Mary Hospital (St. Charles); Kindred Hospital (St. Louis)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
ILLINOIS			
Madison	24	38	*Saint Anthony's Health Center (Alton); *Alton Memorial Hospital (Alton); *Memorial Hospital (Belleville); *Touchette Regional Hospital (Centreville); *Gateway Regional Medical Center (Granite City); *Jersey Community Hospital (Jerseyville); *Saint Elizabeth Hospital (Belleville); *Saint Joseph Hospital (Highland); *St Francis Hospital (Litchfield); *Anderson Hospital (Maryville); Community Memorial Hospital (Staunton); Thomas H Boyd Mem Hospital (Carrollton); ALSO SEE ST. CHARLES COUNTY, MISSOURI (ST. LOUIS)
Bond	4	5	*Saint Joseph Hospital (Breese); Edward A Utlaut Memorial Hospital (Greenville)
Fayette	6	6	*Fayette County Hospital (Vandalia); Hillsboro Area Hospital (Hillsboro); Washington County Hospital (Nashville)
Marion	9	8	*Saint Mary's Hospital (Centralia); *Good Samaritan Regional Health Center (Mount Vernon); *Crossroads Community Hospital (Mount Vernon); *Clay County Hospital (Flora); *St Anthony's Memorial Hospital (Effingham); Pana Community Hospital (Pana); Salem Township Hospital (Salem)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
CUSHING EXTENSION			
NEBRASKA[4]			
KANSAS			
Washington	2	10	Washington County Hospital (Washington); Community Memorial Healthcare, Inc. (Marysville); Republic County Hospital (Belleville)
Clay	4	3	Clay County Medical Center (Clay Center); *Mercy Regional Health Center (Manhattan)
Dickinson	6	8	*Morris County Hospital (Council Grove); *Salina Regional Health Center (Salina)
Marion	5	9	*Augusta Regional Medical Center (Augusta); *Mercy Hospital, Inc. (Moundridge); *Newman Regional Health (Emporia)
Butler	8	12	*Newton Medical Center (Newton); *Susan B. Allen Memorial Hospital (El Dorado); *Via Christi Riverside Medical Center (Wichita); *Wesley Medical Center (Wichita)
Cowley	6	7	*South Central Kansas Regional Medical Center (Arkansas City); *William Newton Memorial Hospital (Winfield); *Sumner Regional Medical Center (Wellington)
OKLAHOMA			
Kay	5	11	*Integris Blackwell Regional Hospital (Blackwell); *Via Christi Oklahoma Regional Medical Center (Ponca City)
Noble	3	5	*Integris Bass Baptist Health Center (Enid); *Perry Memorial Hospital (Perry); *Saint Mary's Regional Medical Center (Enid)

Table 3.11-5 Existing Public Services and Facilities Along the Pipeline Route

State / County[1]	Police/Sheriff Departments[2]	Fire Departments[2]	Nearest Medical Facilities[3]
Payne	7	5	*Cushing Regional Hospital (Cushing); *Bristow Medical Center (Bristow); *Hillcrest Medical Center (Tulsa); *Saint Francis Hospital (Tulsa); *Saint John Medical Center (Tulsa); *Stillwater Medical Center (Stillwater); *Tulsa Regional Medical Center (Tulsa); Saint John Sapulpa (Sapulpa); Prague Municipal Hospital (Prague); Logan Hospital & Medical Center (Guthrie); Cleveland Area Hospital (Cleveland); *Pawnee Municipal Hospital (Pawnee)

[1]States and counties are listed geographically from north to south as proposed project crosses the area.

[2]Includes special law enforcement units for universities. Includes volunteer, district, city, and town fire departments (Capitol Impact 2006).

[3]All facilities listed are critical access facilities within approximately 50 miles of the project; those marked with and asterisk (*) are non-federal, short-term, acute care facilities. AHD 2006.).

[4]Addressed in Keystone Mainline.

