

3.5 TERRESTRIAL VEGETATION

3.5.1 Introduction

This section discusses terrestrial vegetation resources in the proposed Project area. The description of terrestrial vegetation resources is based on information provided in the 2011 Final Environmental Impact Statement (Final EIS) as well as new circumstances or information relevant to environmental concerns that have become available since the publication of the Final EIS, including the proposed reroute in Nebraska. The information that is provided here builds on the information provided in the Final EIS as well as the 2013 Draft Supplemental EIS and, in many instances, replicates that information with relatively minor changes and updates; other information is entirely new or substantially altered.

Specifically, the following information, data, methods, and/or analyses have been substantially updated from the 2011 document:

- The number, type, and length of ecoregions, land uses, and vegetation communities crossed by the Project have changed due to changes in the proposed Project route and the exclusive use of Geographical Information Systems databases such as the National Land Cover Database and the U.S. Geological Survey Gap Analysis Program (GAP) (Fry et al. 2011);
- Biologically unique landscapes and communities of conservation concern crossed by the pipeline have changed, with the most significant changes occurring in Nebraska due to changes in the proposed Project route and the avoidance of the Nebraska Department of Environmental Quality identified Sand Hills Region; and
- Noxious weed occurrences along the proposed Project have changed due to the Project reroutes and new information since preparation of the Final EIS.

The following information, data, methods, and/or analyses have been substantially updated from the 2013 Draft Supplemental EIS:

- Vegetation nomenclature has been revised and definitions provided to clarify the differences between wetland communities also discussed in Sections 3.4 and 4.4, Wetlands;
- The noxious weed information has been revised to include the two pump stations in Kansas; and
- In response to public and agency comments, text has been revised throughout the section where necessary.

Summary

The proposed Project route would affect approximately 875 miles and approximately 15,296 acres of terrestrial vegetation communities within the 110-foot-wide pipeline construction right-of-way (ROW), temporary work spaces, staging areas, construction camps, construction yards, and pipe yards. The approximate acreage of affected terrestrial vegetation for the proposed permanent Project route and ancillary facilities (e.g., access roads, pump stations, and valve sites) is approximately 5,569 acres. The proposed Project route crosses four Level III U.S. Environmental Protection Agency (USEPA) ecoregions. The land cover types crossed by the proposed Project include cultivated crops, developed land, grassland/pasture, upland forest, open

water, woody wetlands¹, and emergent herbaceous wetlands² and shrub-scrub³. Additionally, the proposed Project route crosses biologically unique landscapes and vegetation communities of conservation concern including native grasslands, the Rainwater Basin plains, sagebrush steppe, riparian habitats and bottomland hardwoods, and forest communities. Additionally, the locations of the non-adjacent ancillary facilities including the rail yard in North Dakota and the pump stations in Kansas are known and incorporated in this section. The proposed Project route could also potentially impact various traditionally used native plants. A total of 52 noxious weeds could potentially occur within the Project ROW and/or pump stations in Kansas.

Connected actions include the Bakken Marketlink Project, the Big Bend to Witten 230-kilovolt (kV) Transmission Line, and electrical distribution lines and substations. These connected actions would be constructed in areas similar to the proposed Project route; similar terrestrial vegetation communities discussed for the proposed Project route are expected.

3.5.2 Ecoregions

Vegetative cover is an important component in the classification of ecoregions that reflects differences in ecosystem quality and integrity (USEPA 2007). Ecoregions are described through analysis of patterns and composition of geology, physiography, native vegetation, climate, soils, land use, wildlife, and hydrology. Variation in temperatures and precipitation, and differences in soils and parent materials along the northwest to southeast gradient crossed by the proposed Project route, result in wide variation in vegetation communities. Ecoregions are divided and further subdivided into four levels. The level of generalization of delineated ecosystems respect different levels of planning and reporting needs while still linking habitats based on their similarities (Commission for Environmental Cooperation 1997). The two most locally defined ecoregion levels, Level III and Level IV, are discussed in this section.

The proposed Project route would cross the following four Level III Ecoregions of the United States from northwest to southeast (percentages of total Level III Ecoregions crossing mileage shown in parentheses):

- Northwestern Glaciated Plains (24 percent);
- Northwestern Great Plains (16 percent);
- Western Corn Belt Plains (4 percent); and
- Central Great Plains (56 percent).

¹ The National Land Cover Database (NLCD) definition of woody wetlands is as follows: Areas where forest or shrubland vegetation account for more than 20 percent of vegetative cover, and the soil or substrate is periodically saturated with or covered with water. This category may be considered the ecological equivalent to palustrine forested wetlands and palustrine scrub shrub described in Sections 3.4 and 4.4, Wetlands.

² The NLCD definition of emergent herbaceous wetlands is as follows: Areas where perennial herbaceous vegetation account for more than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water. These areas are the ecological equivalent to palustrine emergent wetlands referenced in Sections 3.4 and 4.4, Wetlands.

³ The NLCD definition of shrub/scrub is as follows: Areas dominated by shrubs less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

Ancillary facilities that are not adjacent to the proposed pipeline, a pipe yard and rail siding in North Dakota and two pump stations in Kansas, would be located in the Northwestern Great Plains (ID No. 43), Central Great Plains (ID No. 27), and the Flint Hills (ID No. 28) Level III Ecoregions. Table 3.5-1 below provides a summary of the Level III Ecoregions in Montana, North Dakota, South Dakota, Nebraska, and Kansas in which proposed Project facilities would be located.

Level IV Ecoregions (USEPA 2012) are more detailed regions (subsets of Level III Ecoregions) used for state-level review. The proposed Project route would cross a total of 19 Level IV Ecoregions located within 5 Level III Ecoregions of the United States. Level IV Ecoregions are presented by milepost in Table 3.5-2 below (grouped by the respective Level III Ecoregions in which they are located), and are supported by descriptions of dominant native vegetation communities per Ecoregion within each state. Figures 3.5.2-1 through 3.5.2-3 depict the Level III and Level IV Ecoregions crossed by the proposed Project route.

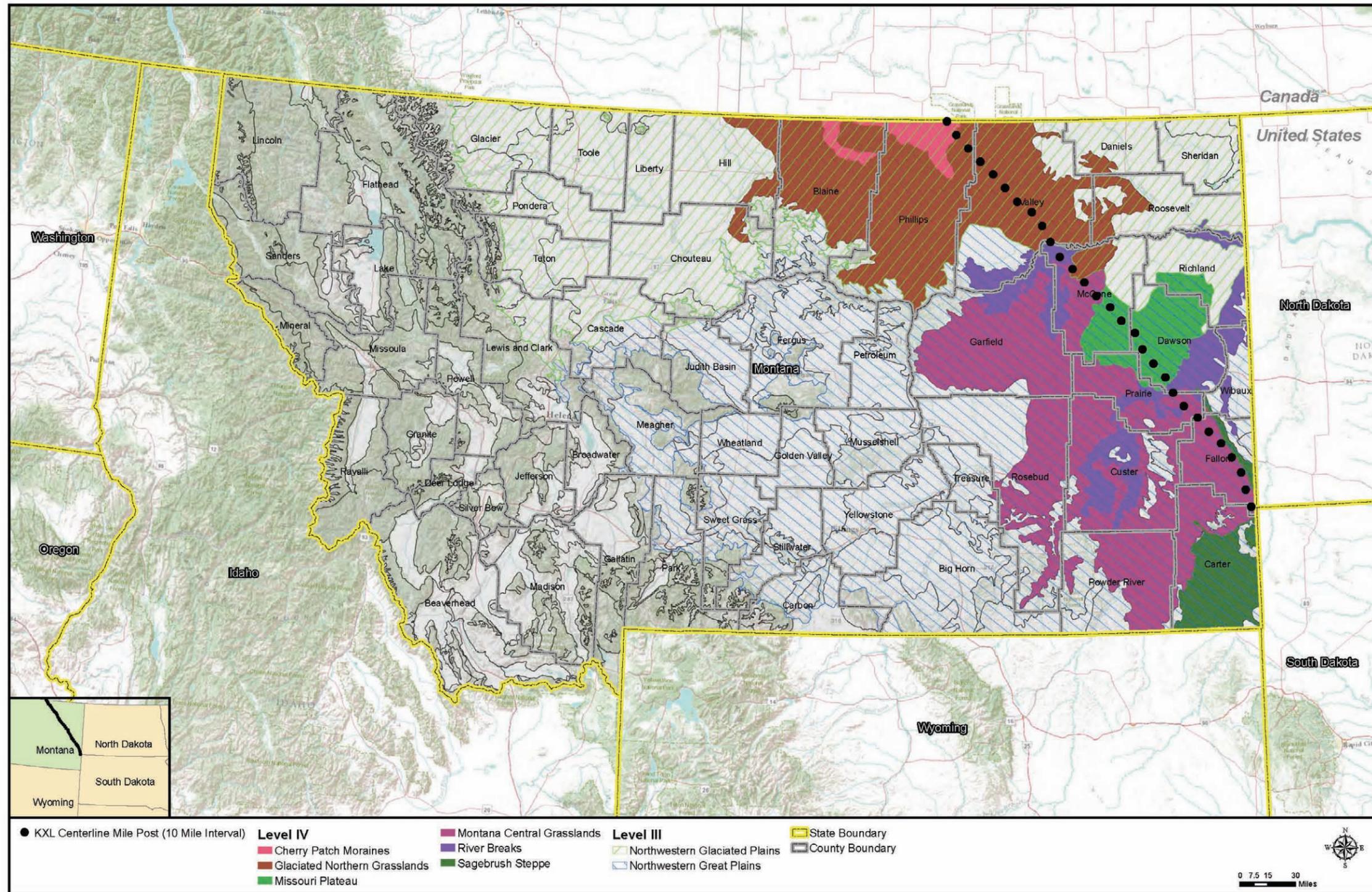
The ancillary facilities in North Dakota and Kansas are not adjacent to the proposed Project's pipeline route, and are therefore not included in Table 3.5-2 below; however, the pipe yard in North Dakota is located in the Missouri Plateau Level IV Ecoregion (43a), and the pump stations in Clay County, Kansas would be located in the Smoky Hills (27a) Level IV Ecoregion. The descriptions for these Ecoregions are included in Table 3.5-2. The pump station in Butler County, Kansas would be located within the Flint Hills (28a) Level IV Ecoregion, which is considered "the largest remaining intact tallgrass prairie in the Great Plains. The natural tallgrass prairie still exists in most areas and is used for range and pasture land. However, some cropland agriculture has been implemented in river valleys and along the periphery of the Flint Hills, especially in the northwest corner where the topography is more level" (USEPA 2012c).

