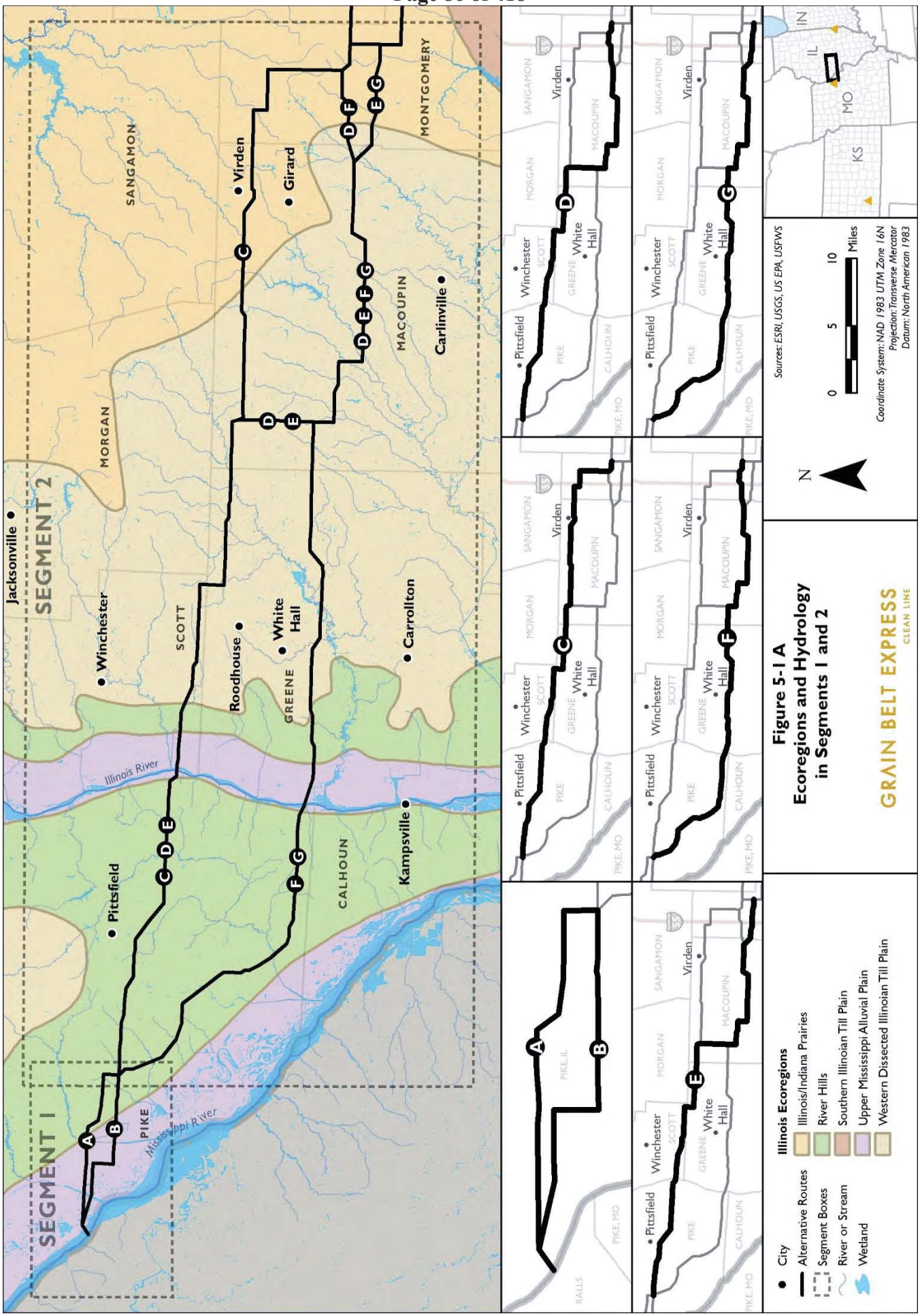