Table 3.11-6 Property Mill Levies and Tax Rates for the Keystone Pipeline Project

State/County[1]	Property Tax Mill Levy (mills)	Effective Tax Rate (%)
KEYSTONE MAINLINE		
NORTH DAKOTA		
Cavalier	324.33	1.62
Pembina	354.14	1.77
Walsh	395.51	1.98
Nelson	401.15	2.01
Steele	356.84	1.78
Barnes	370.65	1.85
Ransom	413.04	2.07
Sargent	406.01	2.03
Dickey	369.16	1.85
SOUTH DAKOTA		
Brown	21.5	2.15
Marshall	21.5	2.15
Day	21.5	2.15
Clark	21.5	2.15
Beadle	21.5	2.15
Kingsbury	21.5	2.15
Miner	21.5	2.15
Hanson	21.5	2.15
McCook	21.5	2.15
Hutchinson	21.5	2.15
Yankton	21.5	2.15
NEBRASKA		
Cedar	17.420	1.7420
Wayne	18.655	1.8655
Stanton	18.366	1.8366
Platte	16.504	1.6504
Colfax	17.900	1.7900
Butler	17.428	1.7428

Table 3.11-6 Property Mill Levies and Tax Rates for the Keystone Pipeline Project

State/County[1]	Property Tax Mill Levy (mills)	Effective Tax Rate (%)
Seward	17.730	1.7730
Saline	19.815	1.9815
Jefferson	19.620	1.9620
Gage	19.319	1.9319
KANSAS		
Marshall	123.487	4.08
Nemaha	116.84	3.86
Brown	118.295	3.90
Doniphan	103.635	3.42
MISSOURI		
Buchanan	70	2.24
Clinton	70	2.24
Caldwell	70	2.24
Carroll	70	2.24
Chariton	70	2.24
Randolph	70	2.24
Audrain	70	2.24
Montgomery	70	2.24
Lincoln	70	2.24
St. Charles	70	2.24
ILLINOIS		
Madison	0	0.00
Bond	0	0.00
Fayette	0	0.00
Marion	0	0.00
CUSHING EXTENSION		
NEBRASKA		
Jefferson	19.620	1.9620
KANSAS		
Washington	142.43	4.70
Clay	140.633	4.64

Table 3.11-6 Property Mill Levies and Tax Rates for the Keystone Pipeline Project

State/County[1]	Property Tax Mill Levy (mills)	Effective Tax Rate (%)
Dickinson	116.802	3.85
Marion	125.699	4.15
Butler	135.282	4.46
Cowley	143.694	4.74
OKLAHOMA		
Kay	105	2.40
Noble	105	2.40
Payne	105	2.40

[1]States and counties are listed geographically from north to south as proposed project crosses the area.

Source: Information was based on discussions with the counties in January 2005 to obtain current local tax rates and valuation methodology.

The purpose of the order is to avoid the disproportionate placement of any adverse environmental, economic, social, or health impacts from federal actions and policies on minority populations, low-income populations, and Indian tribes and to allow all portions of the population an opportunity to participate in the development of, compliance with, and enforcement of federal laws, regulations, and policies affecting human health of the environment regardless of race, color, national origin, or income. The provisions of the order apply to programs involving Native Americans and Hispanic communities. These requirements will be addressed by a) ensuring broad distribution of public information on the Keystone Pipeline Project through public scoping meetings and b) conducting government-to-government consultation with Native American groups either residing in or with historical ties to the project area. Details regarding public scoping meeting dates and locations can be found in Section 1.7, Public Participation and Issues, and in Appendix D, Public Consultation Summary. For an expanded discussion of Native American consultation, see Section 3.10, Native American Consultation.

3.11.4.1 Minority Populations

The CEQ Guidance defines the term "minority population" to include people who identify themselves during the Census as Black or African American, Asian or Pacific Islander, Native American or Alaskan Native, or Hispanic. Hispanic origin refers to ethnicity and language, not race, and may include people whose heritage is Puerto Rican, Cuban, Mexican, and Central or South American.

In accordance with the CEQ Guidance, minority populations should be identified where either a) the minority population in an affected area (e.g., a community) exceeds 50 percent; or b) the minority population percentage of the affected area is meaningfully greater (1.5 times) than the minority population percentage in the general population of the surrounding area (e.g., the county or other appropriate unit of geographical analysis). This is determined by multiplying the percentage of minorities in the surrounding area by 1.5. If the resulting figure exceeds the percentage of the minority population in the community, the community is not a minority population.

