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Hi Charlene,

ENSR has been retained by TransCanada to conduct T&E species surveys along its proposed Keystone Pipeline Project route (<http://www.transcanada.com/keystone/index.html>). We have received information on sensitive species along the project route from the South Dakota NHP and Game, Fish, and Parks Department, and the FWS. It is possible that part of the project may cross native prairie that would be suitable habitat for the Dakota skipper. I am trying to put together an action plan for this species and was hoping that you might be able to provide some insight regarding survey methods or protocols (i.e. Pollard transects) for the Dakota skipper? Thanks for any assistance you may be able to provide!

Sincerely,

Sara

Sara Stribley
Staff Specialist
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MDNR REQUIREMENTS FOR DAKOTA SKIPPER SURVEYS May 2006

1. Surveyor must have prior field experience with grass skippers (Hesperiinae) including sight identification and capture (requires an endangered species permit)
 2. Surveyor must have experience with collecting and preparing voucher specimens of Lepidoptera
 3. Surveys should be completed within 2 weeks of detection of emergence because of the short flight period of the species (Glacial Lakes State Park in Pope County would be the best site to monitor because of the proximity and similar habitat conditions to the Big Stone project area)
 4. Surveys must be completed between the hours of 10:00 a.m. and 6:00 p.m.
 5. If cloud cover is 0-50%, the minimum temperature for reliable surveys is 75° F
If cloud cover is 50-80%, the minimum temperature for reliable surveys is 80° F
If cloud cover is >80%, survey results are unreliable and therefore surveys should not be conducted
 6. Surveys should not be conducted when wind speeds are > 20 mph
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Dakota Skipper Surveyors

The following is a list of contractors that are known to have the necessary qualifications to conduct Dakota Skipper surveys in Minnesota. Please note that there may be other contractors, of which we are unaware, that would be qualified to complete the survey work. Please contact Sarah Hoffmann, MDNR Endangered Species Environmental Review Coordinator, at (651) 259-5109 if you have any questions about the list.

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John Cochnar
U.S. Fish and Wildlife Service
Ecological Services Field Office
203 West Second Street
Federal Building, Second Floor
Grand Island, NE 68801

Dear Mr. Cochnar:

Thank you for agreeing to meet with ENSR to discuss the proposed TransCanada Keystone Pipeline Project. To facilitate our meeting, ENSR is providing preliminary species tables and habitat information for your review to determine potential species survey requirements along the project route.

As discussed in the January 24, 2006 letter, TransCanada is planning to construct and operate a 1,830-mile-long interstate crude oil transmission system from an oil supply hub near Hardisty, Alberta, Canada to destinations in the Midwestern United States (U.S). The proposed Project would consist of approximately 1,070 miles of new pipeline constructed from the U.S.-Canada border in Pembina County, North Dakota to terminals and refineries in Salisbury (Chariton County), Missouri, Wood River (Madison County), and Patoka (Marion County), Illinois. Approximately 283 miles would parallel the proposed Rockies Express Pipeline - West (REX-West) Project in Kansas and Missouri. In addition, TransCanada is considering the construction of a 291-mile pipeline extension that would extend the Keystone Pipeline south from the Nebraska/Kansas border to Cushing, Oklahoma. TransCanada proposes to begin construction of the new pipeline in early 2008, with the system in-service by the end of 2009. The project also will require the construction of pump stations, valves, meters, and other ancillary facilities. The hydraulic characteristics of the pipeline will determine pump station and valve locations. Electrical powerlines and facility upgrades will be required in some locations to provide power for the new pump stations.

At this time, ENSR is providing information regarding the Keystone Mainline portion of the project. As the Cushing Extension portion of the project develops, we will provide additional information for your review and input.

Attached for your review are state-specific special status species tables (i.e., federally listed, proposed and candidate species; state listed species) (**Tables 1 and 2**) that include a brief description of species habitat, miles of potential habitat crossed by the project, and approximate mileposts where potential habitat has been preliminarily identified along the project route. **Table 3** provides potential species habitat by state and county. Habitat for special status species was determined based on species habitat

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association, known distribution, and agency correspondence (e.g., U.S. Fish and Wildlife Service [FWS], state wildlife agencies, and National Heritage Program/NatureServe), in combination with aerial habitat surveys, Land Use-Land Cover (LULC) data, and aerial photography. Survey data from the REX-West Project also was used to quantify potential habitat that would be crossed in Kansas and Missouri (Buchanan County through Randolph County).

Also attached for your review are 1:100,000-scale maps that identify areas along the pipeline route where potential grassland, wetland/riparian, and upland woodland/forests have been identified. Habitat data within these maps were obtained from LULC data and aerial photography. These preliminary habitat locations may be modified following further habitat analysis and consultations with federal and state agencies. In addition, some pipeline routing modifications continue to be developed and evaluated including those denoted by red "reroute" lines on the attached maps. As a result, habitat analysis and consultation will continue for these routing adjustments as needed in the future. Habitat related to powerlines has not been evaluated at this time.

Additional copies of the species tables and associated maps are enclosed for distribution to other regional or state USFWS representatives. It would be beneficial to receive their input prior to our meeting in July. I look forward to our visit on July 18 in Grand Island at 10:00 am. If you have any questions regarding the enclosed materials, please contact me at (970) 493-8878 ext. 181 or email cjohnson@ensr.aecom.com.

Sincerely,

Charles Johnson
Senior Wildlife Biologist

Enclosures: 1:100,000-scale maps
Tables 1 through 3

Table 1
North Dakota Special Status Species
Habitat by County and Mainline Milepost
Keystone Pipeline Project

Species	Status	Habitat Association	Primary Habitat	County	Miles (mi) of Associated Habitat Crossed by Keystone Pipeline Project					Mainline Milepost(s)
					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi) ¹	Open Water (mi) (habitat crossed or within 0.5 mi)	
Gray wolf <i>Canis lupus</i>	FT; ND-SC	No particular habitat preference. Habitats may include: alpine, desert, conifer forest, hardwood forest, mixed forest, grasslands, savannas, shrubland/chaparral, tundra, and woodlands. Breeds late fall/early winter in southern portion of range. Young are born in March and early April in underground dens. Young and parents vacate den when young are about 3 months old.	Any	Cavalier Grand Forks Nelson Pembina Sargent Walsh	Cavalier: 0 Grand Forks: 0 Nelson: 0 Pembina: 0 Sargent: 8.4 Walsh: 0	Cavalier: 0 Grand Forks: 0 Nelson: 0 Pembina: 0.6 Sargent: 0 Walsh: 0	Cavalier: 0 Grand Forks: 0 Nelson: 0.2 Pembina: 2.3 Sargent: 0 Walsh: 1.7			Cavalier: N/A Grand Forks: N/A Nelson: 58.1-58.3 Pembina: 4.7-29.5 Sargent: 203.1-214.8 Walsh: 33.2-46.4
Fisher <i>Martes pennanti</i>	ND-SC	This species inhabits upland and lowland forests, including coniferous, mixed, and deciduous forests. Fishers generally avoid areas with little forest cover or significant human disturbance and conversely prefer large areas of contiguous interior forest. Births occur primarily from March to mid-April.	forests, woodlands	Pembina		Pembina: 0.6	Pembina: 2.3			Pembina: 4.7-7.4, 13.0-13.2, 16.1-18.9, 21.5-29.5
Bald eagle <i>Haliaeetus leucocephalus</i>	FT; ND-SC	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites typically occur in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	riparian forests, open water	Barnes Cavalier Grand Forks Nelson Pembina Ransom Sargent Steele Walsh					Barnes: 0 Cavalier: 0 Grand Forks: 0 Nelson: 0 (Lake Pickard, Nelson Slough) Pembina: 0.1 (Pembina River, Herzog Res.) Ransom: 0.2 (Sheyenne River, Lone Tree Lake) Sargent: 0 (Lake Thayer) Steele: 0 (Lake, Lake, Lake, Stony Lake, Willow Lake) Walsh: 0.3 (S. Branch Park River, N. Branch Forest River, Middle Branch Forest River)	Barnes: N/A Cavalier: N/A Grand Forks: N/A Nelson: 73.6 - 74.3; 87.9 - 88.3 Pembina: 7.1; 17.0 Ransom: 166.9 - 167.0; 178.8 - 181.9 Sargent: 200 - 202 Steele: 100.6; 109.8 - 113.2; 119.7 - 120.8 Walsh: 41.6; 46.3; 54.5
Piping plover <i>Charadrius melodus</i>	FT; ND-SC	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components. Breeding season: May 1 through August 15.	shorelines, sandbars, wetlands, rivers, lakes, ponds	Sargent				data pending	Sargent: 0 (Lake Thayer)	Sargent: 200-202 (Lake Thayer), data pending
Whooping crane <i>Grus americana</i>	FE; ND-SC	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the project regions generally occurs from February through April and from October through November, respectively.	wetlands, riparian, agriculture	Barnes Cavalier Nelson			Barnes: 0 Cavalier: 0 Nelson: 0.2	data pending data pending data pending	Barnes: 0 Cavalier: 0 Nelson: 0 (Lake Pickard, Nelson Slough)	Barnes: data pending Cavalier: data pending Nelson: 58.1-58.3, 73.6 - 74.3 (Lake Pickard); 87.9 - 88.3 (Nelson Slough), data pending
Dakota skipper <i>Hesperia dacotae</i>	FC; ND-SC	This species is considered an obligate of undisturbed native prairie. The butterfly inhabits wet lowland prairie dominated by bluestem grasses and dry upland prairie dominated by mixed bluestem and needle stem grasses. Both habitat types contain an abundance of flowering plants and have alkaline soils. Adults emerge in mid-June to early July, and mate during a flight period that lasts for about three weeks.	lowland and upland prairie	Barnes Ransom Sargent	Barnes: 0 Ransom: 0 Sargent: 8.4					Barnes: N/A Ransom: N/A Sargent: 203.1-214.8

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total wetland habitat crossed by project.