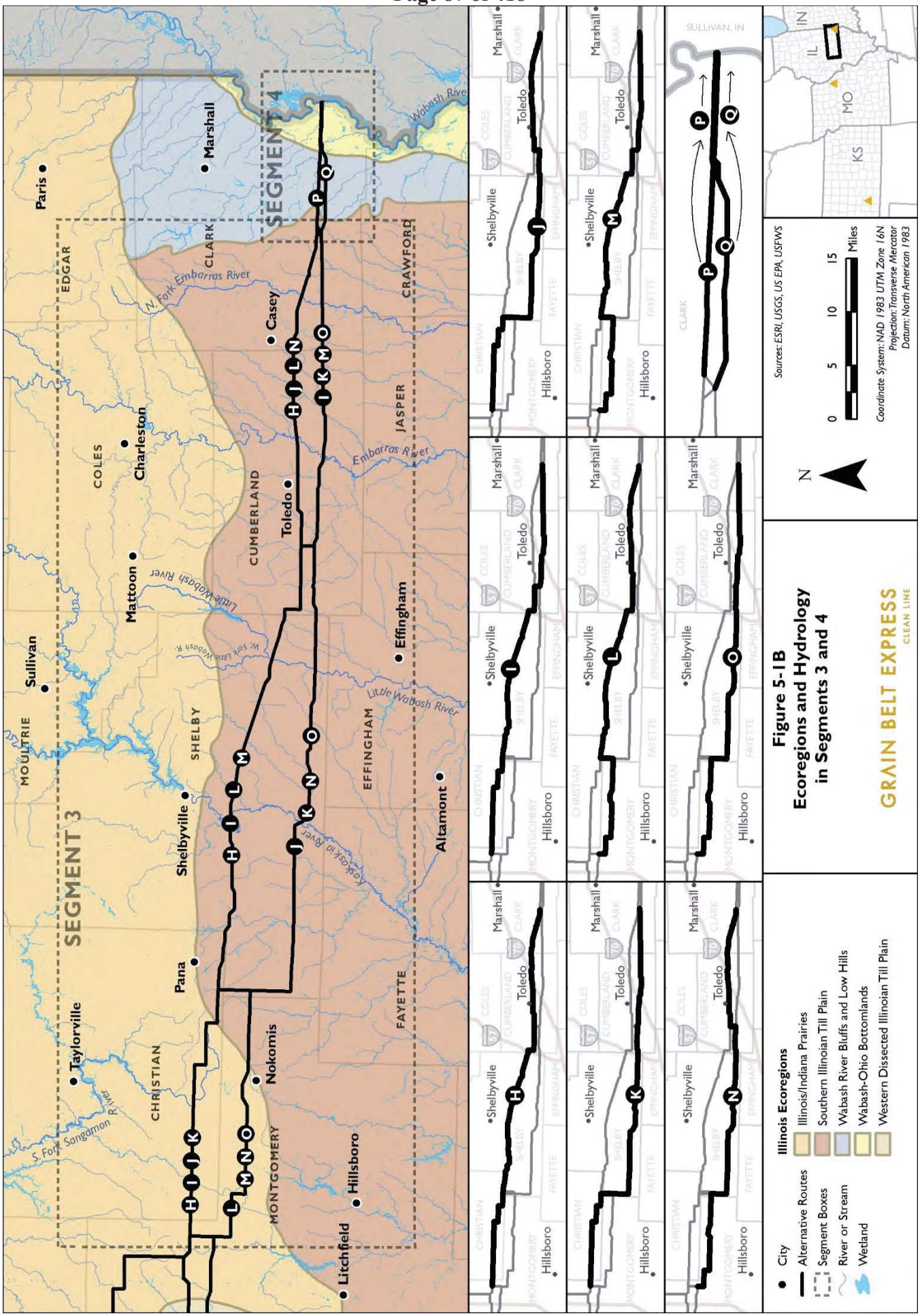