Table 3.5-1 USEPA Level III Ecoregions Crossed by Proposed Project Facilities

Level III Ecoregion (ID Number)	States in which Ecoregion is Located	Description
Northwestern Glaciated Plains (42)	Montana, South Dakota, and Nebraska	This is a transitional region between the generally more level, moister, more agricultural Northern Glaciated Plains to the east and the generally more irregular, dryer, Northwestern Great Plains to the west and southwest. The western and southwestern boundary roughly coincides with the limits of continental glaciations. This region is pocked by a moderately high concentration of semi-permanent and seasonal wetlands, locally referred to as Prairie Potholes.
Northwestern Great Plains (43)	Montana, North Dakota, South Dakota, and Nebraska	This region includes the Missouri Plateau section of the Great Plains. It is a semiarid rolling plain of shale and sandstone punctuated by occasional buttes. Native grasslands, largely replaced on level ground by winter and spring wheat and alfalfa, persist in rangeland areas on broken topography. Agriculture is restricted by the erratic precipitation and limited opportunities for irrigation.
Western Corn Belt Plains (47)	Nebraska	Once covered with tallgrass prairie, over 90% of this ecoregion is now used for cropland agriculture; much of the remainder is forage for livestock. A combination of nearly level to gently rolling glaciated till plains and hilly loess plains, ample precipitation mainly in the growing season, and fertile, warm, and moist soils make this one of the most productive areas of corn and soybean.
Central Great Plains (27)	Nebraska, Kansas	This region is slightly lower, receives more precipitation, and is somewhat more irregular than the Western High Plains to the west. Once grasslands with scattered low trees and shrubs in the south, much of this region has been converted to croplands. The eastern boundary marks the eastern limits of the major winter wheat-growing area of the United States.
Flint Hills (28) ^a	Kansas	This region is characterized by rolling hills composed of shale and cherty limestone, rocky soils, and by humid, wet summers. The Flint Hills marks the western edge of the tallgrass prairie. Erosion of the softer Permian limestone has left the more resistant chert (or flint) deposits, producing the hilly topography and coarse soils of the area. The natural tallgrass prairie still exists in most areas and is used for range and pasture land.

Sources: Classification of Level III Ecoregions is based on USEPA (2007); descriptions of the regions are based on USEPA (2002)

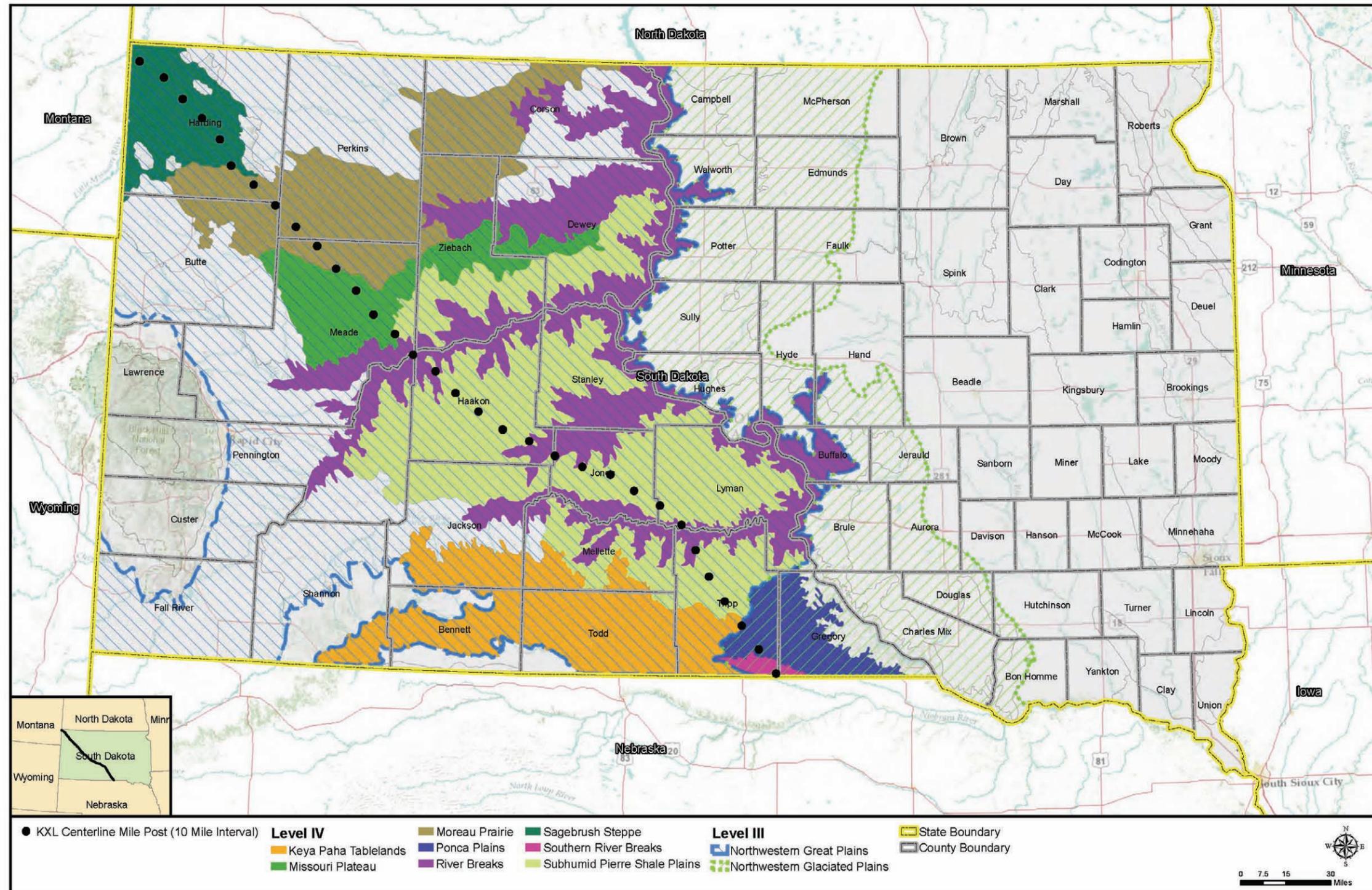
^a The Flint Hills Ecoregion occurs at the location of the Butler County, Kansas pump station and is not crossed by the proposed Project pipeline.



Source: USEPA 2012a through 2012c, respectively; Esri 2013

Figure 3.5.2-1 Montana USEPA Ecoregions

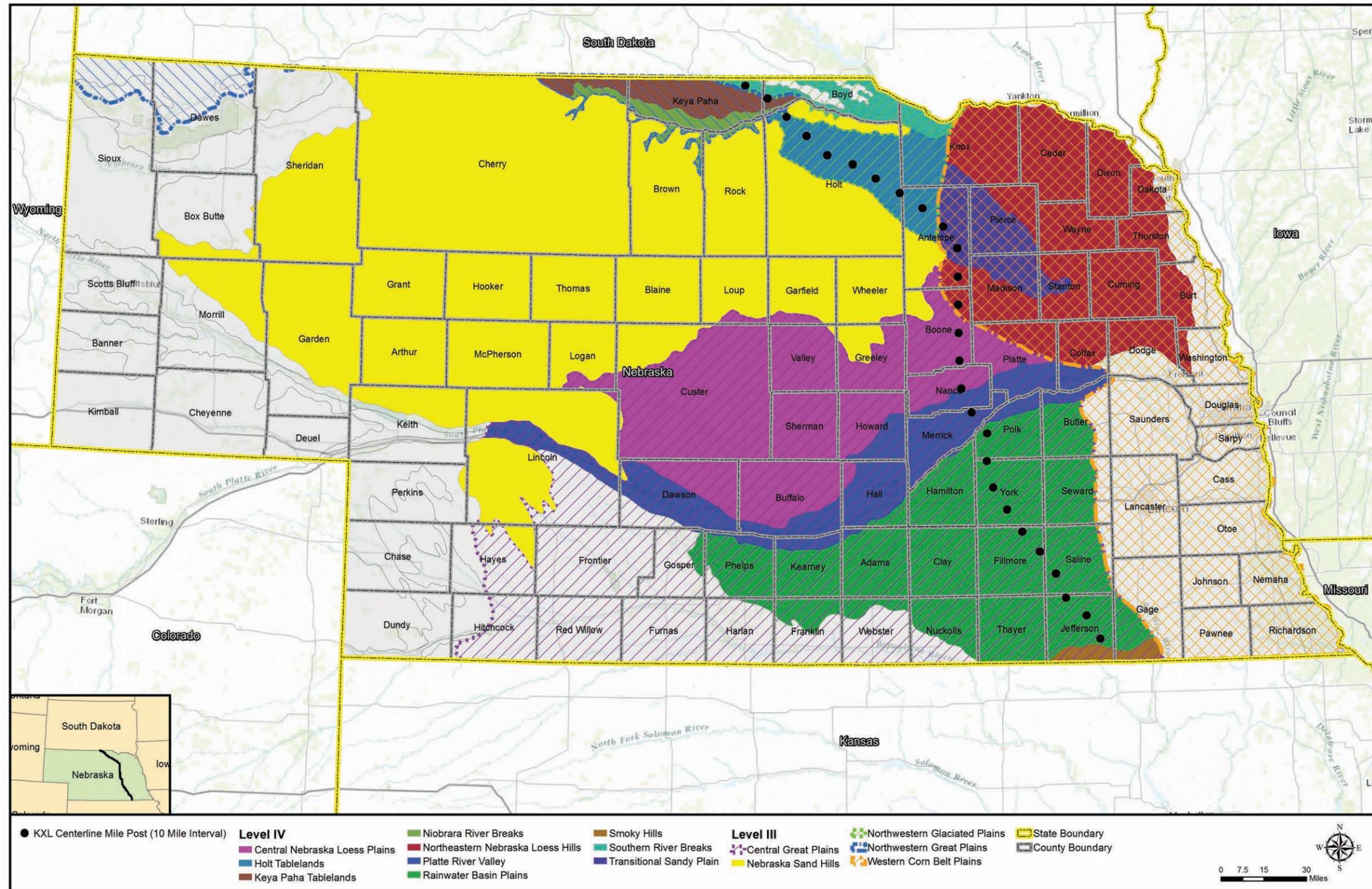
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Source: USEPA 2012a through 2012c, respectively; Esri 2013