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed								
				ND	SD	NE	KS	MO	IL			
Mammals												
Gray bat <i>Myotis grisescens</i>	FE; MO-E; IL-E	This species forages primarily within forested areas along streams and lakes. Winter roosts are in deep vertical caves with domed halls. Large summer colonies utilize caves that trap warm air and provide restricted rooms or domed ceilings. Maternity roosts typically are in caves with stream flow and are separate from summer bachelor roosts.	Riparian woodlands, caves							Madison	6.7	
Indiana bat <i>Myotis sodalis</i>	FE; MO-E; IL-E	This species forages primarily in riparian forests and flood-plains, as well as in upland forests, low field, and pastures. Maternity roosts are located beneath loose bark of living and dead trees (especially oak and hickory spp.). Young are generally born in June. Winter hibernacula occur in caves and mines with 85% of this species population hibernating in Shannon, Washington, and Iron counties, MO.	Riparian woodlands, upland forests, pastures, caves						Audrain Buchanan Caldwell Carroll Chariton Clinton Lincoln Montgomery Randolph St. Charles	3.7 4.5 3.1 3.4 4.1 1.4 10.1 4.6 3.6 0.6	Bond Fayette Madison Marion	1.9 3.4 6.7 0.0
Gray wolf <i>Canis lupus</i>	FT; ND-SC	No particular habitat preference. Habitats may include: alpine, desert, conifer forest, hardwood forest, mixed forest, grasslands, savannas, shrubland/ chaparral, tundra, and woodlands.	Any	Cavalier Grnd Fks Nelson Pembina Sargent Walsh	0.0 0.0 0.2 2.9 8.4 1.7							
Fisher <i>Martes pennanti</i>	FC; ND-SC	This species inhabits upland and lowland forests, including coniferous, mixed, and deciduous forests. Fishers generally avoid areas with little forest cover or significant human disturbance and conversely prefer large areas of contiguous interior forest.	Forests and woodlands	Pembina	2.9							
Plains spotted skunk <i>Spilogale putorius interrupta</i>	SD-SC; MO-E	This species inhabits upland grassland prairie, brushy areas, cultivated land, and forests. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, hollow logs, trees, or on brushy heaps. Young are born from April to July.	Grasslands, shrublands, upland forests, agriculture edge						Chariton	17.0		
Eastern spotted skunk <i>Spilogale putorius</i>	KS-T; MO-E; SD-SC	This species prefers forest edge, prairie, brushy areas, and cultivated land, especially if rock outcrops and shrubs are present. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, brushy heaps, hollow logs, and abandoned buildings or outbuildings. Young are born in May or June.	Grasslands, shrublands, upland forests, agriculture edge					Brown Doniphan Marshall Nemaha	7.9 4.2 6.9 5.3	St. Charles	1.1	

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

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Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
River otter <i>Lontra Canadensis</i>	IL-E	Key habitats are rivers, streams, lakes, ponds, marshes, estuaries, and beaver flowages, especially near waterbodies with wooded shorelines or nearby wetlands. When inactive, occupies hollow logs, spaces under roots, logs, or overhangs, abandoned beaver lodges, dense thickets near water, or burrows of other animals; such sites also are used for rearing young	rivers, streams, lakes, ponds, marshes, wetlands					Colfax Stanton	0.5 0.2					Bond Fayette	0.1 3.1
Birds															
Least bittern <i>Ixobrychus exilis</i>	MO-SC; IL-T	Nest in freshwater wetlands with dense, tall growths of emergent vegetation (particularly <i>Typha</i> spp., <i>Carex</i> spp., <i>Scirpus</i> spp., or <i>Phragmites australis</i>) interspersed with some woody vegetation and open, fresh water. In the north-central U.S., breeding and nesting may occur from May-July. Incubation lasts for 17-20 days; young usually leave nest by the 13 th -15th day.	Wetlands, lakes, open water											Fayette Madison	0.0 ¹ 0.0 ¹
Bald eagle <i>Haliaeetus leucocephalus</i>	FT; ND-SC; SD-T; NE-T; KS-T; MO-E; IL-T; OK-T	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites are located in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	Riparian forests, open water	Barnes Cavalier Grnd Fks Nelson Pembina Ransom Sargent Steele Walsh	0.0 0.0 0.0 0.0 0.1 0.2 0.0 0.0 0.3	Beadle Clark Day Hanson Hutchinson Kingsbury Marshall McCook Miner Yankton	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton Wayne	0.0 0.2 0.5 0.0 0.0 0.0 0.2 0.1 0.2 0.0	Brown Doniphan Marshall Nemaha	0.0 0.2 0.1 0.0	Buchanan Carroll Chariton Clinton Lincoln Montgomery St. Charles	0.2 0.0 0.7 0.0 0.2 0.0 0.3	Bond Fayette Madison	0.1 3.1 1.1
Peregrine falcon <i>Falco peregrinus</i>	IL-T; NE-SC; KS-E	This species is found over a wide variety of habitats, but are generally located near open water or marshes that support high concentration of shorebirds or waterfowl. Nest sites occur on tall steep-walled cliffs, bridges, or buildings. Preferred foraging habitat includes lakes, rivers, and wet meadows. Breeding season: April 15 to July 15.	Wetlands, lakes, open water							Brown Doniphan Marshall Nemaha	0.0 ¹ 0.0 ¹ 0.0 ¹ 0.0 ¹			Madison	2.1 ¹
Greater Prairie-chicken <i>Tympanuchus cupido</i>	MO-E; ND-SC	Prime habitat for this species includes mid-grass and tall-grass prairies bordered by open oak woodlands, oak forests, and cropland. In western Kansas, they nest in sand-sage prairie and forage in corn and wheat fields. In Missouri, nesting habitat is limited to cropland and nearby prairies mainly on the Osage Plains. Breeding season: March through July.	Shortgrass, tallgrass, upland forest, agriculture									Audrain Carroll	5.9 13		
King rail <i>Rallus elegans</i>	MO-E; NE-SC	This species inhabits fresh and brackish wetlands. King rails prefer wetlands with abundant grasses, sedges, rushes and cattails. Nest sites occur in herbaceous cover over shallow water in river floodplains. The adult King Rail molts completely after nesting and is flightless for nearly a month. Breeding season: April-June	Wetlands									Carroll Lincoln St. Charles	0.0 ¹ 0.0 ¹ 0.0 ¹		

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

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Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
Whooping crane <i>Grus americana</i>	FE; ND-SC; SD-E; NE-E; OK-E; KS-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the project regions generally occurs from February through April and from October through November, respectively.	Wetlands, riparian, agriculture	Barnes Cavalier Nelson	0.0 ¹ 0.0 ¹ 0.2 ¹	Beadle Clark Kingsbury Yankton	0.0 ¹ 0.0 ¹ 0.0 ¹ 0.1 ¹	Colfax Saline Seward Stanton	0.5 ¹ 0.2 ¹ 0.1 ¹ 0.2 ¹	Brown Doniphan Marshall Nemaha	0.0 ¹ 0.2 ¹ 0.1 ¹ 0.0 ¹				
Snowy plover <i>Charadrius alexandrinus</i>	KS-T	This species inhabits open alkaline flats, mudflats, sandy shorelines, sandbars with little vegetation along rivers, lakes, ponds, and marshlands. Nesting often occurs on white saline flats. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds							Brown Doniphan Marshall Nemaha	0.0 ¹ 0.2 ¹ 0.0 ¹ 0.0 ¹				
Piping plover <i>Charadrius melodus</i>	FT; ND-SC; SD-T; NE-T; KS-T	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds	Sargent		Clark Day Kingsbury Yankton	0.0 ¹ 0.0 ¹ 0.4 ¹ 0.1 ¹	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0 ¹ 0.2 ¹ 0.5 ¹ 0.0 ¹ 0.0 ¹ 0.0 ¹ 0.2 ¹ 0.1 ¹ 0.2 ¹	Brown Doniphan Marshall Nemaha	0.0 ¹ 0.2 ¹ 0.1 ¹ 0.0 ¹				
W. Curlew <i>Numenius borealis</i>	FE; SD-E; KS-E	This species is a nearly extinct spring migrant that feeds and rests in burned-over prairies, agricultural areas, wetlands, and marshes.	Prairies, wetlands, agriculture			Clark	4.5 ¹			Brown Doniphan Marshall Nemaha	4.9 ¹ 1.8 ¹ 5.6 ¹ 4.7 ¹				
Interior least tern <i>Sterna antillarum athalassos</i>	FE; SD-E; NE-E; MO-E; OK-E; KS-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed. Breeding season: May 1 through August 15.	Shorelines and sandbars or rivers, lakes, reservoirs			Clark Yankton	0.0 ¹ 0.1 ¹	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0 ¹ 0.2 ¹ 0.5 ¹ 0.0 ¹ 0.0 ¹ 0.0 ¹ 0.2 ¹ 0.1 ¹ 0.2 ¹	Brown Doniphan Marshall Nemaha	0.0 ¹ 0.2 ¹ 0.1 ¹ 0.0 ¹	Chariton St. Charles	0.7 ¹ 0.3 ¹		
Barn owl <i>Tyto alba</i>	MO-E; IL-E	This cavity-nesting species is primarily a bird of open country - residential and agricultural areas, old fields and woodland edges. Nests in buildings, tree cavities, caves, cliff crevices, and cut bank burrows Breeding season: late winter, spring, and/or early summer.	Grasslands, woodlands, agriculture									St. Charles	1.7	Fayette Marion	0.0 0.0
Loggerhead shrike <i>Lanius ludovicianus</i>	MO-SC; IL-T	This species is found in open areas with mixed shrub/brush hedgerows and scattered thorny trees. Thorny plant species (osage orange, honey locus, multiflora rose, wild crabapple) are important for impaling prey. In MO and IL, nesting peaks in late April, with a second peak in late May in MO.	Shrublands, uplands											Bond Fayette Marion	2.1 0.0 0.0