SEGMENT 1
SEGMENT 2
Jacksonville
Winchester
Pittsfield
Roodhouse
White Hall
Virden
Girard
Carrollton
Kampsville
Carlinville
SANGAMON
MORGAN
SCOTT
GREENE
CALHOUN
MACOUPIN
MONTGOMERY
PIKE
Illinois River
Mississippi River
A
B
C
D
E
F
G
RALLS
PIKE, IL
PIKE, MO
Sources: ESRI, USGS, US EPA, USFWS
0
5
10
Miles
Coordinate System: NAD 1983 UTM Zone 16N
Projection: Transverse Mercator
Datum: North American 1983
N
IN
IL
MO
KS
City
Alternative Routes
Segment Boxes
River or Stream
Wetland
Illinois Ecoregions
Illinois/Indiana Prairies
River Hills
Southern Illinoian Till Plain
Upper Mississippi Alluvial Plain
Western Dissected Illinoian Till Plain
Figure 5-1 A
Ecoregions and Hydrology
in Segments 1 and 2
GRAIN BELT EXPRESS
CLEAN LINE


SEGMENT 3
SEGMENT 4
Paris
Marshall
Wabash River
EDGAR
CLARK
N. Fork Embarras River
Casey
CRAWFORD
COLES
Charleston
CUMBERLAND
Toledo
JASPER
Embarras River
Mattoon
Little Wabash River
W. Fork Little Wabash R.
Effingham
Sullivan
MOULTRIE
SHELBY
EFFINGHAM
Little Wabash River
Shelbyville
Kaskaskia River
Altamont
Pana
FAYETTE
Taylorville
CHRISTIAN
Nokomis
S. Fork Sangamon River
MONTGOMERY
Hillsboro
Litchfield
SULLIVAN, IN
Shelbyville
Marshall
Toledo
Hillsboro
Figure 5-1B
Ecoregions and Hydrology
in Segments 3 and 4
GRAIN BELT EXPRESS
CLEAN LINE
Sources: ESRI, USGS, US EPA, USFWS
N
0 5 10 15 Miles
Coordinate System: NAD 1983 UTM Zone 16N
Projection: Transverse Mercator
Datum: North American 1983
IN
IL
MO
KS
City
Alternative Routes
Segment Boxes
River or Stream
Wetland
Illinois Ecoregions
Illinois/Indiana Prairies
Southern Illinoian Till Plain
Wabash River Bluffs and Low Hills
Wabash-Ohio Bottomlands
Western Dissected Illinoian Till Plain

Approximately 30 percent of the state population uses groundwater as their primary source of drinking water. Principal aquifers within the Study Area include three types: sand and gravel, shallow bedrock, and deep bedrock. Principal sand and gravel aquifers in the Study Area are associated with the alluvial deposits of the Mississippi and Illinois Rivers and the river valleys of the Kaskaskia, Little Wabash, and Embarras Rivers. Principal shallow bedrock aquifers in the Study Area occur in the west, primarily in Pike, Scott, and Greene Counties. Principal deep bedrock aquifers are also primarily found in the western portions of the Study Area, including Pike, Scott, Greene, Macoupin, Montgomery, and Christian Counties (Illinois Environmental Protection Agency 2014b).

Stream water quality has been degraded across the Study Area by ditching and draining, crop and livestock production, sheet erosion from cultivated slopes, and strip mining (Woods et al. 2006). Several streams in the Study Area are listed on the state's 303(d) list that identifies impaired waterbodies that are not currently meeting water quality standards.

IDNR maintains a list of Biologically Significant Streams (BSS), which are streams that have a high biotic diversity or integrity rating or score based on data from at least two taxonomic groups (IDNR 2008). Segment I crosses no BSS. In Segment 2, Alternative Routes C, D, and E cross Bay Creek. Three BSS crossings are located in Segment 3—Becks and Ranger Creeks, which all Alternative Routes cross, and the Embarras River, which Alternative Routes I, K, M, and O cross. In Segment 4, Alternative Route P crosses Mill Creek three times along an existing transmission line, and Alternative Route Q crosses it once.

General Impacts and Mitigation Measures

Surface Waters

Direct impacts on hydrologic features are often minimized or avoided by spanning wetlands, rivers, or drainages, when feasible. In the absence of other constraints, engineers typically seek to place structures at high points in topography, inherently resulting in the avoidance of structure placement that impacts water or wetland features in low-lying areas. However, in a few rare instances, such as at crossings of large wetland areas or complexes, a structure may need to be placed within a wetland. In these instances, the area of permanent wetland loss will be limited to the area of the footprint of the structure foundation, typically between 0.00016 acre and 0.0009 acre of permanent impact (average permanent impact acreage for each footing of a four-footed lattice steel structure and for a monopole structure, respectively).