Figure 3.5.2-2 South Dakota USEPA Ecoregions

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Source: USEPA 2012a through 2012c, respectively; Esri 2013

Figure 3.5.2-3 Nebraska USEPA Ecoregions

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Table 3.5-2 USEPA Level III and IV Ecoregions Crossed by Proposed Project Facilities

Level IV Ecoregions (ID Number)	Milepost		Total Miles	Potential Natural Vegetation	Land Use and Land Cover
	In	Out			
Level III: Northwestern Glaciated Plains					
Cherry Patch Moraines (42m)	0	7	7	Grama (<i>Bouteloua</i> spp.)-needlegrass (<i>Hesperostipa</i> spp.)-wheatgrass (<i>Pascopyrum</i> spp.); shrubs limited to moister depressional areas.	Undulating to strongly sloping ecoregion that has many seasonal lakes and wetlands and includes one of the most extensive and prominent end moraines in Montana. Shortgrass prairie vegetation is native, and shrubs are restricted to moist depressions. Steep slopes, hummocky moraines, gullies, bouldery knolls, gravelly ridges, and coulees are often grazed. Extensive cereal farming occurs elsewhere.
Glaciated Northern Grasslands (42j)	8	90	82	Grama-needlegrass-wheatgrass.	Glaciated, dissected, rolling to strongly rolling drift plain with many seasonal impoundments. Mostly rangeland with some farming on scattered, undissected benches and on alluvial, irrigated soils.
	110	117	7		
		Total	89		
Ponca Plains (42g)	580	593	13	Mixed-grass prairie - little bluestem (<i>Schizachyrium scoparium</i>), prairie sandreed (<i>Calamovilfa longifolia</i>), green needlegrass (<i>Nassella viridula</i>), and needle and thread (<i>Hesperostipa comata</i>).	Unglaciated, level to rolling plains. Intensive row crops, soybeans, corn, sunflowers, alfalfa, and some grazing.
Southern River Breaks (42h)	594	618	23	Mixed-grass prairie: western wheatgrass (<i>Pascopyrum smithii</i>), little bluestem, sideoats grama (<i>Bouteloua curtipendula</i>), and green needlegrass on uplands. Deciduous woodland: bur oak (<i>Quercus macrocarpa</i>), American basswood (<i>Tilia americana</i>), and eastern redcedar (<i>Juniperus virginiana</i>) in canyons and northfacing slopes. Plains cottonwood (<i>Populus deltoides monilifera</i>), green ash (<i>Fraxinus pennsylvanica</i>), peachleaf willow (<i>Salix amygdaloides</i>), boxelder (<i>Acer negundo</i>), buffaloberry (<i>Shepherdia</i> spp.), and sumac (<i>Rhus</i> spp.).	Lightly glaciated, dissected hills and canyons with high relief bordering Keya Paha River. Mixed grass and woodlands grazing.

Level IV Ecoregions (ID Number)	Milepost		Total Miles	Potential Natural Vegetation	Land Use and Land Cover
	In	Out			
Holt Tablelands (42p)	628	697	69	Mixed-grass prairie: little bluestem, switchgrass (<i>Panicum virgatum</i>), sideoats grama, blue grama (<i>Bouteloua gracilis</i>), sand dropseed (<i>Sporobolus cryptandrus</i>), needle and-thread, prairie sandreed, and sand bluestem (<i>Andropogon hallii</i>).	A transitional area between the loamy, glaciated regions with loess soils to the east and the Sand Hills in the west and south. Cropland agriculture occurs on the more level tablelands and in areas with loamy soils, whereas grassland is found in areas of greater relief.
Level III: Northwestern Great Plains					
River Breaks (43c)	91	105	14	In Montana: bottomlands with heavy soils—western wheatgrass, buffalograss (<i>Bouteloua dactyloides</i>); with gravelly soils—threadleaf sedge (<i>Carex filifolia</i>), and needle and thread. On north-facing slopes—junipers (<i>Juniperus</i> spp.) and deciduous trees. In South Dakota: blue grama, western wheatgrass, buffalograss, some bluestem, and prairie sandreed. Rocky Mountain juniper (<i>Juniperus copulorum</i>) in draws and on north slopes, scattered cottonwoods (<i>Populus</i> spp.) in riparian areas.	In Montana: unglaciated, very dissected terraces and uplands that descend to the Missouri River system and the Yellowstone River system. Primarily used for grazing on native grasses with remnant woodlands in draws and on north facing slopes and alluvial flats.
	195	200	5		
	423	434	11		
	483	491	8		In South Dakota: unglaciated, highly dissected hills and uplands bordering Cheyenne River, Bad River, and White River and alluvial plains. Mostly rangeland and native grasses, cattle grazing, remnant woodlands in draws and on alluvial flats.
	498	498	1		
	540	550	10		
		Total	49		
Montana Central Grassland (43n)	106	109	3	Grama-needlegrass-wheatgrass.	Unglaciated, rolling plains studded with buttes and badlands dissected by many small, ephemeral, or intermittent streams, underlain by fine-grained sedimentary rock. Primarily rangeland, with some irrigated and dry-land farming, and coal mining.
	118	133	15		
	201	285	84		
		Total	102		
Missouri Plateau (43a) *	134	194	60	In Montana: wheatgrass-needlegrass. In South Dakota: blue grama, wheatgrass/needlegrass, little bluestem, and prairie sandreed.	In Montana: primarily unglaciated, treeless, rolling hills and gravel-covered benches; less arid soils result in mosaic of rangeland and farmland with spring wheat, hay, barley, and oats; in contrast to neighboring regions which are mainly rangelands. Subject to wind erosion.
	392	421	29		
		Total	89		
					In South Dakota: unglaciated, moderately dissected rolling plains with isolated sandstone buttes. Mosaic of dry-land farming with spring wheat, barley, oats, sunflowers, and alfalfa.

Level IV Ecoregions (ID Number)	Milepost		Total Miles	Potential Natural Vegetation	Land Use and Land Cover
	In	Out			
Sagebrush Steppe (43e)	285	286	1	Little sagebrush (<i>Artemisia arbuscula</i>), big sagebrush (<i>A. tridentata</i>), with western wheatgrass, green needlegrass, blue grama, Sandberg bluegrass (<i>Poa secunda</i>), and buffalograss.	Unglaciated, level to rolling plains with occasional buttes, badlands, scoria mounds, and salt pans with thick mats of shortgrass prairie and dusky gray sagebrush. Primarily grazing with minimal cultivation.
Moreau Prairie (43j)	341	391	50	Western wheatgrass, green needlegrass, blue grama, and buffalograss.	Unglaciated, level to rolling plains with occasional buttes, badlands, and numerous salt pans on alkaline soils. Mostly cattle and sheep ranching, with occasional dry-land wheat and alfalfa.
Subhumid Pierre Shale Plains (43f)	435	482	47	Shortgrass prairie: western wheatgrass, green needlegrass, blue grama, and buffalograss.	Unglaciated, undulating to rolling plains with steep-sided, incised streams on shale. Rangeland cattle grazing, dry-land farming winter wheat, and alfalfa.
	492	539	47		
	551	574	23		
		Total	117		
Keya Paha Tablelands (43i)	575	579	4	Mosaic of Sand Hills transition prairie and gravelly mixed-grass prairie: little bluestem, blue grama, sideoats grama, prairie sandreed, threadleaf sedge, western wheatgrass, and needle and thread.	Unglaciated, level to rolling sandy plains with isolated gravelly buttes, dissected near streams. Rangeland with areas of cropland, alfalfa, winter wheat, millet, and corn are principal crops.
	619	625	6		
		Total	10		
Niobara River Breaks (43r)	626	627	1	Ponderosa pine (<i>Pinus ponderosa</i>) woodlands with eastern redcedar south-facing bluffs and canyon slopes. Deciduous woodlands: bur oak, American basswood, green ash, and some paper birch (<i>Betula papyrifera</i>) on north-facing bluffs and lower canyon slopes. Plains cottonwoods and eastern redcedar on floodplains and mixed grass and Sand Hills prairies in valley.	Rangeland with scattered cropland in valley bottom. Recreational use.
Level III: Western Corn Belt Plains					
Transitional Sandy Plain (47l)	698	715	17	Potential natural vegetation is a combination of Sand Hills prairie, tallgrass prairie, and some wet meadows, and lacks the oak-hickory forest component found in more eastern regions.	Contains some of the characteristics of Sand Hills in the west and the glaciated regions to the east. This level to rolling plain has fine sandy loams to fine sands with soils coarser and sandier than those in other regions.