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed						
				ND	SD	NE	KS	MO	IL	
Henslow's sparrow <i>Ammodramus henslowii</i>	KS-SC; MO-SC; IL-E	This species breeds in a variety of grassland habitats with tall, dense grass and herbaceous vegetation. Meadows, open grasslands and weedy and abandoned fields, all with wet areas, dense grass-forb mosaics and scattered small woody growths appear to be essential. Breeding season: April-July.	Grasslands, meadows, shrublands						Madison	1.6
Yellow-crowned night heron <i>Nyctanassa violacea</i>	IL-E	This species nests on barrier islands, dredge spoil islands, and bay islands that contain forested wetlands or scrub/shrub thickets. Colonies may be located in dense shrubby thickets, forests with an open understory. They use similar habitat types for nesting and roosting, avoiding areas with insufficient cover. They hunt along the shores of tidal creeks and tide pools within salt and brackish marshes dominated by salt marsh cordgrass.	wetlands, scrub-shrub thickets,						Fayette	3.4 ¹
Pied-billed grebe <i>Podilymbus podiceps</i>	IL-T	This species breeds on seasonal or permanent ponds with dense stands of emergent vegetation, bays and sloughs. Uses most types of wetlands in winter.	ponds, wetlands, sloughs						Fayette	6.5 ¹
Northern Harrier <i>Circus cyaneus</i>	MO-E	This species breeds in marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	marshes, meadows, grasslands, cultivated fields					Carroll	13.0 ¹	
Fish										
Chestnut lamprey <i>Ichthyomyzon castaneus</i>	KS-T	This species is found in moderate-sized rivers and large creeks. Spawning occurs in smaller tributary streams in swift shallow riffles where the gravel is clean. Eggs are laid in a nest in the river bottom. Spawning period: spring or summer.	Rivers and creeks				Doniphan: Missouri River			
Pallid sturgeon <i>Scaphirhynchus albus</i>	FE; SD-E; NE-E; KS-E; MO-E; IL-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	Large, turbid rivers, sand substrate		Yankton: James River Missouri River	Cedar: Missouri River Colfax: Platte River	Doniphan: Missouri River	Buchanan: Missouri River St. Charles: Mississippi River	Madison: Mississippi River Fayette: Kaskaskia River	
Lake sturgeon <i>Acipenser fulvescens</i>	NE-T; MO-E; IL-E	This species is generally bottom dwelling and occurs in large rivers and shallow areas of large lakes. They are most often associated with silt-free deep run and pool habitats of rivers (i.e., >5 ft deep), and generally avoid aquatic vegetation. Gravelly tributary streams of rivers and lakes serve as spawning habitat, although rocky, wave-swept areas near lake shores and islands serve as spawning habitat when preferred habitats are unavailable. Spawning period: late-spring.	Large rivers and lakes, gravelly substrate		Yankton: Missouri River	Cedar: Missouri River		St. Charles: Mississippi River		

¹Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

**Table 2
Keystone Special Status Species
Total Habitat Crossed by State**

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed					
				ND	SD	NE	KS	MO	IL
Flathead chub <i>Platygobio gracilis</i>	KS-T	This species occurs from the Rio Grande to the Arctic Circle in small creeks and the largest rivers that have turbid fluctuating water levels and unstable sand bottoms. This species relies on flood flows to spawn successfully. Spawning occurs after water levels have subsided after peak flows, when water temperatures are warmer and substrate is more stable. Relies on flood flows to spawn successfully. Spawns after rivers have subsided following peak flow.	Creeks and rivers with turbid, fluctuating flow and sandy substrates				Nemaha: S.F. Nemaha River Doniphan: Missouri River		
Sturgeon chub <i>Macrhybopsis gelida</i>	NE-E; KS-T MO-SC SD-T	This species prefers large turbid sandy rivers over substrate of small gravel and coarse sand. It is often found in areas swept by currents especially at heads of islands or exposed sandbars. Spawning period: late spring to midsummer.	Large sandy rivers, sand/gravel substrate		Yankton: Missouri River	Cedar: Missouri River Colfax County: Platte River	Doniphan: Missouri River	Buchanan: Missouri River	
Sicklefin chub <i>Macrhybopsis meeki</i>	NE-SC; KS-E MO-SC SD-E	This species requires continuously and heavily turbid waters of large rivers where it frequents areas of strong current flowing over sand or gravel substrate. Spawning period: spring (likely from late March and May).	Large turbid rivers, sand/gravel substrate		Yankton: Missouri River	Colfax: Platte River	Doniphan: Rock Creek Missouri River	Buchanan: Missouri River	
Western silvery minnow <i>Hvbognathus yritis</i>	KS-T; MO-SC	This species prefers protected areas in large, turbid rivers and prairie streams. In streams they are typically found in water less than one foot deep and shallow shore water heavily vegetated with emergent grasses and reeds. In protected areas of larger rivers, they move in large schools of 50 to 100 individuals along the bottom in deep, quiet water. While little is known about spawning, this species probably scatters eggs on silt substrate in quiet water.	Protected areas of rivers and streams				Nemaha: S.F. Nemaha River Doniphan: Missouri River	Buchanan: Missouri River	
Blacknose shiner <i>Notropis heterolepsis</i>	ND-SC; NE-E; MO-SC	This species prefers clean weedy lakes and streams.	Lakes, streams			Cedar: Missouri River Stanton: Elkhorn River	Doniphan: Missouri River		
Topeka shiner <i>Notropis topeka</i>	FE; SD-SC; KS-T; MO-E	This species inhabits pool and run areas in the headwaters of small prairie streams with high water quality and cool temperatures. These streams generally exhibit intermittent flow during summer; however pools are maintained by spring or groundwater percolation. The substrate of these occupied streams consist mainly of clean gravel, however bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Spawning period: late spring and summer.	Small, cool (often intermittent) prairie streams		Miner: Wolf Creek Hanson: Wolf Creek Hutchinson: Wolf Creek Yankton: James River Missouri River	Cedar: Missouri River Saline: W.F. Big Blue River	Marshall: N. Elm Creek Doniphan: Missouri River	Clinton: Castile Creek Little Platte River Shoal Creek Caldwell: Log Creek Crush Creek Crabapple Creek	
Northern redbelly dace <i>rosomus eos</i>	NE-T	This species occurs in a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			
Shinescale dace <i>Phoxinus neogaeus</i>	NE-T	This species occurs a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed						
				ND	SD	NE	KS	MO	IL	
Western sand darter <i>Ammocrypta clarum</i>	IL-E	This species occurs in medium and large rivers; most commonly in slight to moderate currents over sandy bottoms. It is known to inhabit areas of gravel or silt. The species has also been recorded from quiet margins of drainage canals and shallow backwaters, usually where there is enough current to keep the bottom largely free of silt. Buries in sand.	Medium to large rivers, sandy substrate							Fayette: Kaskaskia River
Reptiles										
Western fox snake <i>Elaphe vulpina vulpina</i>	MO-E	This species inhabits cultivated fields, along wooded stream valleys and in natural prairies that adjoin marshes. It is active between late April and October. Small mammal burrows and brush piles are used as den sites during winter hibernation. Mating begins in April and females lay eggs under logs or leaf litter in May or June. Young hatch in August or September.	Agriculture, riparian woodlands, prairies, wetlands						St. Charles	1.7 ¹
Smooth earth snake <i>Virginia valeriae</i>	KS-T	This species inhabits rocky hillsides in moist woodlands and woodland edges in river and stream valleys where they may be found on the slopes under leaf litter, rocks, or logs. During winter, it utilizes deep crevices on rocky hillsides. Mating begins in the spring after emergence from hibernation. Mating may also occur in the fall. Young hatch in August or September.	Riparian woodland, upland forest				Doniphan	2.4		
Western massasauga <i>Sistrurus catenatus catenatus</i>	FC; MO-E; IL-E	This subspecies prefers marshy and swamp areas dominated by cordgrass, sedges, and bulrushes, as well as lowland areas along river and lakes. The snakes hibernate singly in mammal burrows, crayfish burrows, and in crevices or rock piles close to water. Courtship and mating occurs in spring and young are born in late July through early September.	Wetland, riparian						Chariton	0.7 ¹
Western massasauga <i>Sistrurus catenatus tergeminus</i>	NE-T; MO-E	This subspecies is found in open sagebrush prairie, rocky prairie hillsides, and prairie marsh habitats, usually near a water source. The snakes hibernate singly in rodent burrows. Courtship and breeding occur both in the Spring and Fall. Young are born during July or August.	Sagebrush, shrubland, wetland			Gage Jefferson	0.0 ¹ 3.4 ¹		Chariton	12.9 ¹
False map turtle <i>Graptemys pseudogeographica</i>	SD-T	This species inhabits slow to swift current rivers and streams, river sloughs, oxbow lakes, ponds, impoundments, and backwaters. They are devoted baskers, often resting just below the surface on submerged branches from fallen trees and projecting logs.	Rivers, streams, sloughs, ponds, backwaters, impoundments		Yankton	0.1				
Kirtland's snake <i>Clonophis kirtlandi</i>	IL-T	This species inhabits prairie wetlands, wet meadows, and grassy edges of creeks, ditches, and ponds, usually in association with crayfish burrows. It also has been found in damp habitat remnants in vacant lots of urban settings. Secretive and nocturnal, it shelters beneath logs and surface debris, or in crayfish burrows, by day.	Wetlands						Fayette	0.0 ¹

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed									
				ND		SD		NE		KS		MO	IL
Amphibians													
Illinois chorus frog <i>Pseudacris strecheri illino</i>	IL-T	Sand prairies and remnants such as sandy agricultural fields and waste areas. Burrows in sand and emerges after heavy, early spring rains to breed in nearby flooded fields, ditches, and other vernal ponds	Sand prairies								Madison	0.6	
Invertebrates													
Dakota skipper <i>Hesperia dacotae</i>	FC; SD-SC, ND-SC	This species is considered an obligate of undisturbed native prairie. The butterfly inhabits wet lowland prairie dominated by bluestem grasses and dry upland prairie dominated by mixed bluestem and needle stem grasses. Both habitat types contain an abundance of flowering plants and have alkaline soils. Adults emerge in mid-June to early July, and mate during a flight period that lasts for about three weeks.	Lowland and upland prairie	Barnes Ransom Sargent	0.0 0.0 8.4	Clark Day Marshall Yankton	4.5 6.7 5.1 2.1						
American burying beetle <i>Nicrophorus americanus</i>	FE; KS-E	This species inhabits upland grasslands or near the edge of grassland/forest. Sandy/clay loam soils and food (carrion) availability are also important. The species appears to prefer loose soil in which to bury carrion. Reproduction occurs from late April through mid August. Reproductive activity includes the burial of a carcass, building of a chamber, and laying eggs.	Grasslands, upland forests					Brown Doniphan Marshall Nemaha	7.9 4.2 6.9 5.3				
Blueshell mussel <i>Leptodea leptodon</i>	FE; SD-SC; NE-E	Occurs in riffles with moderate to high gradients in creeks to large rivers. Typically associated with riffles, relatively strong currents, and substrate of mud, sand, or assemblages of gravel, cobble, and boulder. Restricted to rivers with relatively good water quality in stretches with stable channels. Little is known concerning the reproduction of this species.	Creeks and rivers with good water quality and stable channels			Yankton	0.2	Cedar	0.2				
Higgins' eye pearl mussel <i>Lampsilis higginsii</i>	FE; SD-SC	Found in substrates of mud with a mixture of gravel and stones. Prefers rapidly flowing water. The exact breeding season is unknown.	Fast flowing creeks and rivers, mud substrate			Yankton	0.2	Cedar	0.2				
Winged mapleleaf <i>Quadrula gragosa</i>	FE; SD-SC	The species is found in riffles with clean gravel, sand, or rubble bottoms.	Rivers, streams			Yankton	0.1						
Plants													
Decurrent false aster <i>Boltonia decurrens</i>	FT; MO-E; IL-T	The species grows in open muddy bottomlands and is dependent upon disturbance from cyclical flooding to maintain the habitat suitable for its survival. Historically, it was found on the shores of lakes and the banks of streams. Currently, it is most common in disturbed lowland areas where human-caused disturbance provides adequate habitat. Flowers: July-October.	Riparian floodplains and muddy bottomlands subject to flooding							St. Charles	0.0 ¹	Madison	2.0 ¹
Small white lady's-slipper <i>Cypripedium candidum</i>	NE-T	This species is found in wetland prairie habitats: mesic blacksoil prairie, wet blacksoil prairie, glacial till hill prairie, sedge meadow, calcareous fen, glade. Found on calcareous soils. Flowering occurs May-June.	Wetland prairie					Butler Cedar Colfax Stanton Wayne	0.0 ¹ 4.3 ¹ 0.8 ¹ 1.5 ¹ 1.3 ¹				