At the Mississippi River crossing location, no structures will be placed in the river; however, a structure will be placed on Jim Young Island. Although impacts to the Mississippi River are not anticipated, wetlands may occur on the island and along the riparian margins of the Mississippi River. Grain Belt Express will continue coordination with USACE to obtain and comply with the necessary Clean Water Act (Section 404) permits for potential impacts that may be associated with wetlands located at the crossing, as well as across the Project.

Grain Belt Express will implement best management practices during the design, construction, and operational phases to avoid or minimize impacts on wetlands. These practices may include considering designs that limit clearing forests near drainages and in areas of steep topography, using wetland mats to minimize impacts of construction traffic, and avoiding construction activities during seasonally wet periods in certain areas.

Other indirect impacts to surface waters, such as impacts to water quality from sedimentation and erosion of surrounding soils, can result from ground-disturbing activities. Typically, sedimentation is easily controlled with proper perimeter controls around the transmission line construction area. Best management practices may include implementation of sediment control measures, such as silt fences, access road drainage management measures, and timely reseeding of disturbed soil areas. Impacts to water quality would be avoided or minimized for all Alternative Routes because Grain Belt Express will coordinate with the Illinois Environmental Protection Agency and obtain and comply with the necessary National Pollution Discharge Elimination System general storm water permit for construction of the Project.

Groundwater

Generally, transmission line construction does not impact groundwater. In some instances, dewatering may need to occur in areas with a high water table to place foundations in the ground. Dewatering activities required by construction of any of the Alternative Routes, if necessary, will follow best management practices and be covered under the Illinois Environmental Protection Agency National Pollution Discharge Elimination System general storm water permit or under a separate dewatering permit, as appropriate.

Alternative Route Comparison

For each segment, Alternative Routes were analyzed with respect to the potential for water resource impacts. A table of the number of stream crossings (including streams, rivers, or drainages that can be perennial, seasonal, intermittent, or ephemeral), number of waterbodies (lakes or ponds) crossed, acres of emergent marsh (herbaceous low-growing vegetation) and forested/scrub-shrub wetlands, and length of the 100- or 500-year floodplain crossed is presented for each Alternative Route, as well as a qualitative discussion of the concerns for specific Alternative Routes. **Figure 5-1** shows hydrology for all four segments.

Segment 1

Excluding the Mississippi River itself, the transmission line will span all streams and waterbodies in Segment 1 without the use of non-standard design requirements, and wetlands will be spanned when feasible. No structures will be placed in the Mississippi River; however, taller structures and longer spans will be required, and it is likely a structure will be placed on Jim Young Island. When a wetland cannot be spanned, a small amount of wetland fill would be required, as discussed above.

In general, the two Alternative Routes in Segment 1 are similar from a water resources perspective, with only minor differences in forested/scrub-shrub wetland acreage, stream crossings, and floodplain length (the vast majority of which is farmed) (**Table 5-1**). The wetland acreage (based upon NWI data) within the ROW of each Alternative Route is overall similar. Although Alternative Route A crosses the least amount of forested/scrub-shrub wetland, impacts on scrub-shrub wetlands are either unlikely or at most minimal to this type of wetland when spanned. Alternative Route B has more length in the floodplain, which normally suggests a greater potential for impacts on wetlands not found in the NWI data. However, in this case, nearly the entire floodplain has been drained for farming due to its highly productive soils, so impacts on unknown water resources are expected to be minimal. Additional mileage, and therefore additional structures in the floodplain, has a potential for greater impacts on floodplain drainage patterns; however, drainage patterns in the Sny Island Levee District are highly modified through the drainage way and levee system and are easily avoidable. In Segment 1, overall, both Alternative Routes would have similar impacts to water resources.