Tables 3.11-7 and **3.11-8** provide 2000 Bureau of the Census statistics on race, ethnicity, and income status in affected counties and communities. Affected counties are those counties crossed by the Keystone Mainline or Cushing Extension and affected communities are those in the proximity of the proposed route. Communities

Table 3.11-7 Environmental Justice Statistics in Affected Counties[1]

State / County[2]	Total Population 2000	Racial/Ethnic Categories (% of total population, 2000)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
KEYSTONE MAINLINE										
NORTH DAKOTA	**642,200**	**92.4**	**0.6**	**4.9**	**0.6**	**1.2**	**0.4**	**1.2**	**$43,654**	**8.3**
Cavalier	4,831	98.1	0.1	0.5	0.1	0.6	0.1	1.0	$39,601	7.8
Pembina	8,585	95.5	0.2	1.4	0.2	3.1*	1.3	1.4	$45,338	7.4
Walsh	12,389	94.9	0.3	1.0	0.2	5.7*	2.5	1.1	$41,619	7.7
Nelson	3,715	98.6	0.1	0.3	0.3	0.2	0.1	0.6	$37,406	7.2
Steele	2,258	98.3	0.0	0.6	0.0	0.2	0.2	0.8	$43,914	5.0
Barnes	11,775	97.9	0.5	0.8	0.2	0.5	0.1	0.6	$42,149	6.4
Ransom	5,890	97.9	0.2	0.3	0.3	0.8	0.4	0.9	$44,865	6.3
Sargent	4,366	98.2	0.0	0.5	0.0	0.7	0.5	0.7	$44,063	6.0
Dickey	5,757	97.8	0.1	0.3	0.5	1.4	0.6	0.7	$36,682	11.6*
SOUTH DAKOTA	**754,844**	**88.7**	**0.6**	**8.3**	**0.6**	**1.4**	**0.5**	**1.3**	**$43,237**	**9.3**
Brown	35,460	95.5	0.3	2.7	0.5	0.7	0.2	0.9	$44,788	7.0
Marshall	4,576	92.6	0.1	6.3	0.1	0.8	0.2	0.7	$36,295	10.4*
Day	6,267	91.3	0.1	7.4	0.1	0.4	0.2	0.9	$38,011	11.4*
Clark	4,143	98.6	0.1	0.6	0.1	0.5	0.2	0.4	$35,559	10.9*
Beadle	17,023	96.9	0.7	0.9	0.3	0.9	0.3	0.8	$40,596	7.9
Kingsbury	5,815	98.5	0.1	0.4	0.3	0.7	0.2	0.5	$41,057	7.0
Miner	2,884	98.8	0.5	0.3	0.1	0.6	0.1	0.2	$36,667	8.2
Hanson	3,139	99.5	0.0	0.1	0.1	0.1	0.0	0.2	$39,500	12.5*
McCook	5,832	98.9	0.1	0.4	0.2	0.8	0.2	0.4	$42,609	5.5
Hutchinson	8,075	98.8	0.1	0.6	0.1	0.5	0.1	0.4	$37,715	9.6*
Yankton	21,652	95.1	1.2*	1.6	0.4	1.8	0.7	0.9	$43,600	6.6
NEBRASKA	**1,711,263**	**89.6**	**4.0**	**0.9**	**1.3**	**5.5**	**2.8**	**1.4**	**$48,032**	**6.7**
Cedar	9,615	99.1	0.1	0.2	0.0	0.4	0.2	0.4	$39,422	6.3
Wayne	9,851	96.8	0.9	0.3	0.3	1.5	0.9	0.7	$43,840	7.4*
Stanton	6,455	96.7	0.4	0.5	0.1	2.3	1.4	0.9	$41,040	5.3

Table 3.11-7 Environmental Justice Statistics in Affected Counties[1]