Level IV Ecoregions (ID Number)	Milepost		Total Miles	Potential Natural Vegetation	Land Use and Land Cover
	In	Out			
Northeastern Nebraska Loess Hills (47k)	716	733	17	Cropland, especially corn, is common, and there is more irrigated agriculture and pastureland, but fewer scattered woodlands than neighboring Western Corn Belt Plains.	Has an older, coarser loess mantle that is not as weathered as in ecoregions to the south. The climate is generally cooler with slightly lower annual precipitation than in southern glaciated regions.
Level III: Central Great Plains					
Central Nebraska Loess Plains (27e)	734	761	27	Mixed-grass prairie big bluestem, little bluestem, sideoats grama, blue grama, and western wheatgrass with eastern redcedar intrusion. Redcedar concentrated in northwest and next to Sand Hills.	Rolling, dissected plains with deep loess layer, perennial, and intermittent streams. Predominantly rangeland with large areas of cropland in winter wheat, corn, forage crops, and some irrigated agriculture.
Platte River Valley (27g)	762	776	14	Lowland tallgrass prairie with areas of wet meadow and marsh. With flood management and reduced river flow, floodplain forests have increased along the Platte River.	Flat, wide, alluvial valley with shallow, interlacing streams on a sandy bed. Extensive cropland, much of which is irrigated, corn, grain sorghum, soybeans, and alfalfa. Some native rangeland and hay lands; many channelized streams and flood control structures.
Rainwater Basin Plains (27f)	777	872	95	Transitional tallgrass prairie to the east and mixed-grass prairie in the west dominated by big bluestem, little bluestem, and sideoats grama. Wetlands dominated by western wheatgrass, sedge, spikerush (<i>Eleocharis</i> spp.) and slender bulrush (<i>Schoenoplectus heterochaetus</i>).	Flat to gently rolling loess-covered plains; historically covered with extensive rainwater basins and wetlands. Extensive cropland, dry-land sorghum and winter wheat, irrigated corn, and alfalfa. Most of the basins have been drained for cultivation.
Smokey Hills (27a)	873	875	2	Transition from tallgrass prairie in the east to mixed-grass prairie in the west. Some floodplain forests along riparian areas.	Cropland with winter wheat as primary crop (more corn grown in irrigated areas) and areas of grassland.

Sources: Level III Ecoregions are based on USEPA (2007); Level IV Ecoregions are based on (USEPA 2012a, USEPA 2012b, and USEPA 2012c). Plant names follow U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS 2012) PLANTS Database. Milepost information from exp Energy Services, Inc. 2012.

3.5.3 General Vegetation Resources

The general land cover types crossed by the proposed Project route include cultivated cropland, developed land, nonvascular and sparse rock vegetation, grassland/rangeland, upland forest, open water, wetland forest, and palustrine emergent wetlands. These were identified as being present within 250 feet of the centerline of the proposed pipeline route using the 2011 U.S. Geological Survey (USGS) GAP Analysis (USGS 2011). Cultivated cropland generally consists of introduced crop species, which provide food for livestock and human consumption. Developed lands include several ecosystem designations such as open space, low and medium intensity, and non-specific. The land covers that are characterized by naturally occurring terrestrial and aquatic vegetation include nonvascular and sparse rock vegetation (associated with the Western Great Plains Badlands), grassland/rangeland, upland forests, open water, wetland forests, and palustrine emergent wetlands.

Tables 3.5-3 (proposed pipeline) and 3.5-4 (proposed ancillary facilities) describe the land cover types and ecosystems designations in which proposed Project facilities would be located, and provide examples of common plant species known to occur within the designations.

Table 3.5-3 Land Cover Types with Ecosystem Designations Crossed by the Proposed Pipeline Route

Ecosystem Designation	Description	Common Plants	Presence per State		
			MT	SD	NE
Cultivated Cropland					
Cultivated Cropland	Cultivated land, row crops, hayfields.	Wheat, barley, oats, sorghum, corn, beans, and hay	x	x	x
Pasture/Hay		Non-native grasslands	x	x	x
Developed Land					
Open Space	Land that is not intensively developed for residential, commercial, industrial, or institutional use.	NA ^a	x	x	x
Low Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49% of the total cover. Single-family housing units are commonly found in these areas.	NA	x	x	x
Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79% of the total cover. Single-family housing units are commonly found in these areas.	NA	x	x	x
Non-Specific				x	x
Nonvascular/Sparse Rock Vegetation					
Western Great Plains Badlands	Land lies below its local base level and is shaped by streams, erosion, and erodible parent material. Noted for the relative absence of vegetative cover.	Dryland shrubs or herbaceous taxa	x	x	

Ecosystem Designation	Description	Common Plants	Presence per State		
			MT	SD	NE
Grassland/Rangeland					
Inter Mountain Basins Big Sagebrush Steppe	Occurs on both glaciated and non-glaciated landscapes. Soils are typically deep and non-saline with a microphytic crust.	Wyoming big sagebrush (<i>Artemisia tridentata</i> spp. <i>Wyomingensis</i>), western wheatgrass, xeromorphic shrubs	x	x	
Northwestern Great Plains Mixed-grass Prairie	Occurs on both glaciated and non-glaciated landscapes. Soils are typically deep and non-saline with a microphytic crust.	Western wheatgrass, thickspike wheatgrass (<i>Elymus lanceolatus</i>), green needlegrass, blue grama, and needle and thread (<i>Hesperostipa comata</i>)	x	x	x
Introduced Upland Vegetation - Perennial Grassland and Forbland	Land cover is significantly altered/disturbed by introduced, non-native perennial grasses and forbs. Natural vegetation types are no longer recognizable.	Crested wheatgrass (<i>Agropyron cristatum</i>), smooth brome (<i>Bromus inermis</i>), Kentucky bluegrass (<i>Poa pratensis</i>), knapweed (<i>Centaurea</i> spp.), Canada thistle (<i>Cirsium arvense</i>), leafy spurge (<i>Euphorbia esula</i>), pepperweed (<i>Lepidium</i> spp.), and sweet clover (<i>Melilotus officinalis</i>)	x	x	
Perennial Grassland and Forbland	Herbaceous cover dominated by introduced perennial grasses and forbs.	Crested wheatgrass, smooth brome, Kentucky bluegrass, knapweed, Canada thistle, leafy spurge, pepperweed, and sweetclover			x
Western Great Plains Sand Prairie	Coarse textured soils.	Needle and thread, little bluestem, threadleaf sedge, prairie sandreed, sand bluestem (<i>Andropogon hallii</i>), and big bluestem (<i>Andropogon gerardii</i>)	x	x	x
Western Great Plains Tallgrass Prairie	Less than 5-11% tree cover.	Big bluestem, Indian grass (<i>Sorghastrum nutans</i>), switch grass (<i>Panicum virgatum</i>), little bluestem, and several grama grasses		x	x
Central Mixed-grass Prairie	Transition zone where tallgrass and shortgrass prairie merge, taking on the characteristics of both.	Tall and shortgrass prairie species, blue grama, buffalo grass, sideoats grama, western wheatgrass, sand dropseed, Indian grass, and Canada wild rye (<i>Elymus Canadensis</i>)		x	x
Central Tallgrass Prairie	Rich loess soils and receives 25 to 36 inches of annual precipitation.	Big bluestem, Indian grass, switchgrass, Canada wild rye, showy goldenrod (<i>Solidago speciosa</i>), prairie blazing star (<i>Liatris pycnostachya</i>), sky blue aster (<i>Aster oolentangiensis</i>), and purple coneflower			x

Ecosystem Designation	Description	Common Plants	Presence per State		
			MT	SD	NE
Northwestern Great Plains Shrubland	Found at elevations 1,220 to 1,524 meters. It is more commonly found at mesic sites with moderately shallow or deep, fine to sandy loam soils.	Serviceberry (<i>Amelanchier arborea</i>), skunkbush sumac (<i>Rhus trilobata</i>), snowberry (<i>Symphoricarpos albus</i>), silver buffalo berry (<i>Shepherdia argentea</i>), shrubby cinquefoil (<i>Potentilla fruticosa</i>), silverberry (<i>Elaeagnus ebbingei</i>), and horizontal rug juniper (<i>Juniperus horizontalis</i>)	x	x	
Upland Forest					
Western Great Plains Wooded Draw and Ravine	Associated with highly intermittent or ephemeral streams. May occur on steep northern slopes or within canyon bottoms where soil moisture and topography produce higher moisture levels.	Rocky Mountain juniper, aspen, paper birch, and boxelder maple	x	x	x
Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna	Typically found within the matrix of the Great Plains grassland systems where available soil moisture is higher or soils are more coarse and rocky.	Ponderosa pine, Douglas fir (<i>Pseudotsuga menziesii</i>), Rocky Mountain juniper, bearberry (<i>Arctostaphylos uvaursi</i>), big bluestem, and pussy toes (<i>Anthennaria neglecta</i>)	x	x	
Northern Rocky Mountain Foothill Conifer Wooded Steppe	Occurs between lower tree line and grasslands or shrublands on warm, dry, exposed sites that are too droughty to support a canopy.	Ponderosa pine, western juniper (<i>Juniperus occidentalis</i>), and bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	x	x	
Northern Rocky Mountain Foothill Limber Pine-Juniper Woodland	Found in the foothill and lower montane zones. Receives a relatively small amount of precipitation. It occurs mainly on limestone substrates.	Limber pine (<i>Pinus flexilis</i>) and juniper	x		
Western Great Plains Dry Bur Oak Forest/Woodland	Occurs in small-to-large patches on buttes, escarpments, and in foothill zones, usually on northerly facing slopes.	Bur oak, American basswood, quaking aspen, and eastern redcedar		x	x
Ruderal Forest	Pioneer species of disturbed lands.	Maple, oak, ponderosa pine with crested wheatgrass, smooth brome, and Kentucky bluegrass.			x
NC Interior Dry-Mesic Oak Forest/Woodland	Found in gently rolling to flat landscapes. Characterized by a dry edaphic condition that is transitional between dry prairies, oak barrens, or savannas and dry-mesic oak-hickory forests and woodlands.	Eastern black oak (<i>Quercus velutina</i>), bur oak, scarlet oak (<i>Quercus coccinea</i>), and northern pin oak (<i>Quercus ellipsoidalis</i>)			x
Open Water					
Open Water (Fresh)	Open water, sometimes associated with wetland habitat.	Emergent and submergent vegetation	x	x	x