Segment 2

Similar to Segment 1, the transmission line will span all streams and waterbodies in Segment 2. However, Alternative Routes C, D, and E all cross approximately 215 streams and waterbodies, including Bay Creek, a BSS, whereas Alternative Routes F and G cross approximately 130 streams and waterbodies (**Table 5-1**). Alternative Routes C, D, and E cross Bay Creek perpendicularly in an area with very limited riparian forest; therefore, any impacts on Bay Creek from ROW clearing would be negligible. All Alternative Routes in Segment 2 cross the Illinois River, which will be spanned; however, structures may need to be placed in the leveed floodplains. Alternative Routes C, D, and E all cross the Illinois River at a location parallel to existing pipelines. Although Alternative Routes F and G cross significantly fewer streams, they both cross more mapped floodplain than the other Alternative Routes, and are therefore more likely to require structures placed in floodplains, which are regulated under the Illinois Rivers, Lakes, and Streams Act. The majority of the floodplains in the Hillview and Hartwell Drainage and Levee Districts are in active agricultural use, so it is unlikely that structures in the floodplains would impact wetlands. Alternative Routes F and G, as the two Alternative Routes that follow a southern path for their entirety, cross more forest acreage and larger tracts of contiguous forest. Although the NWI data only show a moderate difference in forest/scrub-shrub wetlands crossed by these Alternative Routes as opposed to the others, the amount of forest along the southern Alternative Routes in Segment 2 indicates that Alternative Routes F and G would require the clearing of more riparian forest and forested wetlands.

Table 5-1. Alternative Routes Water Resource Information

Water Resources Category	Alternative Routes																
	Segment 1		Segment 2					Segment 3								Segment 4	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Stream crossings (count)[1]	24	21	201	215	213	129	127	123	121	130	124	119	117	122	116	13	11
Waterbody crossings (count)[1]	1	1	5	6	6	2	2	5	7	2	4	4	6	1	3	1	0
Biologically Significant Steam crossings (count)[2]	0	0	1	1	1	0	0	2	3	2	3	2	3	2	3	3	1
Emergent wetlands[3] within the ROW[4] (acres)	2	3	0	0	0	1	1	2	2	3	2	1	1	2	2	<1	<1
Forested and Scrub-shrub wetlands[3] within the ROW[4] (acres)	14	24	19	21	23	23	25	17	20	26	29	19	22	24	28	4	3
100-year or 500-year floodplain crossed (miles)	3.2	4.1	5.0	5.4	5.8	7.1	7.5	4.1	4.9	5.9	6.3	3.7	4.4	5.5	5.8	3.6	3.2

[1] U.S. Geological Survey (2014)
[2] IDNR (2014)
[3] USFWS (2014)
[4] ROW is 100 feet on either side of centerline.

Although the number of access road stream crossings will not be known until initial engineering and design is completed, in general Alternative Routes, such as C, D, and E, which have more streams in the ROW, may require more access road stream crossings in the form of culverts or temporary bridges. However, no in-water work is expected to occur in Bay Creek, a BSS. All Alternative Routes have similar acreage of wetlands located within the ROW, although Alternative Route G has the greatest acreage at approximately 26 acres, versus Alternative Route C which has approximately 19 acres. Impacts to wetlands in Segment 2 from any of the Alternative Routes are expected to be minimal because wetlands will be spanned wherever feasible, and access roads through wetlands will incorporate best management practices, which could include the use of construction matting or other protection techniques.

Overall, in Segment 2, all Alternative Routes would have similar impacts to water resources, with the exception of the potential for larger floodplain, forested wetland, and riparian impacts in Alternative Routes F and G and the potential for more stream impacts as a result of access roads in Alternative Routes C, D, and E.

Segment 3

Overall, all the Alternative Routes in Segment 3 cross similar numbers of streams, waterbodies, and acres of wetlands, although Alternative Routes H, I, J, and K cross the South Fork Sangamon River numerous times. All Alternative Routes in Segment 3 cross the navigable Embarras River. The South Fork Sangamon, Kaskaskia, and Little Wabash Rivers are not navigable at the location where the Alternative Routes cross. All streams, rivers, and waterbodies in Segment 3 will be spanned; however, the aerial crossings of navigable waterways will require Section 10 permits from USACE.