State / County[2]	Total Population 2000	Racial/Ethnic Categories (% of total population, 2000)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Platte	31,662	94.3	0.4	0.3	0.4	6.5	3.5	1.2	$47,776	5.4
Colfax	10,441	81.7	0.1	0.2	0.2	26.2*	15.9	1.7	$40,936	7.2*
Butler	8,767	98.4	0.1	0.1	0.1	1.7	0.8	0.4	$44,441	4.8
Seward	16,496	98.0	0.3	0.2	0.3	1.1	0.4	0.7	$51,812	4.1
Saline	13,843	93.0	0.4	0.4	1.7	6.6	3.7	1.1	$44,199	6.4
Jefferson	8,333	98.4	0.1	0.4	0.2	1.3	0.5	0.4	$40,747	8.0*
Gage	22,993	97.7	0.3	0.6	0.3	0.9	0.3	0.8	$43,072	6.6
KANSAS	**2,688,418**	**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**$49,624**	**6.7**
Marshall	10,965	98.1	0.2	0.4	0.2	0.8	0.3	0.8	$39,705	6.4
Nemaha	10,717	98.3	0.5	0.2	0.1	0.7	0.2	0.6	$41,838	6.5
Brown	10,724	86.9	1.6	8.8*	0.2	2.3	0.7	1.8	$39,525	10.6*
Doniphan	8,249	94.8	2.0	1.2	0.3	1.2	0.4	1.3	$39,357	9.0*
MISSOURI	**5,595,211**	**84.9**	**11.2**	**0.4**	**1.2**	**2.1**	**0.8**	**1.5**	**$46,044**	**8.6**
Buchanan	85,998	92.7	4.4	0.4	0.4	2.4	0.6	1.4	$42,408	8.5
Clinton	18,979	96.6	1.5	0.3	0.2	1.1	0.3	1.1	$48,244	7.3
Caldwell	8,969	98.6	0.1	0.3	0.1	0.7	0.2	0.7	$37,087	9.7*
Carroll	10,285	96.9	1.7	0.3	0.1	0.7	0.1	0.8	$36,773	9.7*
Chariton	8,438	96.0	3.2	0.2	0.1	0.6	0.1	0.4	$39,176	8.8*
Randolph	24,663	90.6	7.0	0.5	0.4	1.1	0.2	1.3	$39,268	9.2*
Audrain	25,853	91.1	7.2	0.3	0.3	0.7	0.2	0.9	$40,448	11.1*
Montgomery	12,136	96.0	2.0	0.2	0.3	0.8	0.2	1.3	$38,632	8.4
Lincoln	38,944	96.1	1.7	0.4	0.2	1.1	0.4	1.1	$47,747	6.2
St. Charles	283,883	94.7	2.7	0.2	0.9	1.5	0.5	1.1	$64,415	2.8
ILLINOIS	**12,419,293**	**73.5**	**15.1**	**0.2**	**3.4**	**12.3**	**5.8**	**1.9**	**$55,545**	**7.8**
Madison	258,941	90.2	7.3	0.3	0.6	1.5	0.5	1.1	$50,862	7.2
Bond	17,633	90.7	7.4	0.5*	0.3	1.4	0.4	0.7	$45,412	6.7
Fayette	21,802	94.0	4.9	0.1	0.2	0.8	0.3	0.5	$39,044	8.42*
Marion	41,691	94.0	3.8	0.2	0.6	0.9	0.2	1.1	$41,427	8.63*

Table 3.11-7 Environmental Justice Statistics in Affected Counties[1]

State / County[2]	Total Population 2000	Racial/Ethnic Categories (% of total population, 2000)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
CUSHING EXTENSION										
NEBRASKA[7]										
KANSAS	**2,688,418**	**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**$49,624**	**6.7**
Washington	6,483	98.9	0.1	0.3	0.0	0.6	0.1	0.5	$37,260	7.3*
Clay	8,822	97.7	0.6	0.4	0.1	0.8	0.3	0.9	$41,103	6.8*
Dickinson	19,344	96.4	0.6	0.5	0.3	2.3	0.8	1.4	$43,952	5.3
Marion	13,361	97.1	0.5	0.6	0.2	1.9	0.5	1.1	$41,386	4.8
Butler	59,482	94.9	1.4	0.9	0.4	2.2	0.7	1.7	$53,632	5.4
Cowley	36,291	90.1	2.7	2.0*	1.5	3.6	1.4	2.3	$43,636	9.2*
OKLAHOMA	**3,523,553**	**76.2**	**7.6**	**7.9**	**1.5**	**5.2**	**2.4**	**4.5**	**$40,709**	**11.2**
Kay	48,080	84.2	1.8	7.5	0.5	4.3	2.0	4.0	$38,144	12.4*
Noble	11,411	86.4	1.6	7.6	0.3	1.8	0.6	3.4	$40,180	9.6
Payne	68,190	84.3	3.6	4.6	3.0*	2.1	0.8	3.6	$40,823	10.8

[1]Affected areas are those counties where existing facilities exist, or counties where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]States and counties are listed geographically from north to south as proposed project crosses the area.

[3]Minority populations defined as black, Native American or Alaskan Native, Asian Pacific Islander, or Hispanic with percentages meaningfully greater than 1.5 times that of the minority population percentage in the general population of the surrounding area (i.e., the corresponding state) are identified with an asterisk (*).