¹ Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

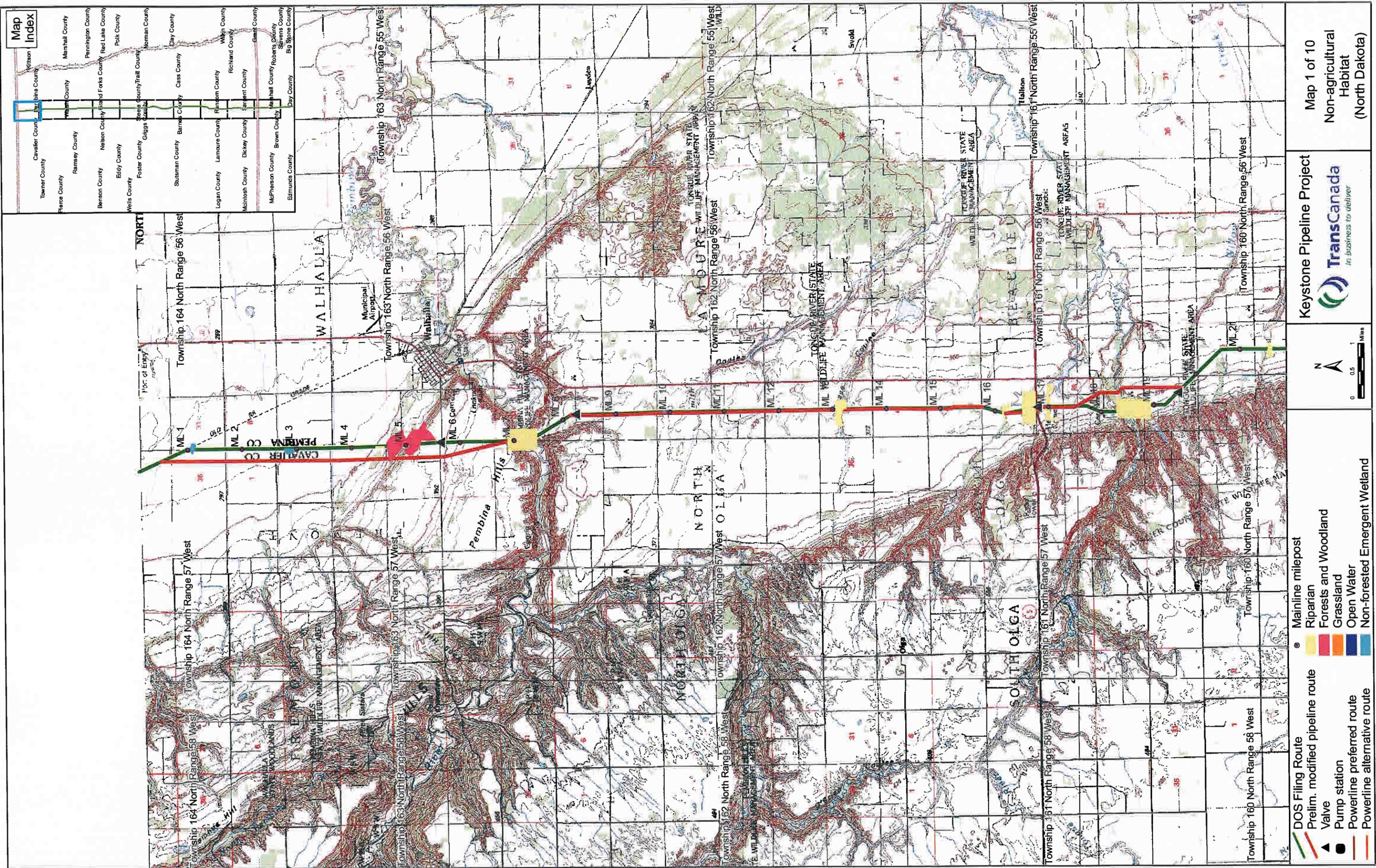
Table 2
Keystone Special Status Species
Total Habitat Crossed by State

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed													
				ND		SD		NE		KS		MO		IL			
Eastern prairie fringed orchid <i>Platanthera leucophaea</i>	FT; IL-E	Mesic-wet calcareous tallgrass sand or silt loam prairie. May also be found in open graminoid portions of lake margins, sedge, meadows, and marshes, wet prairie or open swamps, or bogs and shores. Flowering begins late June to early July. Flowers do not appear annually.	Mesic-wet tallgrass prairie													Bond	0.0 ¹
																Fayette	0.0 ¹
																Madison	0.0 ¹
																Marion	0.0 ¹
Western prairie fringed orchid <i>Platanthera praeclara</i>	FT; ND-SC; SD-SC; NE-T	Occurs in mesic upland tallgrass prairie in the southern part of its range, often in swales, and wet-mesic tallgrass prairie and sedge meadows in the northern part of its range. Also known from prairies and swales in sand dune complexes that are fed by shallow underground water. Flowers June-July.	Tallgrass prairie, dune complexes	Ransom	0.0	Clark	4.5 ¹	Butler	0.0 ¹								
						Day	6.7 ¹	Cedar	4.3 ¹								
						Yankton	2.1 ¹	Colfax	0.8 ¹								
								Gage	0.0 ¹								
								Jefferson	3.4 ¹								
								Platte	0.0 ¹								
								Saline	0.3 ¹								
								Seward	0.0 ¹								
								Stanton	1.5 ¹								
								Wayne	1.3 ¹								
Prairie bush-clover <i>Lespedeza leptostachya</i>	FT; IL-E	In Illinois, this species is generally found on dry gravel prairies and dry-mesic prairies. It is often found on north-facing prairie slopes. On these slopes, it typically occurs either in thin soil at the margins of rocks or in gravelly loamy soil. Flowers in July, August.	Prairie													Bond	0.8
																Fayette	0.0
																Madison	0.6
																Marion	0.0
Running buffalo ver <i>folium stoloniferum</i>	FE; MO-E	This species is commonly found in areas of rich soils in the ecotone between open forest and prairie; and moist, partially shaded woodlands- sometimes along stream or river terraces. Also found in areas disturbed by grazing or mowing. This species historically grew along bison trails. Flowers: April-June.	Riparian areas, woodland/prairie ecotones										Lincoln	11.7 ¹			
Royal Catchfly <i>Silene regia</i>	IL-E	This species is found in habitats that include mesic black soil prairies, openings in upland forests, savannas, scrubby barrens, and open areas along roadsides and railroads	Prairies, upland forests, savannas, open roadsides												Madison	1.6	
Prairie Spiderwort <i>Tradescantia bracteata</i>	IL-T	Common spiderwort likes sandy soils and seems to be most abundant where grazing is light to moderate. Dry typical prairie and dry sand prairies	Grazed prairies, sandy soils												Madison	0.6	
Spring Ladies' Tresses <i>Spiranthes vernalis</i>	IL-E	This species is typically found in upland dry to mesic forests, dry to mesic prairies, and successional cultured fields.	Upland/mesic forests												Madison	2.0 ¹	

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Table 3
North Dakota Special Status Species Listed by County and Habitat Type

County	Grassland	Forests And Woodlands	Riparian	Emergent Wetland	Open Water
Barnes	Dakota Skipper		Whooping Crane	Whooping Crane	Bald Eagle, Whooping Crane
Cavalier	Gray Wolf	Gray Wolf	Whooping Crane, Gray Wolf	Whooping Crane	Bald Eagle, Whooping Crane
Grand Forks	Gray Wolf	Gray Wolf	Gray Wolf		Bald Eagle
Nelson	Gray Wolf	Gray Wolf	Whooping Crane, Gray Wolf	Whooping Crane	Bald Eagle, Whooping Crane
Pembina	Gray Wolf	Fisher, Gray Wolf	Fisher, Gray Wolf		Bald Eagle
Ransom	Dakota Skipper				Bald Eagle
Sargent	Dakota Skipper, Gray Wolf	Gray Wolf	Gray Wolf	Piping Plover	Bald Eagle, Piping Plover
Steele					Bald Eagle
Walsh	Gray Wolf	Gray Wolf	Gray Wolf		Bald Eagle