Three BSS are crossed within Segment 3. Alternative Routes H, I, L, and M all cross Becks Creek perpendicularly in an area of narrow riparian forest between fields. Alternative Routes J, K, N, and O also perpendicularly cross Becks Creek farther to the south, in an area of denser forest. Because both crossings are perpendicular, the stream will be spanned, and no access road culverts will be placed in Becks Creek; therefore, impacts from any of the Alternative Routes would be minimal. The portion of the Embarras River crossed by Alternative Routes I, K, M, and O is a BSS, whereas it is not a BSS where crossed by Alternative Routes H, J, L, and N. The Embarras River would not be affected because the transmission line will span the river, there will be no in-water work associated with access roads, and the area where Alternative Routes I, K, M, and O cross has only scattered forest, so little riparian forest would be removed. The last of the BSS segments crossed in Segment 3 is Ranger Creek, which is crossed by all the Alternative Routes. However, Alternative Routes H, J, L, and N cross the creek in an area with very little riparian forest that is adjacent to a developed motocross park, so those Alternative Routes would have very little impact. Alternative Routes I, K, M, and O cross Ranger Creek perpendicularly in an area of dense forest, so some riparian forest would be cut;

however, because the creek will be spanned and there will be no in-water work associated with access roads, impacts to Ranger Creek would be minimal.

Alternative Routes J, K, and O cross the most miles of floodplain, and Alternative Routes H and L cross the fewest miles of floodplain (**Table 5-1**). Floodplains are likely to contain wetlands beyond those that are mapped by NWI; however, wetlands will be spanned wherever feasible. In addition, crossing more miles in floodplains makes it more likely that structures would have to be placed in a floodplain, which is regulated by the Illinois Rivers, Lakes, and Streams Act. Although Alternative Route K has the greatest wetland acreage within the ROW (31 acres) versus Alternative Routes H and L (19 and 20 acres, respectively), wetlands will be spanned wherever feasible and access roads through wetlands will use construction matting or other protection techniques. If wetlands cannot be spanned, structures in wetlands would result in a small amount of fill and would require USACE permits.

In the eastern portion of Segment 3, Alternative Routes H, I, L, and M all cross Richland Creek within the Hidden Springs State Forest. These Routes parallel an existing transmission line in this area that essentially parallels Richland Creek. Paralleling Richland Creek, while also paralleling an existing cleared transmission line, would result in the loss of a wide swath of riparian forest along the steep banks of the creek within the State Forest. IDNR noted this concern in its correspondence regarding the crossing following its own field review of the site. Therefore, although the potential impacts to water resources by the Alternative Routes would otherwise be somewhat similar in the western portion of Segment 3, the impacts to the Richland Creek riparian area within Hidden Springs State Forest suggest that Alternative Routes J, K, N, and O would be preferable in this eastern portion of Segment 3.

Segment 4

Within Segment 4, both Alternative Routes would have similar impacts to water resources. Both routes span all streams, rivers, and waterbodies, including the navigable Wabash River. Alternative Route P parallels Little and Snyder Creeks for short distances, which would result in the loss of riparian forest; however, Alternative Route Q does the same for a short distance along Mill Creek. Alternative Route P crosses the BSS Mill Creek three times, all in a close to perpendicular fashion. Mill Creek in this area has a narrow riparian forest buffer through agricultural fields. Because Alternative Route P parallels an existing transmission line for its length, the crossings of Mill Creek would result in a wider length of riparian forest cleared than if the ROW was not adjacent to another transmission line. Although Alternative Route P would have some impact on riparian forest adjacent to Mill Creek, Alternative Route Q would as well. Alternative Route Q crosses Mill Creek while paralleling the same transmission line as Alternative Route P and would have similar impacts. In addition, Alternative Route Q parallels Mill Creek for a short distance, which would result in the loss of additional riparian forest.

Wetlands in the ROW of both routes are minimal and will likely be spanned, and there is minimal floodplain, indicating that the placement of structures in floodplains likely could be avoided (**Table 5-1**).