Ecosystem Designation	Description	Common Plants	Presence per State		
			MT	SD	NE
Wetland Forest					
Northwestern Great Plains Riparian	Associated with perennial to intermittent or ephemeral streams. Flooding is the key ecosystem process.	Black cottonwood, narrowleaf cottonwood (<i>Populus trichocarpa</i>), Plains cottonwood, willow, red osier dogwood (<i>Cornus sericea</i>), western wheatgrass, American licorice (<i>Glycyrrhiza lepidota</i>), big sagebrush, and silver sagebrush (<i>Artemisia cana</i>)	x	x	
Northwestern Great Plains Floodplain	Meandering channels with alluvial bar formation. Vegetation occurs in bands or zones reflecting past deposition.	Black cottonwood, narrow leaf cottonwood, eastern cottonwood, Plains cottonwood, willow, red osier dogwood, common chokecherry (<i>Prunus virginiana</i>), boxelder, and green ash	x		
Introduced Riparian and Wetland Vegetation	Dominated by introduced species that are spontaneous, self-perpetuating, and the delayed result of planting, cultivation, and/or human maintenance.	Purple loosestrife (<i>Lythrum salicaria</i>), reed canary grass (<i>Phalaris arundinacea</i>), and common reed	x		
Western Great Plains Floodplain Systems	Woody and herbaceous communities associated with larger rivers and streams that are subject to at least seasonal inundation.	Cottonwood, willows, switchgrass, snowberry, and buffaloberry		x	x
Southern Great Plains Floodplain Forest	Primarily along the floodplains or medium and large rivers. Soils are mainly alluvial and range from sand to dense clays.	Eastern cottonwood, willows, switchgrass, big bluestem			x
Palustrine Emergent Wetland					
Great Plains Prairie Pothole	Occur in shallow depressions scraped out by glaciers.	Hardstem bulrush (<i>Schoenoplectus acutus</i>), softstem bulrush (<i>Schoenoplectus tabernaemontani</i>), common threesquare (<i>Schoenoplectus pungens</i>), cattails (<i>Typha</i> spp.), aquatic buttercups (<i>Ranunculus hydrocharoides</i>), aquatic smartweeds (<i>Lemna</i> spp.), pondweeds (<i>Elodea</i> spp.), duckweeds (<i>Lemnaceae</i> spp.), spikerush, and foxtail barley (<i>Hordeum jubatum</i>)	x		
North American Arid West Emergent Marsh	Occur in depressions in the landscape, as fringes around lakes, and along the mainstem and backwater channels of slow flowing streams and rivers.	Bulrushes (<i>Scirpus</i> spp.), cattails, rushes, pondweeds, smartweeds (<i>Polygonum</i> spp.), and pond lilies (<i>Numphaeaceae</i> spp.)	x		
Inter-Mountain Basins Greasewood Flat	Found on nearly level, older alluvial terraces on broad or narrow floodplains and coalescing alluvial fans in valley. They typically have saline soil and a shallow water table.	Greasewood (<i>Sarcobatus vermiculatus</i>) is the dominant shrub	x	x	

Ecosystem Designation	Description	Common Plants	Presence per State		
			MT	SD	NE
Western Great Plains Saline Depression Wetland	Discharge wetlands where highly saline water has moved into the depression. The water is prevented from percolating out due to impermeable dense clay.	Alkali bulrush (<i>Schoenoplectus martimus</i>), common threesquare, inland saltgrass (<i>Districhlis spicata</i>), Nuttall's alkali grass (<i>Puccinellia nuttalliana</i>), foxtail barley, red swampfire (<i>Salicornia rubra</i>), and freshwater cordgrass (<i>Spartina pectinata</i>)	x	x	
Eastern Great Plains Wet Meadow, Prairies, and Marsh	Herbaceous wetland communities that are found in drainages within loess-mantled hills.	Hydrophytic graminoids		x	x
Western Great Plains Depressional Wetland Systems	Completely isolated from both the regional groundwater system and inter-wetland surface drainage basins. They occur in depressional basins found flat, enclosed upland areas or on level, shallow lake basins.	Western wheatgrass, foxtail barley, povertyweed (<i>Iva avillaris</i>), willow dock (<i>Rumex salicifolius</i>), spikerush, and hardstem bulrush	x	x	x

Source: USGS 2011 GAP Analysis. Descriptions and common plants obtained from metadata. Plant names follow USDA NRCS 2012a PLANTS Database.

^a Not applicable (NA).

Table 3.5-4 Land Cover Types with Ecosystem Designations in which Proposed Ancillary Facilities^a in North Dakota and Kansas would be Located

Ecosystem Designation	Description	Common Plants
North Dakota		
Cultivated Cropland		
Cultivated Cropland	Cultivated land, row crops, hayfields.	Wheat, barley, oats, sorghum, corn, beans, and hay
Developed Land		
Open Space	Land that is not intensively developed for residential, commercial, industrial, or institutional use.	NA ^b
Grassland/Rangeland		
Northwestern Great Plains Mixed-grass Prairie	Occurs on both glaciated and non-glaciated landscapes. Soils are typically deep and non-saline with a microphytic crust.	Western wheatgrass, thickspike wheatgrass, green needlegrass, blue grama, and needle and thread
Upland Forest		
Northwestern Great Plains Shrubland	Found at elevations 1,220 to 1,524 meters. It is more commonly found at mesic sites with moderately shallow or deep, fine to sandy loam soils.	Serviceberry, skunkbush sumac, snowberry, silver buffalo berry, shrubby cinquefoil, silverberry, and horizontal rug juniper

Ecosystem Designation	Description	Common Plants
Western Great Plains Wooded Draw and Ravine	Associated with highly intermittent or ephemeral streams. May occur on steep northern slopes or within canyon bottoms where soil moisture and topography produce higher moisture levels.	Rocky Mountain juniper, aspen, paper birch, and boxelder maple
Kansas		
Developed Land		
Open Space	Land that is not intensively developed for residential, commercial, industrial, or institutional use.	NA ^b
Grassland/Rangeland		
Harvested Forest - Grass/Forb Regeneration	Harvested forest lands for timber. Perennial groundcovers regenerating under natural conditions.	Crested wheatgrass, smooth brome, Kentucky bluegrass, knapweed, Canada thistle, leafy spurge, pepperweed, and sweetclover
Southeastern Great Plains Tallgrass Prairie	This system is primarily found in the Flint Hills and Osage Plains of Kansas and Oklahoma. Generally thin soil layer over limestone beds; relatively unsuitable for farming.	Big bluestem, switchgrass, little bluestem, indiagrass, stiff goldenrod (<i>Oligoneuron rigidum</i>), Nebraska blazing star (<i>Liatris punctata</i>), white heath aster (<i>Symphotrichum ericoides</i>)
Upland Forest		
North-Central Interior Dry-Mesic Oak Forest and Woodland	System is typically found throughout glaciated areas of the Midwest, usually occurring in gently rolling landscapes with well drained soils.	Bur oak, Northern Red Oak (<i>Quercus rubra</i>), bitternut hickory (<i>Carya cordiformis</i>), and mockernut hickory (<i>Carya alba</i>)
Wetland Forest		
Southeastern Great Plains Floodplain Forest	System is typically found in floodplains of rivers of the East Central Texas Plains, Texas Blackland Prairie Regions, Crosstimbers, and the southeastern edge of the Central Great Plains. Soil formation is dominated by periodic flooding and related sediment deposition.	Pecan (<i>Carya illinoensis</i>), cedar elm (<i>Ulmus crassifolia</i>), American elm (<i>Ulmus americana</i>), sugarberry (<i>Celtis laevigata</i>), water oak (<i>Quercus nigra</i>), and white ash (<i>Fraxinus americana</i>)

Source: USGS 2011 GAP Analysis. Descriptions and common plants obtained from metadata. Plant names follow USDA NRCS 2012a PLANTS Database.

^a Access roads, pump stations, and pipe yard and rail siding.

^b Not applicable (NA).

3.5.4 Biologically Unique Landscapes and Vegetation Communities of Conservation Concern

Native vegetation communities throughout the proposed Project area have been altered by agricultural, urban, and industrial development and by changes in ecosystem processes that have maintained or reset succession, including fire, bison grazing, and prairie dog use. Some of the vegetation communities crossed by the proposed Project route have become conservation concerns by state and federal agencies as well as non-profit collaborations. Vegetation

communities are generally of concern because of declining abundance, sensitivity to disturbance, and/or reliance of listed or sensitive species on the habitats that they create. The vegetative communities of conservation concern crossed by the proposed Project route include native grasslands, Rainwater Basin, sagebrush steppe, riparian forest, and native forests. Additionally, vegetation cover within wetlands, conservation and reserve areas, wildlife production areas, and unique landscapes are sensitive habitats that provide valuable resources for wildlife. The following subsections provide brief descriptions of these unique vegetation communities. Figures 3.5.4-1 through 3.5.4-3 illustrate the current distribution of native grasslands, Rainwater Basin, sagebrush steppe, riparian forest, and native forest communities crossed by the proposed Project route. The above referenced figures do not include the facilities located in Kansas and North Dakota as the facilities are not adjacent to the proposed pipeline. However, as noted in Table 3.5-4 above, the pump station locations in Kansas and the pipe yard location in North Dakota do contain native grasslands. This information is discussed in detail in Section 4.5, Terrestrial Vegetation.

3.5.4.1 Native Grasslands

Native grasslands or prairies are among the most threatened native vegetation communities in the United States. In the past, grasslands such as the tallgrass prairies, mixed-grass prairies, and shortgrass prairies dominated central North America. In the past, grazing, especially by large herds of bison, and fire maintained native grasslands in a relatively treeless condition across the proposed Project area. With suppression of fires, woody vegetation has encroached upon the prairie landscape in some parts of Great Plains. Prairies have been lost to agriculture, urbanization, and mineral exploration and altered by invasions of non-native plants and the establishment of woodlots and shelterbelts.

Tallgrass prairie is the wettest of the grasslands composed of sod-forming grasses. Mixed-grass prairies are intergrades between tallgrass and shortgrass prairies characterized by the warm-season grasses of the shortgrass prairie and the cool and warm-season grasses of the tallgrass prairie. Shortgrass prairies are dominated by blue grama and buffalograss—two warm-season grasses that flourish under intensive grazing. For some of the Great Plains states crossed by the proposed Project route, estimated declines range from 83 to 99 percent for native tallgrass prairie, 30 to 75 percent for mixed-grass prairie range, and 35 to 79 percent for shortgrass prairie (Samson et al. 1998). The proposed Project route would cross through the unique Verdigris-Bazile landscape in northeastern Nebraska. This area consists primarily of a mosaic of cropland, restored native grasslands, native tallgrass and mixed-grass prairie, and exotic cool season grasslands (Nebraska Natural Legacy Project 2012). Because of the decline and the importance of these areas as wildlife habitat, conservation of native prairie remnants is a high priority throughout the proposed Project area. Many of the sensitive plant species discussed in Section 3.8, Threatened and Endangered Species and Species of Conservation Concern, which occur along the proposed pipeline route, occur within native grasslands. Construction effects on previously untilled native prairies could be long term, as destruction of the prairie sod during trenching may require more than 100 years for complete recovery.