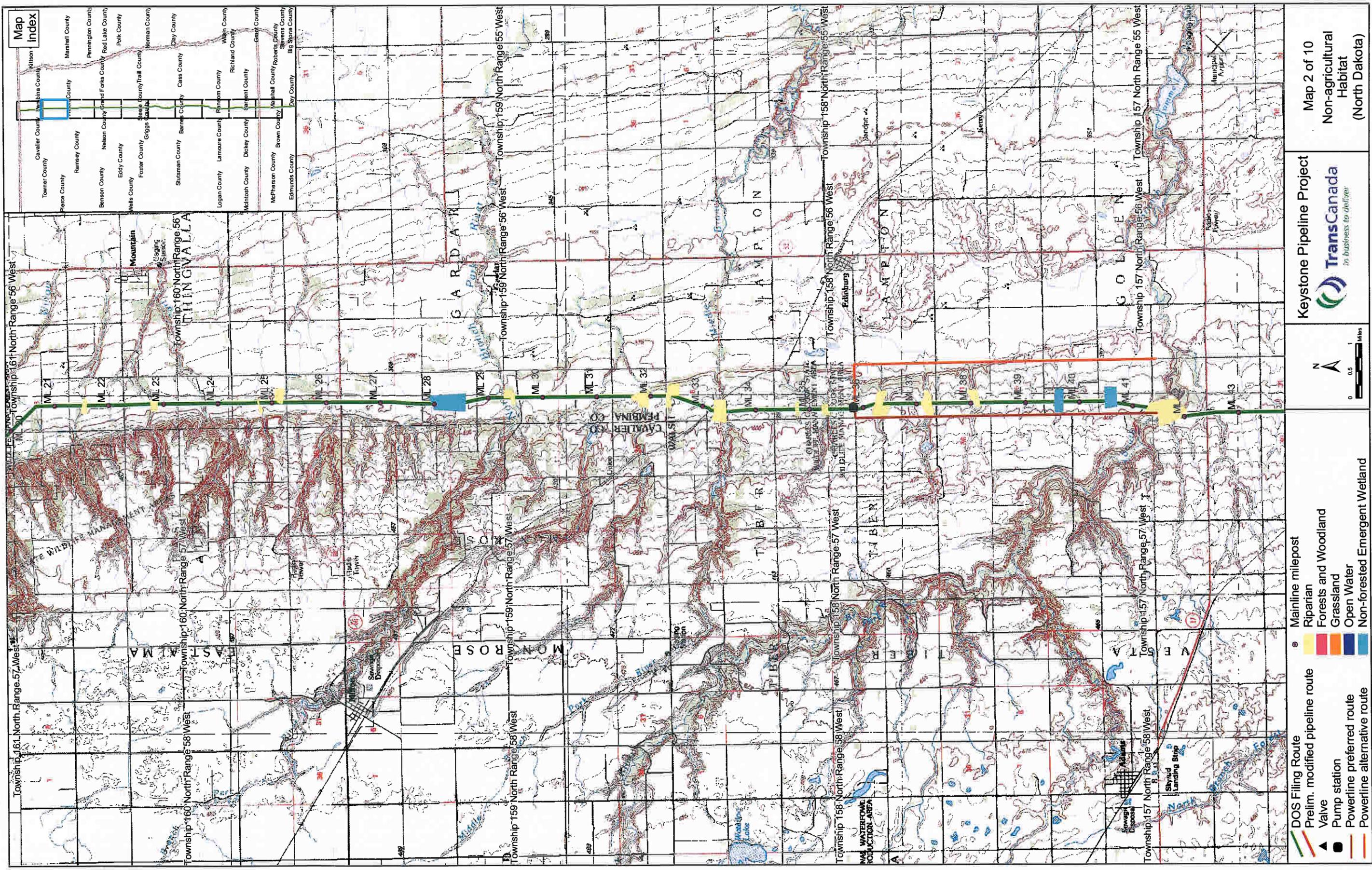
- DOS Filing Route
- Prelim. modified pipeline route
- Pump preferred route
- Powerline alternative route
- Mainline milepost
- Riparian
- Forests and Woodland
- Grassland
- Open Water
- Non-forested Emergent Wetland
- Valve
- Pump station

- North
- 0 0.5 1 Miles

Keystone Pipeline Project

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Map 1 of 10
Non-agricultural
Habitat
(North Dakota)



Map Index

Towner County	Cavaller County	Kimball County	Marshall County
Pierce County	Ramsay County	Pennington County	Pennington County
Benson County	Nelson County	Grand Forks County	Red Lake County
Eddy County	Wells County	Steele County	Trail County
Foster County	Giggs County	Norman County	Norman County
Susman County	Barnes County	Cass County	Clay County
Logan County	Lamoure County	Richland County	Richland County
Melrose County	Dickey County	Sargent County	Sargent County
McPherson County	Brown County	McPherson County	Roberts County
Edmunds County	Big Stone County	Edmunds County	Big Stone County

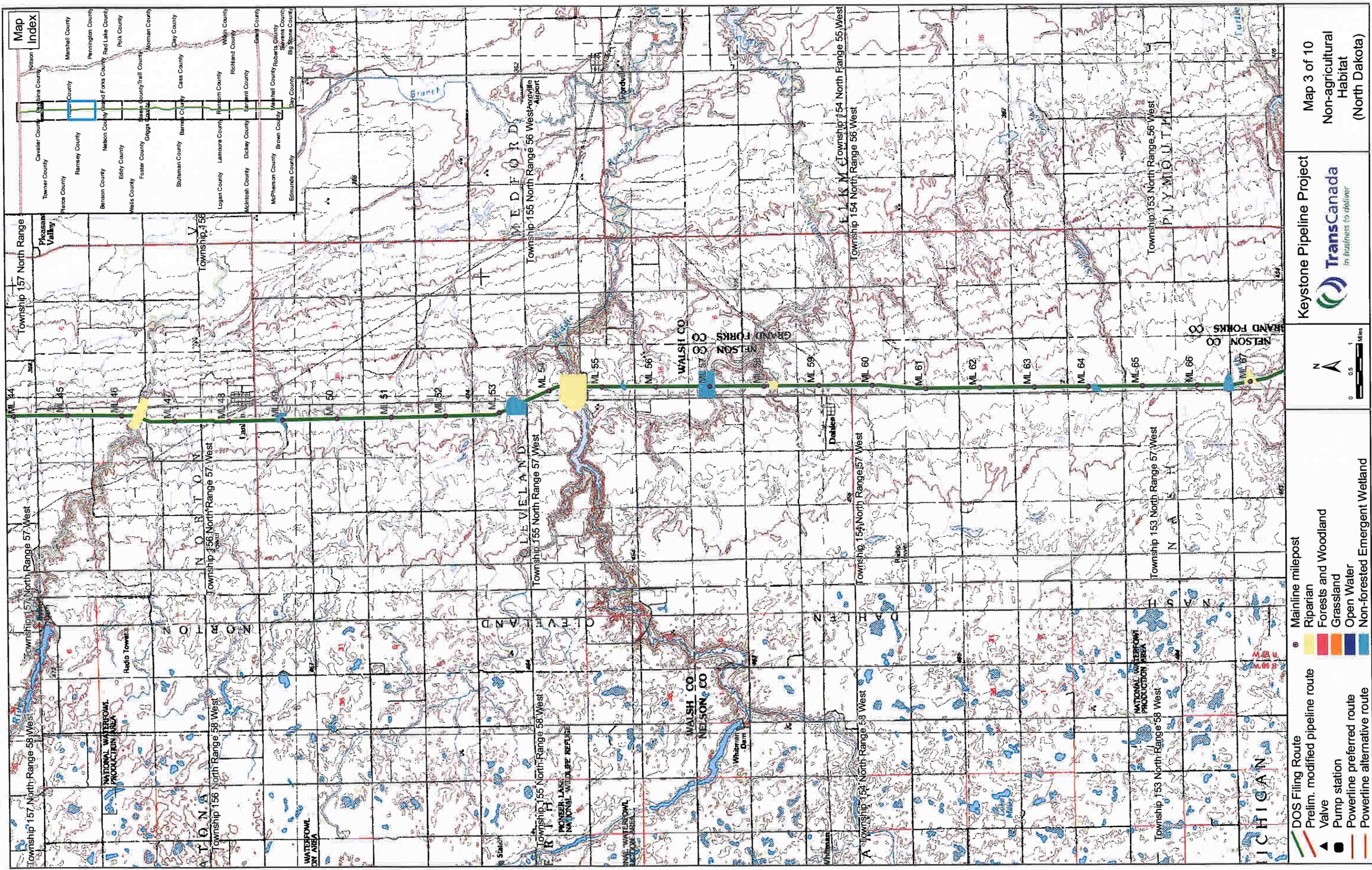
Keystone Pipeline Project

Map 2 of 10

Non-agricultural Habitat (North Dakota)

0 0.5 1 Miles

- DOS Filing Route
- Prelim. modified pipeline route
- Valve
- Pump station
- Powerline preferred route
- Powerline alternative route
- Mainline milepost
- Riparian
- Forests and Woodland
- Grassland
- Open Water
- Non-forested Emergent Wetland



Map Index

Kitson	Cavalier County	Walton County	Marshall County
Towner County	Ramsey County	Benson County	Pennington County
Fergus County	Nelson County	Eddy County	Red Lake County
Wells County	Foster County	Stutsman County	Polk County
Logan County	Lamoure County	McPherson County	Norman County
McIntosh County	Dickey County	Edmunds County	Clay County
Richland County	Grant County	Roberts County	Walton County
Big Stone County	Day County	Stevens County	Richland County
		Big Stone County	Grant County