[4]Persons of Hispanic origin may be of any race, and for census-gathering purposes, Hispanic is a self-identified category. In this table individuals may have reported themselves as only Hispanic or in combination with one or more of the other races listed. This may result in the sum of percentages for all ethnic categories to be greater than 100 percent for any one county.

[5]The median family income is defined here for a family of three. The poverty threshold is defined as the average threshold for a family of three and is not adjusted for regional, state, or local variations in the cost of living.

[6]The percent of families with income below the poverty threshold in 2000, as defined by the Census Bureau for Federal statistical purposes, based on a family of three. Counties with a higher percent of the population below the poverty level than that occurring in the respective state are identified with an asterisk (*).

[7]Addressed in Keystone Mainline.

Source: Census 2000a.

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
KEYSTONE MAINLINE										
NORTH DAKOTA		**92.4**	**0.6**	**4.9**	**0.6**	**1.2**	**0.4**	**1.2**	**$43,654**	**8.3**
Lankin	0.5	96.9	0.0	2.3	0.0	0.0	0.0	0.8	$40,313	0.0
Walhalla	2	89.8	0.0	6.0	0.0	0.9	0.1	4.2	$39,375	9.7*
Sharon	2	94.5	0.0	1.8	0.0	0.0	0.0	3.7	$43,125	0.0
Fort Ransom	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$31,250	11.8*
Niagara	2	94.7	0.0	1.8	0.0	0.0	0.0	3.5	$31,240	0.0
Sibley	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$17,500	14.3*
Luverne	2	97.7	0.0	2.3	0.0	0.0	0.0	0.0	$37,188	0.0
SOUTH DAKOTA		**88.7**	**0.6**	**8.3**	**0.6**	**1.4**	**0.5**	**1.3**	**$43,237**	**9.3**
Yankton	0.5	94.4	1.6*	1.6	0.5	2.5*	0.9	1.0	$44,009	6.2
Iroquios	0.5	95.7	0.0	0.4	0.4	2.5*	1.4	2.2	$36,250	18.8*
Raymond	0.5	96.5	0.0	0.0	0.0	4.7*	3.5	0.0	$36,250	13.6*
Roswell	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$51,250	0.0
Emery	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$35,313	3.8
Carthage	2	98.9	0.0	0.0	0.0	0.0	0.0	1.1	$32,917	13.2*
Spencer	2	98.7	0.0	0.6	0.6	0.0	0.0	0.0	$34,688	7.0
NEBRASKA		**89.6**	**4.0**	**0.9**	**1.3**	**5.5**	**2.8**	**1.4**	**$48,032**	**6.7**
Leigh	0.5	99.5	0.0	0.0	0.0	1.8	0.0	0.5	$40,481	4.5
Richland	0.5	97.8	1.1	1.1	0.0	1.1	0.0	0.0	$33,125	0.0

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Garrison	0.5	95.5	0.0	4.5*	0.0	0.0	0.0	0.0	$51,000	0.0
Sholes	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$36,250	0.0
Seward	2	98.0	0.5	0.1	0.5	1.0	0.4	0.6	$54,808	4.1
Stanton	2	97.2	0.2	0.6	0.3	2.4	1.1	0.7	$42,717	5.8
Randolph	2	99.0	0.1	0.3	0.3	0.2	0.2	0.1	$40,000	4.9
Dorchester	2	97.2	0.0	0.0	0.0	4.1	2.6	0.2	$40,982	4.1
Plymouth	2	99.4	0.0	0.0	0.0	0.8	0.4	0.2	$42,813	1.5
Bellwood	2	100.0	0.0	0.0	0.0	0.4	0.0	0.0	$39,286	1.6
Hoskins	2	99.6	0.0	0.0	0.0	0.4	0.0	0.4	$39,583	5.3
Staplehurst	2	97.4	0.0	0.0	0.4	0.4	0.0	2.2	$42,361	7.4*
Fordyce	2	100.0	0.0	0.0	0.0	4.9	0.0	0.0	$37,031	2.4
Swanton	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$52,500	0.0
Steele City	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$32,500	8.3*
Harbine	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$40,833	0.0
KANSAS		**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**$49,624**	**6.7**
Seneca	2	98.8	0.4	0.0	0.0	0.7	0.0	0.6	$40,819	4.4
Fairview	2	95.2	3.3	0.0	0.0	1.1	0.0	1.5	$51,607	11.0*
Denton	2	99.5	0.0	0.0	0.0	0.5	0.0	0.5	$40,625	0.0
Severance	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$27,083	21.4*
Oketo	2	95.4	0.0	0.0	0.0	0.0	0.0	4.6	$30,893	8.7*