3.5.4.2 *Rainwater Basin*

The proposed Project route crosses through the Rainwater Basin landscape in Nebraska. The Rainwater Basin encompasses a 17-county area in central Nebraska. It is a complex of wetlands and grasslands on the flat to rolling loess-covered plains of the Rainwater Basin Plains. The landscape was historically a tall- to mid-grass prairie plain containing as many as 11,000 playa⁴ wetlands that covered more than 100,000 acres (Western Hemisphere Shorebird Reserve Network 2012). This complex of playa wetlands formed by wind scour retains water because of impervious clay layers accumulated in the bottoms of the depressions over thousands of years. These clay layers slow water from seeping into the ground (LaGrange 2005). Surface water drainage is poorly developed, and wetlands fill with precipitation and snowmelt (Schneider et al. 2005). This region supports millions of migratory ducks, geese, and shorebirds. Vegetation communities include mixed grass, tallgrass, and saline prairie communities.

3.5.4.3 *Sagebrush Steppe*

Mixed shrub and grass habitats characterize large expanses of grasslands throughout Montana and South Dakota. Depending on site moisture, communities may include silver sagebrush in more moist areas, big sagebrush and rabbitbrush (*Chrysothamnus* spp. and *Ericameria* spp.) in drier areas, or greasewood in alkali flats. Large areas of intact native sagebrush grasslands are a conservation priority in Montana and South Dakota. Sagebrush is susceptible to fire; low-lying, xeric⁵ big sagebrush communities may have a natural fire return interval of 100 to 200 years depending on topography and exposure. Sagebrush communities on more moist sites may have a natural fire interval of decades (U.S. Fish and Wildlife Service [USFWS] 2008). Re-establishment of sagebrush communities may require 20 to 50 years.

3.5.4.4 *Riparian Habitats and Bottomland Hardwood*

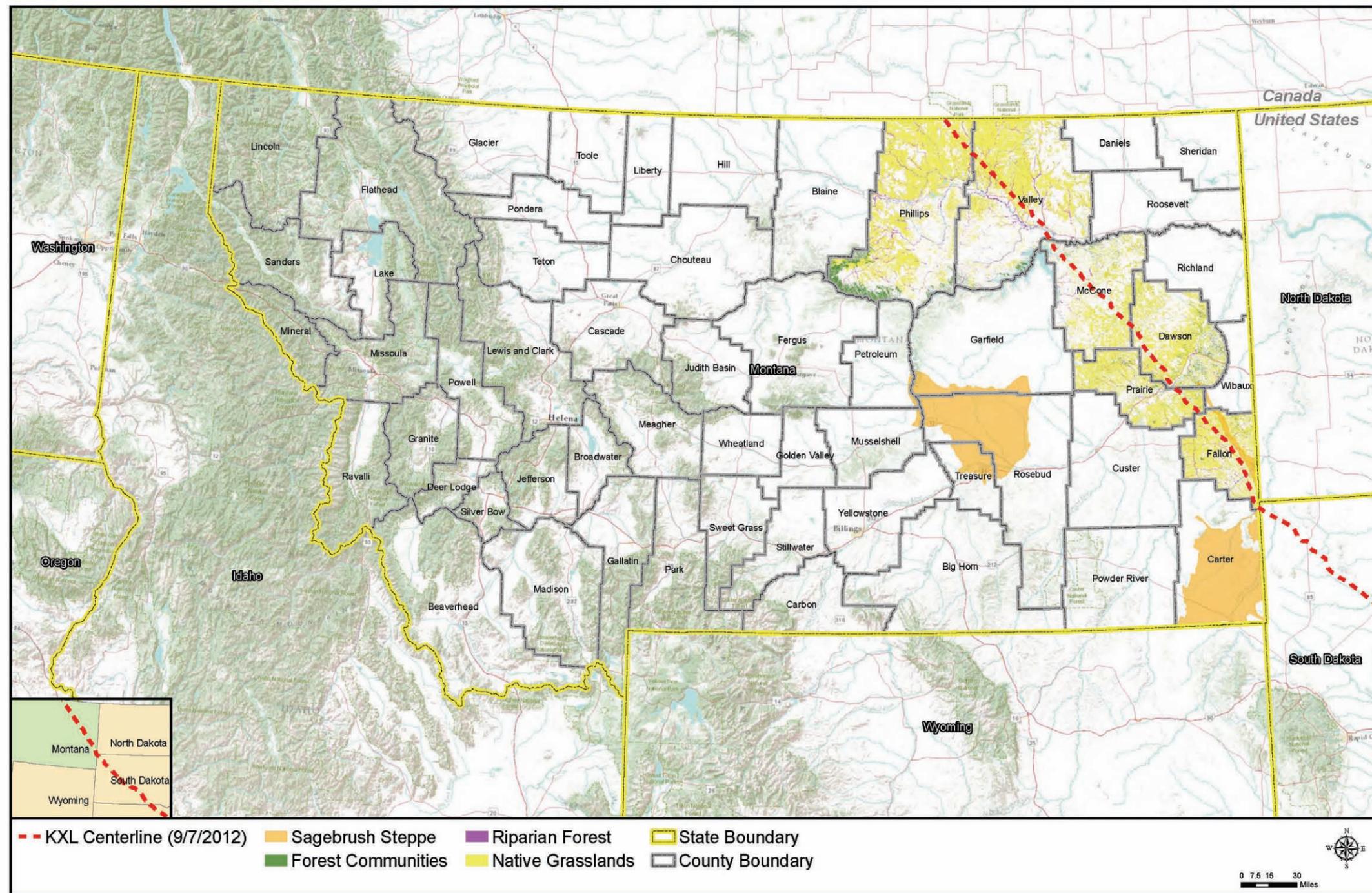
Riparian areas are important as wildlife habitat within the western United States (USFWS 1997) because riparian areas provide wildlife with habitat for food, dens, and nests. Riparian areas represent a transition between wetland and upland habitats, but generally lack the amount or duration of water present in wetlands. Riparian vegetation may include wetland or upland plants. Riparian habitats identified as conservation priorities in Montana by the Natural Resource Conservation Services (NRCS) Wildlife Habitat Incentive Program include woody draws (dry streambed areas dominated by broadleaf riparian communities such as cottonwood-alder-chokecherry-willow communities), shrub riparian communities (alder-chokecherry-dogwood communities), graminoid⁶ and forb⁷ riparian communities (bluejoint reedgrass-cinquefoil-cattails), and mixed riparian communities (mixed grasses and shrubs) (USDA NRCS 2012b).

⁴ Shallow, ephemeral ponds or lagoons that experience significant seasonal changes in semi-arid to arid climates. Often have high salinity or may be completely dry (Aber 2012).

⁵ Habitat generally deficient of moisture.

⁶ Grass or grass-like plant, including grasses (*Poaceae*), sedges (*Cyperaceae*), rushes (*Juncaceae*), arrow-grasses (*Juncaginaceae*), and quillworts (*Isoetes*) (USDA NRCS 2012a).

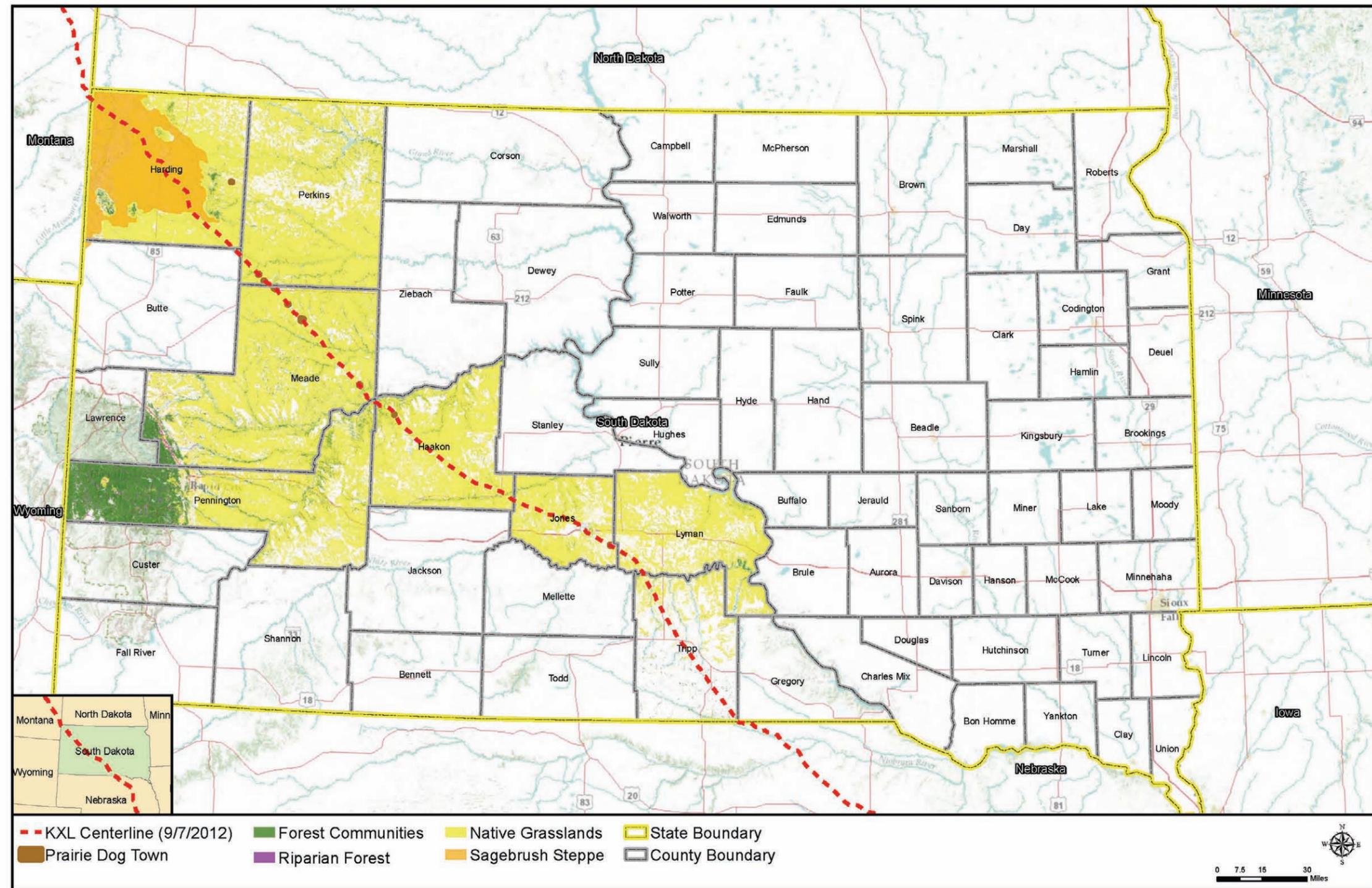
⁷ Vascular plant without significant woody tissue above or at the ground. Forbs and herbs may be annual, biennial, or perennial but always lack significant thickening by secondary woody growth and have perennating buds borne at or below the ground surface (USDA NRCS 2012a).