Keystone Pipeline Project

Map 3 of 10

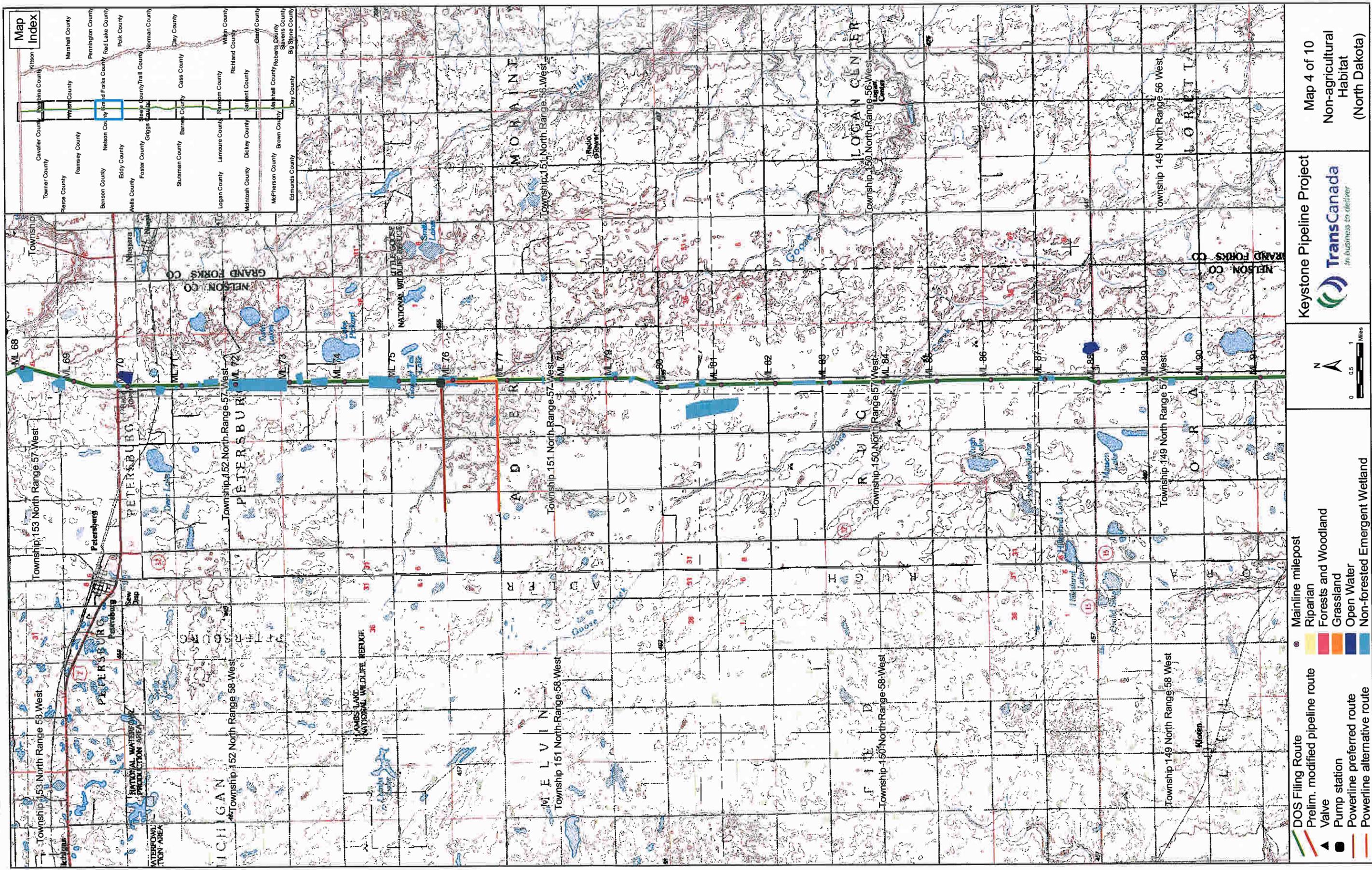
Non-agricultural Habitat (North Dakota)

TransCanada
in business to deliver

Scale: 0, 0.5, 1 Miles

Legend

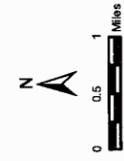
- DOS Filing Route
- Prelim. modified pipeline route
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- Riparian
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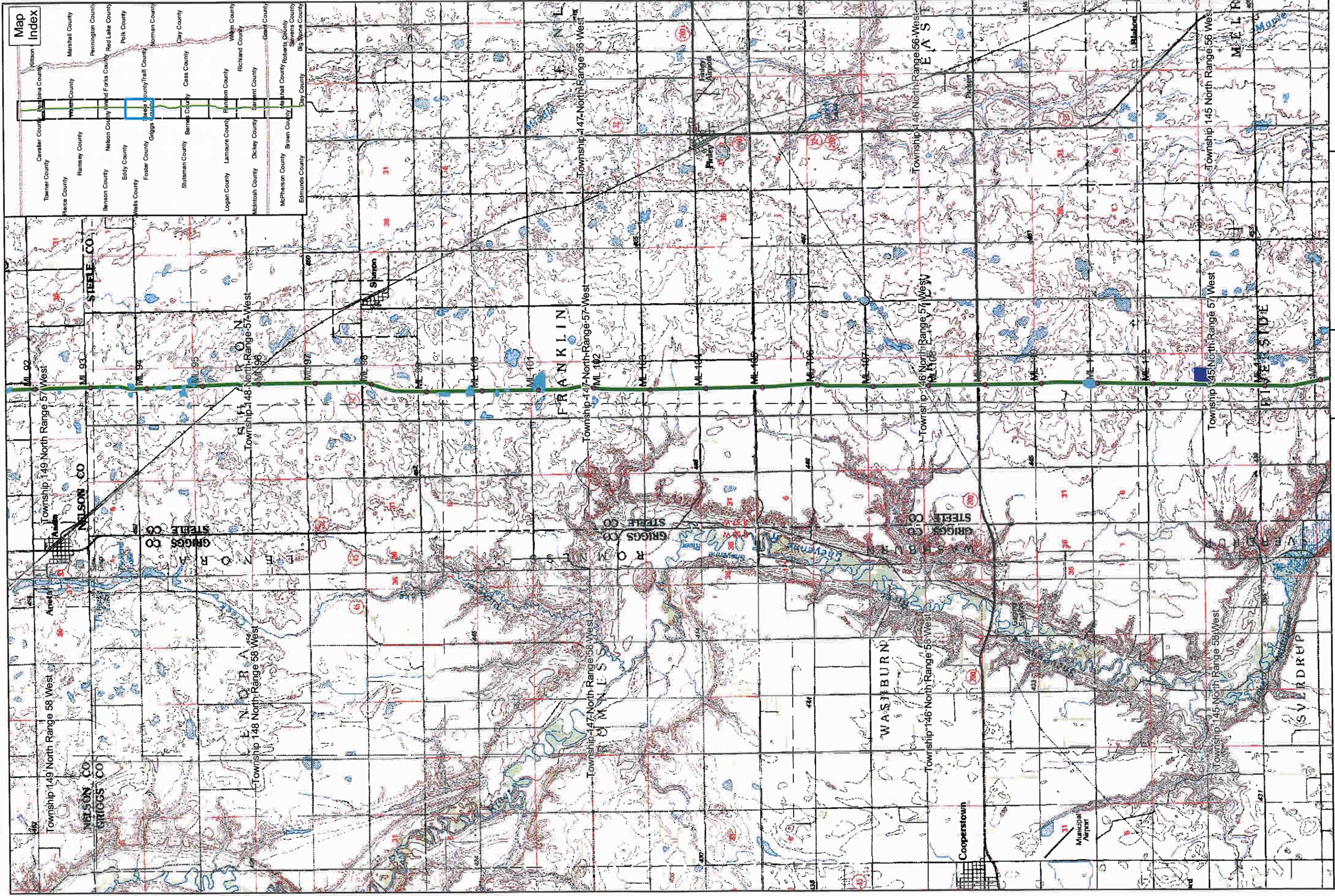


Map Index

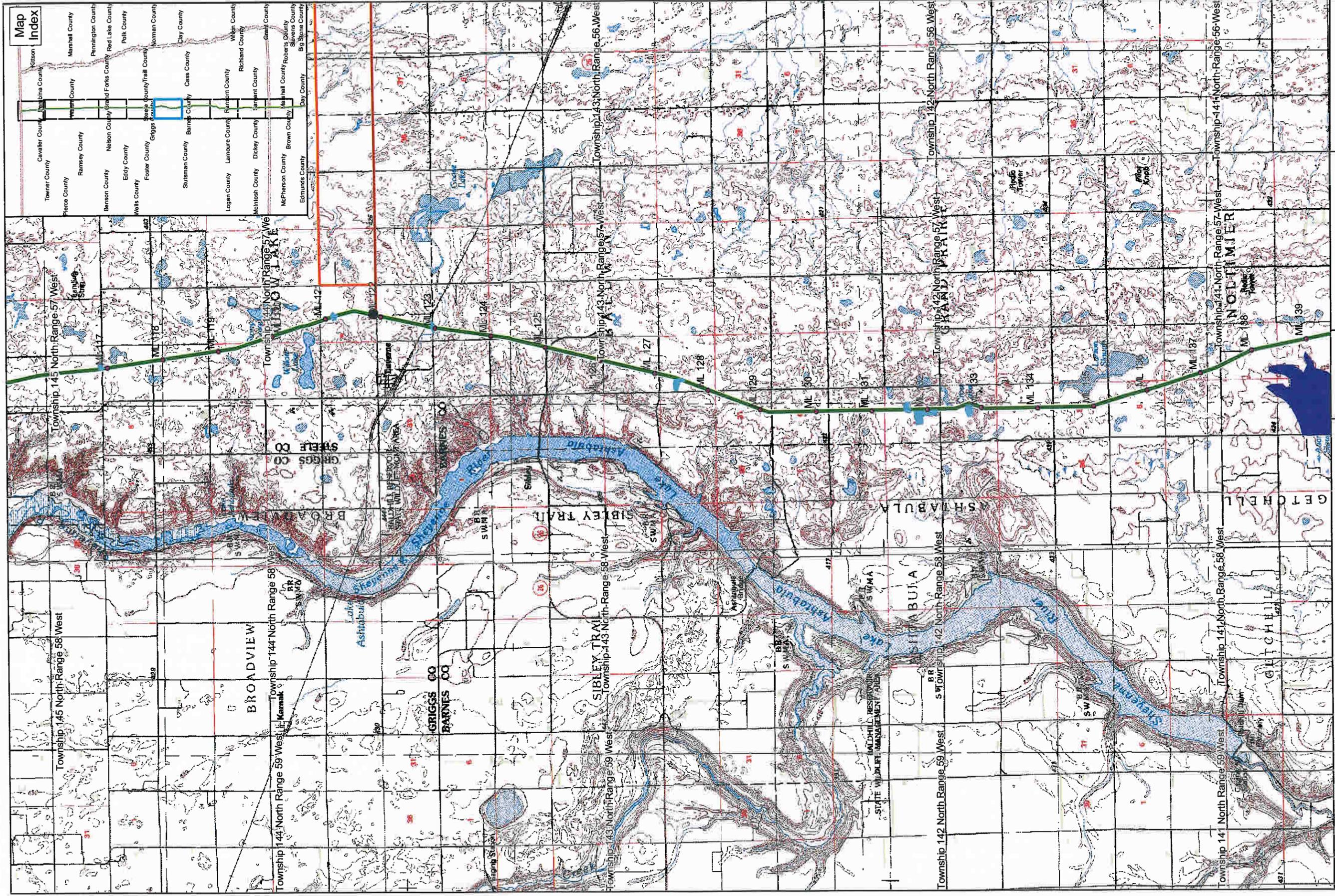
Towner County	Cavalier County	Madison County	Kitson County
Faith County	Raymer County	Wheat County	Marshall County
Benson County	Nelson County	Grand Forks County	Red Lake County
Wells County	Eddy County	Stutsman County	Pink County
Foster County	Griggs County	Stutsman County	Grand Forks County
Stutsman County	Barnes County	Cass County	City County
Logan County	Lamoure County	Pennington County	Wheat County
Mahoning County	Dickey County	Sargent County	Richardson County
McPherson County	Brown County	McPherson County	Roberts County
Edmunds County	Big Stone County	Edmunds County	Big Stone County