5.1.2 Wildlife and Habitat

Vegetation and Habitats

Illinois was once a complex mixture of forests, woodlands, savannas, wet to dry prairies, marshes, and swamps occurring on a diversity of landforms that vary in degree of relief, dissection, and geologic parent materials. Today, nearly all of the original prairies have been replaced by agriculture with corn, soybeans, and wheat the main crops. Existing native vegetation in Illinois has undergone extensive fragmentation into smaller tracts. Most of the forests have been removed in flatter areas and are now concentrated in areas unsuited to agriculture, such as steep slopes, ravines, and riparian areas. Scattered forest remnants occur as narrow corridors and islands (Woods et al. 2006). Most of the marshes and swamps have been cleared and drained for agriculture (Woods et al. 2006). Grain Belt Express considered the locations of forest vegetation and potential habitat during its siting process.

Along the Mississippi River and its major tributaries, broad floodplains and low river terraces that were once bottomland forests, prairies, and marshes, have been cleared and drained and are now devoted mainly to use as croplands. Scattered forest remnants occur as islands and on the inside of levees.

Eastern Illinois consists of broad flat to rolling plains and the bluffs and low hills of the Wabash River. Most former prairies are now used as cropland and hayland in addition to livestock production. Forests on the Wabash River bluffs and low hills are still common on steeper slopes and in ravines, while the majority of flatter areas are cultivated for the production of corn, wheat, soybeans, and hay. The area nearest the Wabash River consists of an alluvial plain, most of which has been cleared and drained for agriculture, although some woodlands, marshes, and swamps remain (Woods et al. 2006).

Today, approximately 12 percent of Illinois is covered by forests of which only a small percentage are high quality communities such as floodplain forest, upland forest, sand forest, and flatwoods. The majority of the forests in Illinois have been fragmented into small parcels of land, and the species that require large forested tracts to survive have declined. However, these forests provide stopover habitat during migration for Neotropical migratory birds and breeding habitat for summer resident species. Approximately 19 percent of Illinois is grassland habitat, but fewer than 2,600 acres of high quality prairie remain in Illinois. Most of these grasslands are not large enough areas to support sensitive wildlife species. Illinois has lost approximately 90 percent of its wetlands and remaining wetlands are in poor condition due to fragmentation, siltation, altered hydrological conditions, and exotic species (IDNR 2005).

Wildlife

Illinois' natural communities support and provide habitat for a diversity of wildlife species, including: 403 bird species made up of 204 native breeding bird species, 151 migrant/vagrants, and 48 very rare vagrants; 101 native reptile and amphibian species; 68 native mammal species; 187 native fish species; 104 native mussel and clam species; 170 native snail species; and more than 17,000 native insect species. Game species managed for hunting include big and small game animals, furbearing animals, upland game birds, migratory game birds, and waterfowl (INHS 2015a).

In addition, Illinois lies within the Mississippi Flyway, one of the four major North American migratory bird corridors. The Mississippi Flyway stretches from the Gulf Coast of Louisiana, Mississippi, and Alabama up through Canada. During early spring and late fall, many bird species migrate between wintering grounds and summer nesting grounds along this Flyway.

Remaining forest, woodland, and savanna communities provide nesting, cover, and foraging sites for a variety of wildlife from amphibians and reptiles, birds, small mammals to large mammal species. Riparian forest cover is also important to fishes and other aquatic organisms, while ephemeral pools in forest and woodland are important breeding sites for amphibians. Numerous animal species use the tallgrass prairies, including amphibians and reptiles, particularly where there is a prairie and wooded riparian zone. Numerous bird species use prairies for summer breeding habitat and migration layovers, while fewer use these areas for overwintering (IDNR 2005). Because much of the Study Area has been converted to agricultural land with limited areas of native habitat remaining, Grain Belt Express considered habitat during its siting process.