Source: USGS 2011; Fry et al. 2011; USEPA 2012a; Esri 2013

Figure 3.5.4-1 Montana Vegetation Communities of Conservation Concern

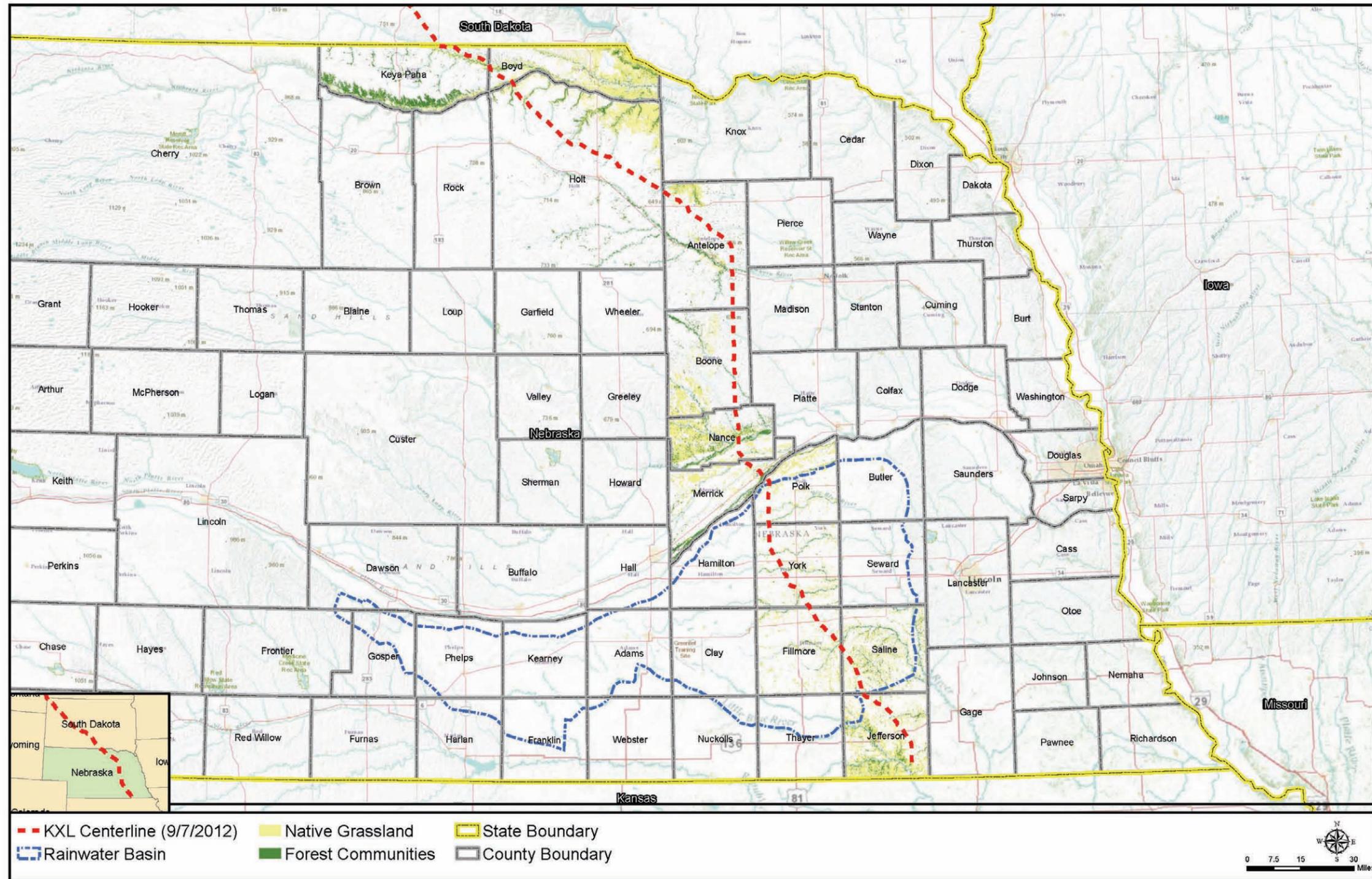
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Source: USGS 2011; Fry et al. 2011; USEPA 2012b; exp Energy Services, Inc. 2012; Esri 2013

Figure 3.5.4-2 South Dakota Vegetation Communities of Conservation Concern

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Source: USGS 2011; Fry et al. 2011; USEPA 2012c; exp Energy Services Inc. 2012; Esri 2013

Figure 3.5.4-3 Nebraska Vegetation Communities of Conservation Concern

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Extensive riparian habitats occur near the confluence of the Milk and Missouri Rivers and near the Yellowstone River in Montana. High-priority conservation riparian communities in South Dakota include areas with emergent, scrub-shrub⁸, or forest vegetation in semi-permanent or permanent depressional wetlands and low-gradient perennial streams and rivers (South Dakota Department of Game, Fish, and Parks [SDGFP] 2006). The proposed Project route would cross through the Keya Paha Watershed, Lower Niobrara River, Verdigris-Bazile, and Lower Loup River Unique Landscapes in Nebraska with priority cottonwood-willow riparian woodlands.

3.5.4.5 Forest Communities

Native wooded communities were once an integral component of the prairie landscape throughout the Great Plains where they provide foraging, breeding, and refuge habitats for many wildlife species. Fire generally limited the size and distribution of prairie woodlands to river breaks and protected areas. Many of these communities have been lost due to land conversion to agricultural uses, levee construction, and urban development.

In Montana, green ash and cottonwood woodlands are declining in number (Montana Fish, Wildlife & Parks [MFWP] 2005). No forested habitats are considered high-conservation priorities within the Great Plains Steppe region of South Dakota (SDGFP 2006). Within the biologically unique landscapes identified in Nebraska, several forest communities are identified as conservation priorities, including Keya Paha Watershed (oak woodland), Middle Niobrara River (bur oak-basswood-ironwood forest, oak woodland, and ponderosa pine woodland), and Lower Loup River (oak woodland) (Schneider et al. 2005).

3.5.4.6 Traditionally Used Native Plants

Indian tribes have traditionally used many native plants for food, construction materials, forage for livestock, fuel, medicine, and spiritual purposes (Johnston 1987, Hart and Moore 1976, and Gilmore 1977). Although dependence on plants for many aspects of survival in the natural environment has become less pronounced in recent times, plants continue to be of substantial importance to the culture of most Indian tribes. The plants themselves are important and, in some cases, indigenous peoples consider them sacred. Places where traditionally used plants grow and have been collected for many generations may be considered to have spiritual and cultural significance.

Plants of ethnobotanical importance known or likely to occur in the proposed Project area include plants from all native vegetation communities, although many grow in wetlands and riparian areas. Examples of these many important wetland and riparian plants include cottonwood (*Populus* spp.), hawthorn (*Crataegus* spp.), sweet grass (*Hierochloa odorata*), cattail (*Typha* spp.), snowberry (*Symphoricarpos* spp.), silver buffaloberry (*Sheperdia argentea*), and saskatoon (*Amelanchier alnifolia*). Wetlands and riparian habitats occupy a small percentage of the land area in the Great Plains; however, they are disproportionately important as sources of traditionally used plants. Native grasslands also provided numerous traditionally used plants; some examples of these include Indian bread-root (*Psoralea esculenta*), wild flax (*Linum lewisii*), prickly pear cactus (*Opuntia* spp.), fringed sage (*Artemisia frigida*), and white sage

⁸ Scrub-shrub is used as a reference to the Cowardin Classification System. This section uses the NLCD shrub-scrub definition, which pertains to uplands and wetlands.

(*Artemisia ludoviciana*). Reductions in native grasslands have also reduced populations of plants valued by Indian tribes. In addition to plants traditionally used by Indian tribes, many people also use and collect for sale the purple (or prairie) coneflower (*Echinacea* spp.) as an herbal supplement.

3.5.5 Wetland and Conservation Easements

The proposed Project route would cross multiple conservation easements including USFWS wetland easements, MFWP Conservation Easements, and multiple conservation agreements enrolled in the NRCS Conservation Reserve Program and the Wetland Reserve Program. The Wetland Reserve Program and Conservation Reserve Program are described in Section 3.9, Land Use, Recreation, and Visual Resources.

3.5.6 Noxious Weeds

Under the Federal Plant Protection Act of 2000 (formerly the Noxious Weed Act of 1974 [Title 7 of the U.S. Code Sections 2801–2814]), the U.S. Department of Agriculture (USDA) defines a noxious weed as “any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment.” Noxious weeds and invasive plants are non-native, undesirable native, or introduced species. They are able to exclude and out-compete desirable native species, thereby decreasing overall species diversity. The Federal Plant Protection Act contains a list (updated February 2012) of 137 federally restricted and regulated noxious weeds (as per Title 7 of the Code of Federal Regulations, Chapter III, Part 360) including 19 aquatic and wetland weeds, 62 parasitic weeds, and 56 terrestrial weeds. Each state is federally mandated to uphold the rules and regulations set forth by the Federal Plant Protection Act and to manage its lands accordingly.