<ul style="list-style-type: none"> DOS Filing Route Prelim. modified pipeline route Valve Pump station Powerline preferred route Powerline alternative route 	<ul style="list-style-type: none"> Mainline milepost Riparian Forests and Woodland Grassland Open Water Non-forested Emergent Wetland 	<p>Keystone Pipeline Project</p> <p>TransCanada an INNOVATION TO EXCELLENCE</p>	<p>Map 4 of 10</p> <p>Non-agricultural Habitat (North Dakota)</p>
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<ul style="list-style-type: none"> ● Mainline milepost ● DOS Filing Route ● Prelim. modified pipeline route ▲ Valve ● Pump station — Powerline preferred route — Powerline alternative route 	<ul style="list-style-type: none"> ● Riparian ● Forests and Woodland ● Grassland ● Open Water ● Non-forested Emergent Wetland 	<p>0 0.5 1 Miles</p>	<p>Keystone Pipeline Project</p> <p>Map 5 of 10 Non-agricultural Habitat (North Dakota)</p>
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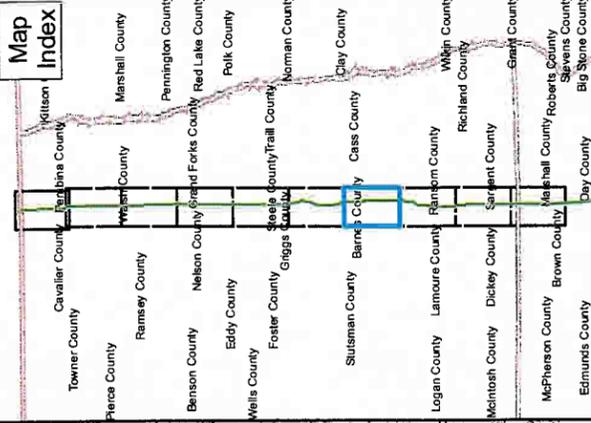
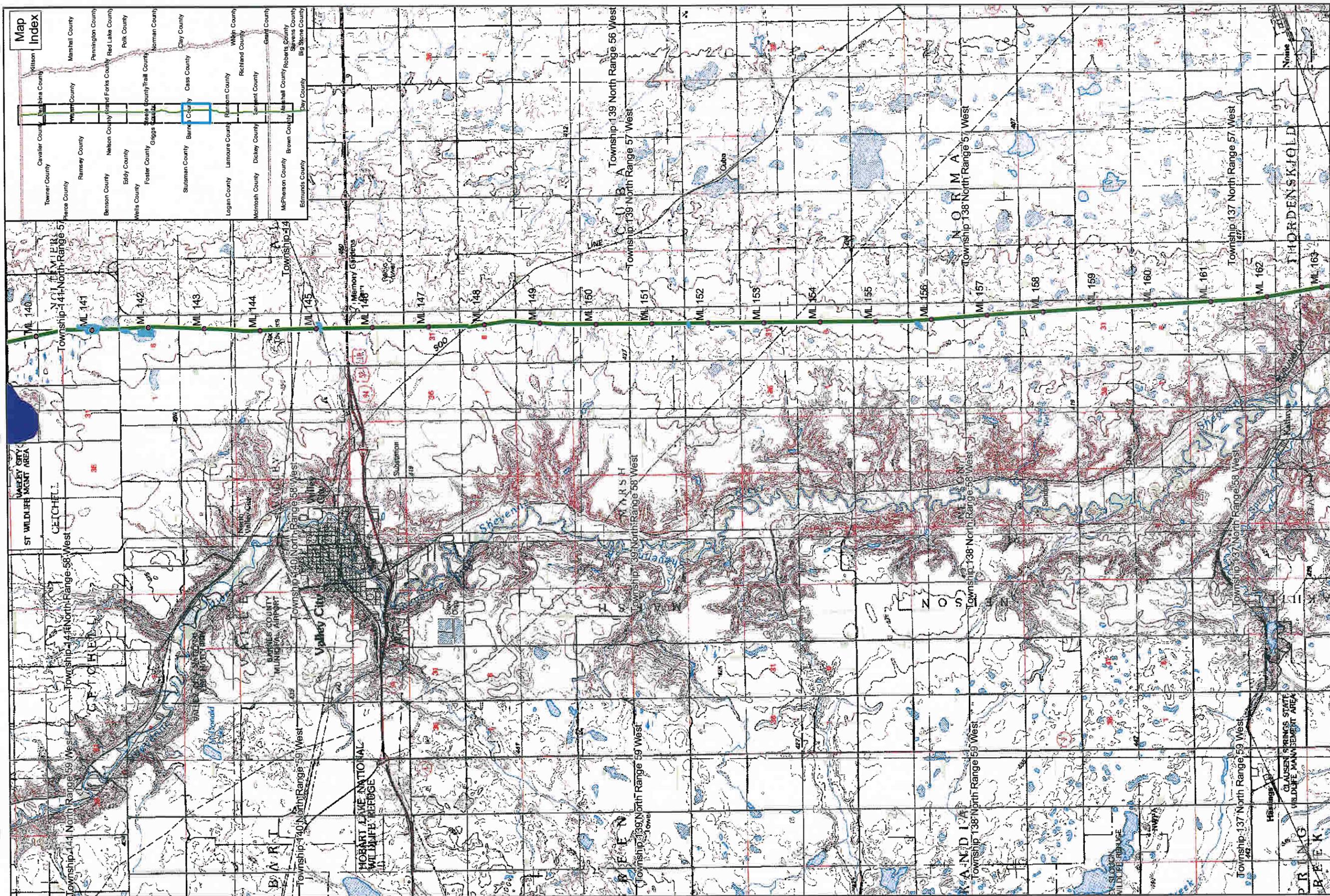


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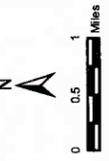
- DOS Filing Route
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- Valve
- Pump station
- Powerline preferred route
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- Mainline milepost
- Riparian
- Forests and Woodland
- Grassland
- Open Water
- Non-forested Emergent Wetland

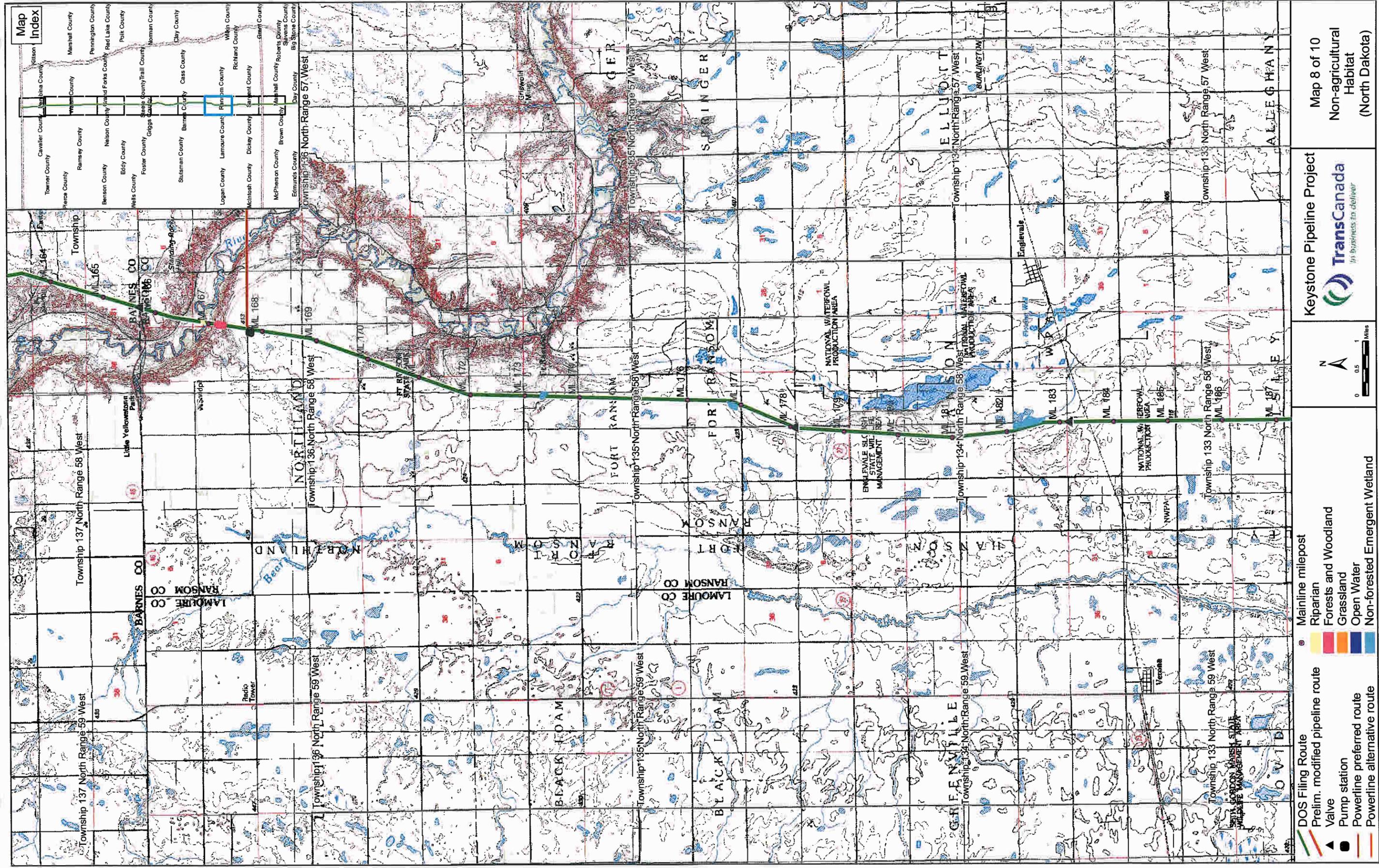
Map 6 of 10
Keystone Pipeline Project
TransCanada
in partnership with
Non-agricultural Habitat (North Dakota)