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Oneida	2	94.1	2.9	0.0	0.0	0.0	0.0	0.0	$48,750	0.0
MISSOURI		**84.9**	**11.2**	**0.4**	**1.2**	**2.1**	**0.8**	**1.5**	**$46,044**	**8.6**
Troy	0.5	93.9	2.9	0.4	0.1	1.7	0.8	1.9	$46,818	7.6
Moscow Mills	0.5	94.3	3.2	0.3	0.1	0.9	0.3	1.8	$42,083	5.3
Salisbury	0.5	94.8	4.2	0.2	0.2	0.6	0.1	0.5	$41,389	7.1
Agency	0.5	98.5	0.0	0.0	0.5	1.7	0.5	0.5	$52,500	3.7
West Alton	0.5	99.1	0.0	0.2	0.2	0.5	0.5	0.0	$45,556	4.5
Keytesville	0.5	95.3	3.9	0.0	0.0	0.2	0.2	0.6	$35,568	10.9*
Cowgill	0.5	97.6	0.4	0.0	0.0	0.0	1.2	0.8	$24,444	21.2*
Renick	0.5	95.5	0.0	0.9*	0.0	0.0	0.0	3.6	$37,500	10.0*
Chain of Rocks	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$38,125	7.1
St. Joseph	2	91.9	5.0	0.5	0.5	2.6	0.7	1.4	$40,995	9.1*
St. Charles	2	93.3	3.5	0.3	1.0	2.0	0.7	1.2	$60,175	4.6
St. Peters	2	94.3	2.8	0.2	1.2	1.5	0.4	1.1	$65,123	1.5
Moberly	2	90.5	6.7	0.4	0.6	1.7	0.4	0.3	$37,488	11.1*
Mexico	2	88.8	9.2	0.3	0.5	0.9	0.3	0.9	$39,406	10.0*
St. Paul	2	99.0	0.1	0.1	0.0	1.3	0.2	0.7	$68,438	1.1
Gower	2	99.4	0.1	0.1	0.0	0.8	0.0	0.4	$55,694	2.4
Polo	2	99.5	0.0	0.0	0.0	1.4	0.2	0.3	$36,705	5.2
Bosworth	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$28,750	11.7*

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Portage Des Sioux	2	99.1	0.0	0.3	0.0	1.4	0.6	0.0	$42,321	2.8
Old Monroe	2	98.4	0.0	0.0	0.0	2.8	0.8	0.8	$42,188	0.0
Tina	2	99.5	0.0	0.0	0.0	0.0	0.0	0.5	$34,643	5.4
Turney	2	95.5	0.6	1.3*	0.0	0.6	1.3	1.3	$36,429	6.0
Fountain N' Lakes	2	99.2	0.0	0.8*	0.0	0.0	0.0	0.0	$31,563	17.2*
Truxton	2	95.8	0.0	0.0	3.1*	1.0	0.0	1.0	$40,938	4.5
Triplett	2	87.5	7.8	1.6*	1.6	0.0	0.0	1.6	$33,750	30.8*
Cave	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	$41,250	0.0
ILLINOIS		**73.5**	**15.1**	**0.2**	**3.4**	**12.3**	**5.8**	**1.9**	**$55,545**	**7.8**
Edwardsville	0.5	87.7	8.7	0.3	1.7	1.0	0.3	1.4	$65,555	5.0
Highland	0.5	98.6	0.1	0.1	0.5	1.3	0.3	0.5	$52,240	3.6
South Roxana	0.5	97.7	0.3	0.4*	0.3	0.8	0.3	1.0	$37,344	17.4*
Roxana	0.5	98.5	0.1	0.3	0.3	0.6	0.4	0.5	$45,500	2.5
Hartford	0.5	98.4	0.1	0.2	0.4	0.7	0.3	0.5	$40,652	10.3*
Pocahontas	0.5	98.6	0.1	0.3	0.3	0.0	0.0	0.7	$37,000	12.5*
Grantfork	0.5	99.2	0.0	0.4*	0.0	0.4	0.0	0.4	$48,750	3.1
Vernon	0.5	98.3	0.0	0.6*	0.0	1.7	0.0	1.1	$24,583	17.9*
Granite City	2	94.7	2.0	0.5*	0.5	2.9	0.9	1.4	$42,130	8.8*
Alton	2	72.3	24.7*	0.2	0.4	1.5	0.7	1.7	$37,910	14.7*
Godfrey	2	94.1	4.0	0.3	0.7	1.0	0.2	0.7	$57,971	3.2