In addition to federal noxious weed lists, each state maintains a list of state and local noxious weeds. County weed control boards or districts are present in most counties along the proposed pipeline route. These county weed control boards monitor local weed infestations and provide guidance on weed control. Weed distributions (USDA NRCS 2012a) in the counties along the proposed pipeline route suggest that 52 noxious weeds and invasive plants could potentially occur within the construction ROW and/or the two pump stations located in Clay and Butler counties in Kansas. These are broadly categorized as follows:

- Six aquatic or wetland weeds;
- Thirty-nine upland weeds; and
- Seven weeds that may occur in either wetland or upland habitats.

Of these 52 weeds (listed in Table 3.5-5), 46 occur in Montana, 31 occur in South Dakota, 28 occur in Nebraska, and 19 occur in Kansas. Of those, common crupina (*Crupina vulgaris*) and dodder (*Cuscuta* spp.) are federally designated noxious weeds.

Executive Order 13112 directs federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species can cause. It further specifies that federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the

United States or elsewhere unless it has been determined that the benefits outweigh the potential harm and that all feasible and prudent measures to minimize risk have been taken.

Table 3.5-5 Federal, State, or Local Introduced, Invasive, and Noxious Weeds Potentially Occurring Along the Proposed Project Route^a

Species ^c	Status/Habitat	Occurrence and State/County Designations ^{b,d}			
		MT	SD	NE	KS
Hardheads [Russian knapweed] (<i>Acroptilon [Centaurea] repens</i>)	Introduced/Upland	x	x		x
Lesser [Common] burdock (<i>Arctium minus</i>)	Introduced/Upland	x	x	x	x
Hoary alyssum (<i>Berteroa incana</i>)	Introduced/Upland	x			
Cheatgrass (<i>Bromus tectorum</i>)	Introduced/Upland	x	x	x	x
Flowering rush (<i>Butomus umbellatus</i>)	Introduced/Wetland	x		x	
Whitetop [Hoary cress] (<i>Cardaria draba</i>)	Introduced/Upland	x	x	x	
Spiny plumeless thistle (<i>Carduus acanthoides</i>)	Introduced/Upland		x	x	
Nodding plumeless [musk] thistle (<i>Carduus nutans</i>)	Introduced/Upland	x	x	x	x
Diffuse [white] knapweed (<i>Centaurea diffusa</i>)	Introduced/Upland	x	x	x	
Yellow star-thistle (<i>Centaurea solstitialis</i>)	Introduced/Upland	x	x	x	
Spotted knapweed (<i>Centaurea stoebe [maculosa]</i>)	Introduced/Upland	x	x	x	
Rush skeletonweed (<i>Chondrilla juncea</i>)	Introduced/Upland	x			
Tall thistle (<i>Cirsium altissimum</i>)	Native/Upland			x	x
Canada thistle (<i>Cirsium arvense</i>)	Introduced/Wetland and Upland	x	x	x	
Flodman thistle (<i>Cirsium flodmanii</i>)	Native/Upland			x	
Bull thistle (<i>Cirsium vulgare</i>)	Introduced/Upland	x	x	x	x
Poison hemlock (<i>Conium maculatum</i>)	Introduced/Wetland and Upland	x	x	x	x
Field bindweed (<i>Convolvulus arvensis</i>)	Introduced/Upland	x	x	x	x
Common Crupina (<i>Crupina vulgaris</i>) ^b	Introduced/Upland	x			
Dodder (<i>Cuscuta spp.</i>)	Introduced and Native/ Upland	x	x	x	x
Gypsyflower [Houndstongue] (<i>Cynoglossum officinale</i>)	Introduced/Upland	x	x	x	x
Scotch Broom (<i>Cytisus scoparius</i>)	Introduced/Upland	x			
Common viper's bugloss [Blueweed] (<i>Echium vulgare</i>)	Introduced/Upland	x			
Russian olive (<i>Elaeagnus angustifolia</i>)	Introduced/Upland	x	x	x	x

Species ^c	Status/Habitat	Occurrence and State/County Designations ^{b,d}			
		MT	SD	NE	KS
Leafy spurge (<i>Euphorbia esula</i>)	Introduced/Upland	x	x	x	x
Baby's breath (<i>Gypsophila paniculata</i>)	Introduced/Upland	x	x		
Orange hawkweed (<i>Hieracium aurantiacum</i>)	Introduced/Upland	x	x		
Meadow hawkweed complex (<i>Hieracium caespitosum</i> , <i>H. x. floribundum</i> , <i>H. piloselloides</i>)	Introduced/Upland	x			
Hydrilla (<i>Hydrilla verticillata</i>)	Introduced/Wetland	x			
Common St. Johnswort (<i>Hypericum perforatum</i>)	Introduced/Upland	x		x	x
Paleyellow iris [Yellow flag iris] (<i>Iris pseudacorus</i>)	Introduced and Upland and Wetland	x			
Dyer's woad (<i>Isatis tinctoria</i>)	Introduced/Upland	x			
Broadleaved [Perennial] pepperweed (<i>Lepidium latifolium</i>)	Introduced/Upland	x			
Sericea lespedeza (<i>Lespedeza cuneata</i>)	Introduced/Upland				x
Oxeye daisy (<i>Leucanthemum vulgare</i> [<i>Chrysanthemum leucanthemum</i>])	Introduced/Upland	x	x		x
Dalmatian toadflax (<i>Linaria dalmatica</i>)	Introduced/Upland	x	x		
Butterandeggs [Yellow toadflax] (<i>Linaria vulgaris</i>)	Introduced/Upland	x	x		x
Purple loosestrife (<i>Lythrum salicaria</i>)	Introduced/Wetland	x	x	x	
Eurasian (Spike) watermilfoil (<i>Myriophyllum spicatum</i>)	Introduced/Aquatic	x		x	
Scotch cottonthistle (<i>Onopordum acanthium</i>)	Introduced/Upland		x		
Common reed (<i>Phragmites australis</i>)	Native/Wetland	x	x	x	
Japanese knotweed complex [Crimson beauty] (<i>Polygonum cuspidatum</i> , <i>P. polystachyum</i> , <i>P. sachalinense</i>)	Introduced/Upland and wetland	x	x	x	
Curlyleaf pondweed (<i>Potamogeton crispus</i>)	Introduced/Aquatic	x			
Sulphur cinquefoil (<i>Potentilla recta</i>)	Introduced/Upland	x			
Tall buttercup (<i>Ranunculus acris</i>)	Introduced/Upland	x			
Tansy Ragwort (<i>Senecio jacobaea</i>)	Introduced/Upland	x			
Field [Perennial] sowthistle (<i>Sonchus arvensis</i>)	Introduced/Upland and wetlands	x	x		
Johnson grass (<i>Sorghum halepense</i>)	Introduced/Upland				x
Tamarisk [Saltcedar] (<i>Tamarix</i> spp.)	Introduced/Upland and wetland	x	x	x	

Species ^c	Status/Habitat	Occurrence and State/County Designations ^{b,d}			
		MT	SD	NE	KS
Common tansy (<i>Tanacetum vulgare</i>)	Introduced/Upland	x	x	x	
Puncturevine (<i>Tribulus terrestris</i>)	Introduced/Upland	x	x	x	x
Common mullein (<i>Verbascum thapsus</i>)	Introduced species/ Upland	x	x	x	x

Source: exp Energy Services Inc. 2012a

^a This information was compiled from federal and state websites listing the declared noxious weed lists for each state. For specific state designations see the following: USDA NRCS 2012a; Montana Department of Agriculture 2012; South Dakota Department of Agriculture (SDA) 2012; Nebraska Department of Agriculture 2012; Kansas Department of Agriculture 2013

^b Introduced, invasive, or noxious weed observed by exp Energy Services, Inc. during field surveys within counties crossed by proposed Project route or within state.

^c Species in bold are federal noxious weeds (USDA NRCS 2012a). Common and species synonyms in square brackets [] are as listed on state noxious weed or plant lists.

^d The ancillary facilities in North Dakota do not involve new construction and are therefore not included in this table.

3.5.7 Connected Actions⁹

The proposed Project would include several connected actions, including: 1) the Bakken Marketlink Project, 2) the Big Bend to Witten 230-kV Transmission Line, and 3) Electrical Distribution Lines and Substations. All three of the connected actions would affect terrestrial vegetation and land cover types described in Section 3.5.3, General Vegetation Resources.

3.5.7.1 Bakken Marketlink Project

Construction and operation of the Bakken Marketlink Project would consist of a 16-inch pipeline approximately 5 miles in length, additional piping, booster pumps, meter manifolds, and two 250,000-barrel tanks that would be used to store crude from connecting third-party pipelines and terminals. The Bakken Marketlink Project facilities would be located within private land currently used as pastureland and hayfields.

3.5.7.2 Big Bend to Witten 230-kV Transmission Line

The Big Bend to Witten 230-kV Transmission Project is located in Lyman and Tripp counties in south-central South Dakota. The project would consist of replacing the existing Big Bend-Fort Thompson No. 2 230-kV Transmission Line Turning Structure on the south side of the Big Bend Dam on Lake Sharpe; constructing a new double-circuit 230-kV transmission line for approximately 1 mile southwest of the dam; and constructing a new Lower Brule Substation south of the dam. The existing Witten Substation would be expanded immediately to the northeast to accommodate the new 230-kV connection.

⁹ Connected actions are those that 1) automatically trigger other actions which may require environmental impact statements, 2) cannot or will not proceed unless other actions are taken previously or simultaneously, 3) are interdependent parts of a larger action and depend on the larger action for their justification.

3.5.7.3 *Electrical Distribution Lines and Substations*

Multiple private power companies or cooperatives would construct distribution lines to deliver power to 20 pump stations located along the length of the pipeline in the United States. These distribution lines would range in length from approximately 0.1-mile to 62 miles, with the average being 13 miles long, and are estimated to extend about 377 miles, combined. The distribution lines would range in capacity from 69 kV to 240 kV, but the majority would have a capacity of 115 kV. The lines would be strung on a single-pole and/or on H-frame wood poles.

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