Scale: 0 0.5 1 Miles



<p>DOS Filing Route</p> <p>Prelim. modified pipeline route</p> <p>Valve</p> <p>Pump station</p> <p>Powerline preferred route</p> <p>Powerline alternative route</p>	<p>Mainline milepost</p> <p>Riparian</p> <p>Forests and Woodland</p> <p>Grassland</p> <p>Open Water</p> <p>Non-forested Emergent Wetland</p>	<p>Keystone Pipeline Project</p>  <p><i>In business to deliver</i></p>	<p>Map 7 of 10</p> <p>Non-agricultural Habitat (North Dakota)</p>
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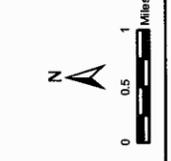
Map Index

Towner County	Walsh County	Golden Valley County
Deer Valley County	Ward County	Golden Valley County
Golden Valley County	Golden Valley County	Golden Valley County
Golden Valley County	Golden Valley County	Golden Valley County
Golden Valley County	Golden Valley County	Golden Valley County
Golden Valley County	Golden Valley County	Golden Valley County
Golden Valley County	Golden Valley County	Golden Valley County
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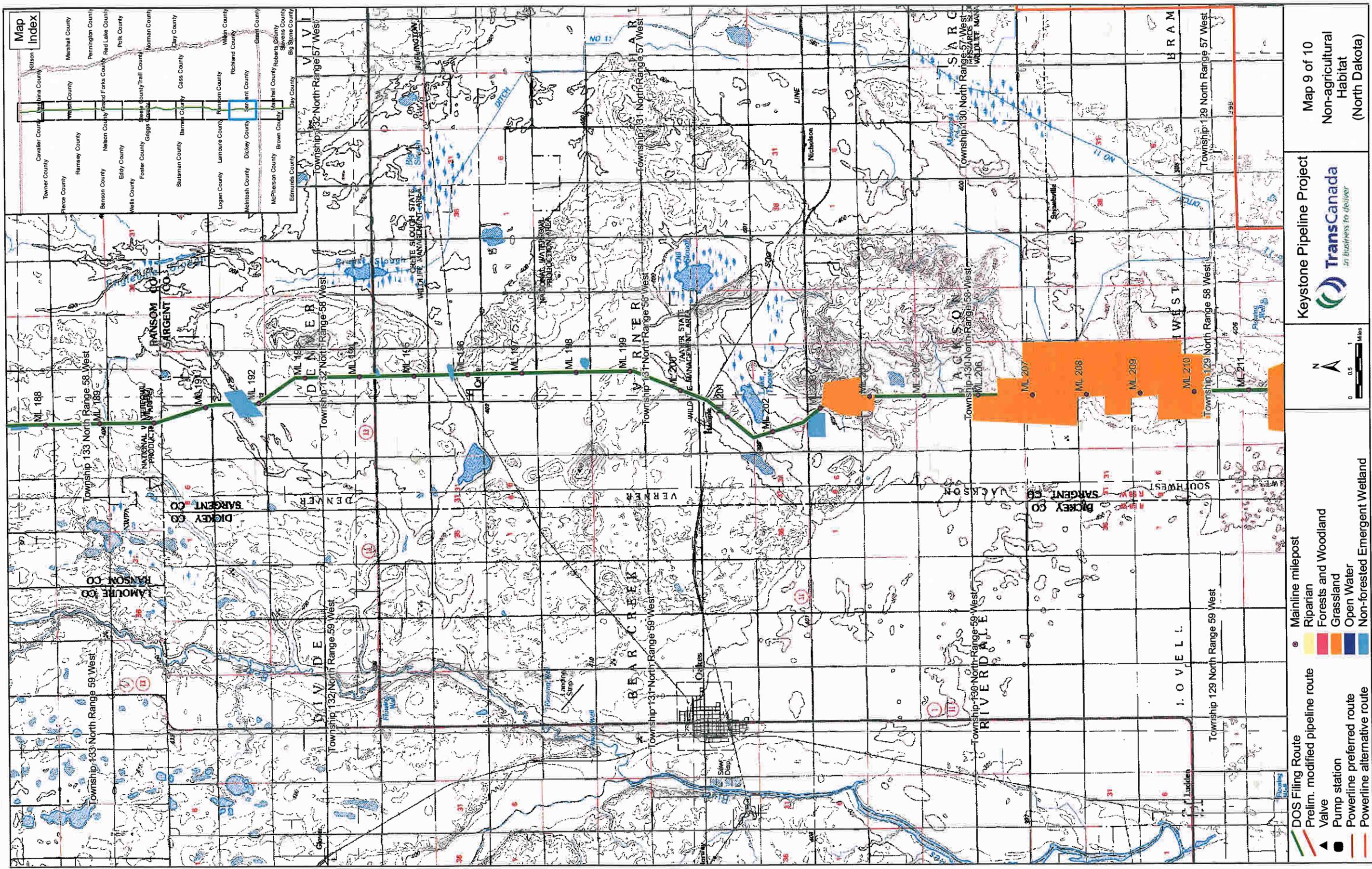
Keystone Pipeline Project

Map 8 of 10

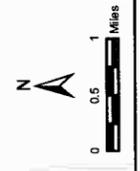
Non-agricultural Habitat (North Dakota)



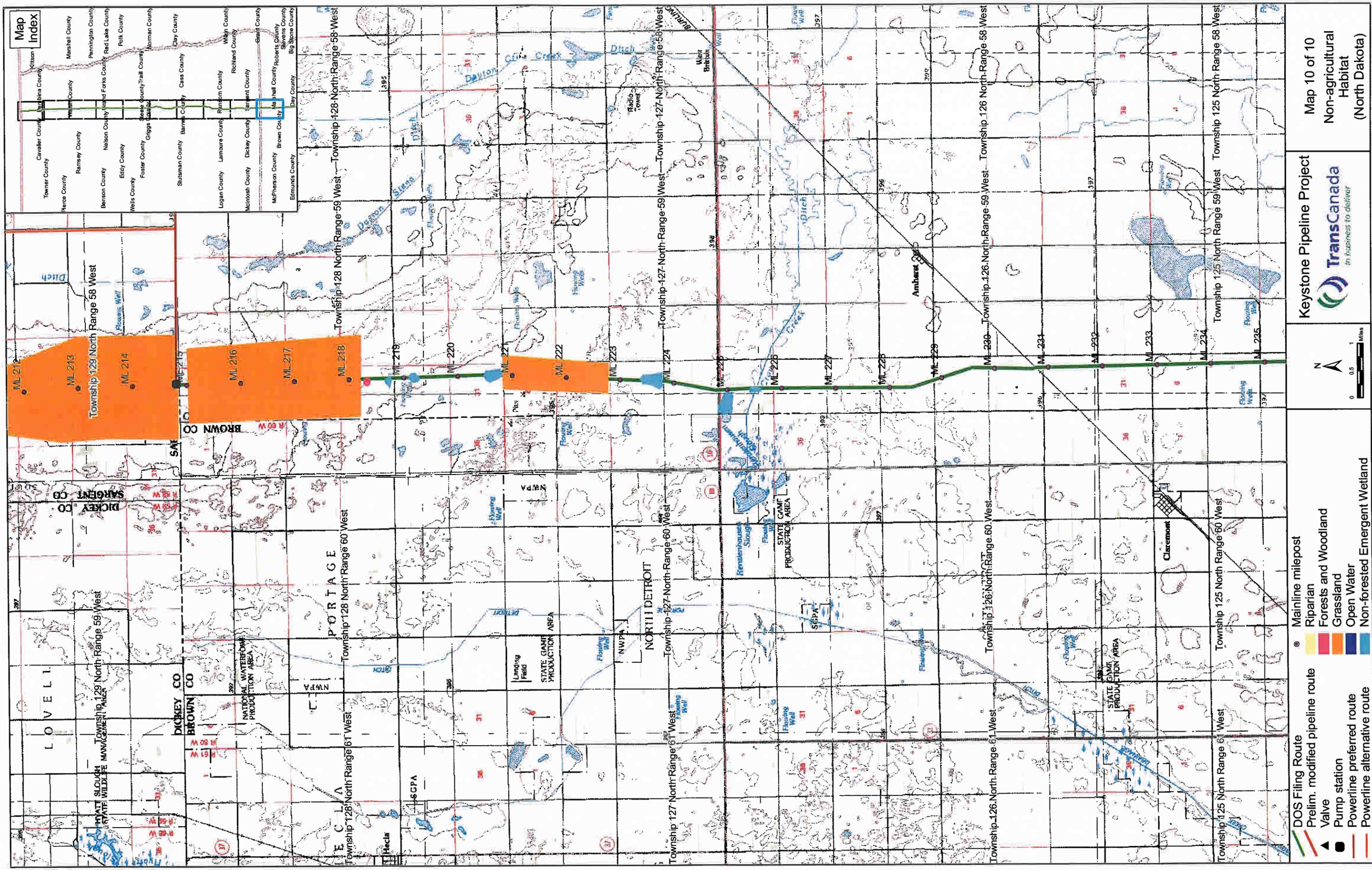
- DOS Filing Route
- Prelim. modified pipeline route
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- Pump station
- Powerline preferred route
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- Mainline milepost
- Riparian
- Forests and Woodland
- Grassland
- Open Water
- Non-forested Emergent Wetland



Map 9 of 10
 Non-agricultural
 Habitat
 (North Dakota)



- DOS Filing Route
- Prelim. modified pipeline route
- Valve
- Pump station
- Powerline preferred route
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- Mainline milepost
- Riparian
- Forests and Woodland
- Grassland
- Open Water
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Legend

- DOS Filing Route
- Prelim. modified pipeline route
- Valve
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- Powerline preferred route
- Powerline alternative route
- Mainline milepost
- Riparian
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- Grassland
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- Non-forested Emergent Wetland

Map 10 of 10
Keystone Pipeline Project
TransCanada
In partnership to deliver

Map 10 of 10
 Non-agricultural Habitat
 (North Dakota)

Scale: 0 to 1 Miles