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Wood River	2	97.6	0.6	0.3	0.5	1.2	0.4	0.7	$41,688	13.2*
East Alton	2	96.7	0.9	0.2	0.4	1.0	0.2	1.5	$35,655	7.8
Patoka	2	98.9	0.0	0.0	0.2	1.3	0.0	0.9	$33,917	11.6*
CUSHING EXTENSION										
NEBRASKA[7]										
KANSAS		**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**$49,624**	**6.7**
Towanda	0.5	96.8	0.4	0.4	0.2	0.7	0.2	2.0	$47,188	5.1
Chapman	0.5	94.8	0.5	1.0	0.4	3.0	0.7	2.7	$44,063	4.3
Potwin	0.5	95.4	0.0	1.5*	0.2	0.9	0.0	2.8	$42,500	4.7
Greenleaf	0.5	99.4	0.0	0.0	0.0	0.8	0.3	0.3	$38,125	8.3*
Hollenberg	0.5	96.8	0.0	0.0	0.0	3.2	3.2	0.0	$52,083	0.0
Winfield	2	88.1	3.3	1.1	3.7*	4.7	1.7	2.1	$44,539	8.9*
Arkansas City	2	87.2	4.5	2.7*	0.6	4.5	1.9	3.0	$39,692	12.4*
Augusta	2	96.1	0.2	0.8	0.4	2.6	0.7	1.9	$51,886	4.1
Marion	2	97.6	0.0	0.8	0.1	1.4	0.2	1.2	$42,202	5.3
Douglass	2	96.2	0.3	1.6*	0.2	1.7	0.5	1.2	$49,875	4.5
Washington	2	98.9	0.1	0.2	0.0	0.6	0.2	0.5	$37,448	8.6*
Wakefield	2	95.9	0.8	1.1	0.1	1.2	0.6	1.4	$50,526	4.2
Hope	2	98.1	0.8	0.5	0.3	0.3	0.0	0.3	$32,813	4.8
Green	2	96.6	0.7	2.7*	0.0	1.4	0.0	0.0	$29,167	5.3

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
Ramona	2	95.7	0.0	0.0	0.0	6.4	4.3	0.0	$33,125	0.0
OKLAHOMA		**76.2**	**7.6**	**7.9**	**1.5**	**5.2**	**2.4**	**4.5**	**$40,709**	**11.2**
Ponca City	0.5	84.2	3.0	6.3	0.7	4.4	2.1	3.8	$39,846	12.7*
Cushing	0.5	79.7	7.0	8.0	0.1	2.7	0.9	4.3	$32,284	15.1*
Newkirk	2	83.7	1.2	8.7	0.1	2.1	0.8	5.4	$38,125	11.0
Morrison	2	89.2	0.3	2.8	0.5	4.2	2.7	4.6	$35,417	13.5*
Marland	2	48.9	0.0	38.6*	0.0	10.0*	3.2	9.3	$25,625	31.0*

[1]Affected areas are those communities where existing facilities exist, or communities where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]Communities are listed in order by state as the proposed project crosses from north to south, proximity to proposed project centerline, and descending size based on year 2000 population.

[3]Minority populations defined as black, Native American or Alaskan Native, Asian Pacific Islander, or Hispanic with percentages meaningfully greater than 1.5 times that of the minority population percentage in the general population of the surrounding area (i.e., the corresponding state) are identified with an asterisk (*).

[4]Persons of Hispanic origin may be of any race, and for census-gathering purposes, Hispanic is a self-identified category. In this table individuals may have reported themselves as only Hispanic or in combination with one or more of the other races listed. This may result in the sum of percentages for all ethnic categories to be greater than 100 percent for any one community.

[5]The median family income is defined here for a family of three. The poverty threshold is defined as the average threshold for a family of three and is not adjusted for regional, state, or local variations in the cost of living.

[6]The percent of families with income below the poverty threshold in 2000, as defined by the Census Bureau for Federal statistical purposes, based on a family of three. Communities with a higher percent of the population below the poverty level than that occurring in the respective state are identified with an asterisk (*).

[7]Addressed in Keystone Maineline.

Source: Census 2000a.

in the proximity of the proposed routes include those communities crossed by the proposed route (within one-half mile) as well as communities located within two miles of the proposed route. Based upon review of the available Census data for minority populations in all of the counties crossed and communities in the proximity of the proposed route, the various minority populations do not exceed 50 percent, however, there are minority populations occurring in portions of the counties crossed by the proposed route that are "meaningfully greater" than their corresponding minority populations in the general population. Therefore, for the purposes of identifying environmental justice concerns, minority populations, as defined in the CEQ Guidance, exist within the study area. For this ER, general minority populations used for comparison were state populations.

Two affected counties in North Dakota have minority populations greater than 1.5 times the relevant minority population in the state. These include Pembina and Walsh counties. There are no communities with a notable minority population in the proximity of the project.

In South Dakota, one county and three of the affected communities have minority populations greater than 1.5 times the relevant minority population in their associated general populations. These include Yankton County and the communities of Yankton, Iroquois, and Raymond. All three communities are within one-half mile of the project.

One affected county and one affected community in Nebraska have minority populations greater than 1.5 times their respective relevant minority populations. These include Colfax County and the community of Garrison, which is within one-half mile of the project.

In Kansas, Brown County has a minority population greater than 1.5 times the relevant minority population in the state. There are no communities with a notable minority population in the proximity of the project.

Five of the affected communities in Missouri have minority populations greater than 1.5 times the relevant minority population in the state. These include Renick within one-half mile of the project and Turney, Fountain N' Lakes, Truxton, and Triplett between one-half and two miles. There are no affected counties in Missouri with minority populations meaningfully greater than the minority population of the state.

In Illinois, one affected county and five communities have minority populations greater than 1.5 times the relevant minority population in the associated general populations. These include Bond County, South Roxana, Grantfork, and Vernon within one-half mile of the project, and Granite City and Alton between one-half and two miles.

Along the Cushing Extension in Kansas, Cowley County and five communities have minority populations greater then 1.5 times the relevant minority populations in the associated general populations. The five communities include Potwin, Winfield, Arkansas City, Douglass, and Green. Of these five Potwin is the only one within one-half mile of the proposed project.

In Oklahoma, one affected county and one community have minority populations greater than 1.5 times the relevant minority population in the associated general populations. These include Payne County and the community of Marland between one-half and two miles of the proposed project.

3.11.4.2 Low-Income Populations

According to the CEQ Guidance, low-income populations in an affected area should be identified using the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, federal agencies may consider as a community either a group of individuals living in geographic proximity to one another or a set of individuals (such as migrant workers or Native Americans) where either type of group experiences common conditions of environmental exposure or effect. The poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index. They are the same for all parts of the country (i.e., they are

not adjusted for regional, state, or local variations in the cost of living). The poverty threshold for a family of three used for analysis was $13,290 in 2000. The median family income in the nation was $50,046 for a family of three and the percent of families below the poverty level was 9.2 percent.

Low income populations were identified along the proposed project route by comparing the percent of the population below the poverty level in the affected counties and communities to the percent of the population below the poverty level in each respective state. If the percent in the affected county or community was greater than the percent in the state, the affected county or community was determined to be a low-income population. Low-income counties and communities are identified on **Tables 3.11-7** and **3.11-8**.

The percent of the population below the poverty level in all states except Oklahoma is approximately the same as or lower than the percent of the population below the poverty level in the nation. Dickey County and three communities in North Dakota have been identified as having low-income populations. Five of South Dakota's 11 counties and three communities, three of Nebraska's 10 counties and two communities, and two of Kansas' four counties and three communities are considered low-income populations along the proposed mainline route. In the more heavily populated states, five of 10 counties and nine communities in Missouri have low-income populations as well as two of Illinois' four counties and eight communities. Along the proposed Cushing Extension, Kansas has additional low-income populations in three of six counties and four additional communities, while Oklahoma has low-income populations in one of the three counties crossed and four of the five communities in proximity to the project.

3.12 Public Health and Safety

Keystone submitted a preliminary risk assessment for the accidental release of crude oil from the pipeline. The assessment included the likelihood of crude oil releases and potential for environmental affects, depending upon release volumes and locations. Based on refinements of the route, hydraulic models, and additional engineering information, an updated risk assessment will be submitted to the Department of State by the first quarter of 2007.