Conservation Lands

Conservation lands primarily include lands in the Natural Resources Conservation Service (NRCS) Wetland Reserve Program, lands in the USDA's Conservation Reserve Enhancement Program (CREP), and IDNR's Conservation Opportunity Areas (COAs). The NRCS Wetland Reserve Program is a voluntary program that allows landowners to protect wetlands on their property under conservation easements. These easements are federal easements that can either be permanent or implemented in 30 year terms (USDA NRCS 2013). The CREP program is also a voluntary program in which environmentally sensitive land is removed from production and conservation practices are introduced in exchange for farmers, ranchers, and agricultural land owners receiving an annual rental rate (USDA CREP 2015). The Illinois Comprehensive Wildlife Conservation Plan and Strategy identifies habitat areas that demonstrate the greatest conservation need and potential and establishes specific conservation goals for the enhancement and protection of these sites (IDNR 2005). No federal wildlife sanctuaries, USDA Forest Service lands, or wild and scenic rivers are found within the Study Area.

Conservation Opportunity Areas—COAs are priority places for implementing conservation actions and comprehensive wildlife conservation by the IDNR and its partners (IDNR 2005). These areas are locations with significant existing or potential wildlife and habitat resources, identified as high importance for conserving Illinois' Species in Greatest Need of Conservation Concern. Conservation actions in these areas are necessary for achieving regional and local conservation objectives, and contribute toward statewide goals. The Alternative Routes cross four COAs—the Hill Prairie Corridor-North Section COA, Upper Mississippi River COA, Mason County Sands Areas COA; and the Wabash River and Floodplain and Backwaters Ponds COA (IDNR 2015b).

The Hill Prairie Corridor-North Section COA is located in west-central Illinois in Pike and Adams Counties with its west edge along the Mississippi River bluffs. This COA's protected lands include Fults Hill Prairie Nature Preserve, Pine Hills Annex Hill Prairie, Piney Creek Ravine Nature Preserve, several privately owned land and water reserves, nature preserves, and natural heritage landmarks. The priority resources include hill prairies and their associated species with the conservation goal to restore, maintain, and protect fragmented hill prairies that exist on these areas by preventing woody encroachment and protecting and proactively managing for the unique flora and fauna native to the blufftop ecosystems. The objectives are to expand the boundaries of the hill prairies and enroll any unprotected hill prairies and critical habitats for endangered/threatened species into long term protection plans. Alternative Routes A, B, C, D, E, F, and G cross the Hill Prairie Corridor-North Section COA.

The Upper Mississippi River COA is located in west-central Illinois along the Mississippi River. It includes mussel and fish communities and migratory birds as priority resources. Alternative Routes A and B cross the Upper Mississippi River COA. The Mason County Sand Areas COA includes 4,000 acres of protected lands across eight natural areas and Clear Lakes open water. The natural areas and Clear Lakes are all north-northeast of the Alternative Routes and are not crossed. The priority resources of this COA include sand prairie, sand savanna, ephemeral wetlands, sand-restricted wildlife, and grassland and savanna species. Alternative Routes C, D, and E cross the Mason County Sand Areas COA.

The priority resources in the Wabash River and Floodplain and Backwater Ponds COA include free-flowing river, bottomland forest, bottomland ponds, bald cypress communities, cane restoration, successional areas, shallow-water wetlands, mussels, fishes, river cooter (*Pseudemys concinna*), copperbelly watersnake (*Nerodia erythrogaster neglecta*), migratory waterfowl, shorebirds, interior least tern (*Sterna antillarum athalassos*), cerulean warbler (*Setophaga cerulean*), red-shouldered hawk (*Buteo lineatus*), brown creeper (*Certhia americana*), and prothonotary warbler (*Protonotaria citrea*) (IDNR 2015b). Alternative Routes P and Q cross the Wabash River and Floodplain and Backwater Ponds COA.

Illinois Department of Natural Resources Land—Alternative Routes H, I, L, and M cross one IDNR land holding, Hidden Springs State Forest, located in east-central Illinois in Shelby County. The state forest is managed as a multiple use area, including timber and resource management and recreation by IDNR. Most of the timber is classified as mature, second growth oak-hickory forest. Numerous springs are scattered throughout the state forest. In addition, Alternative Routes H, I, L, and M all cross Richland Creek within the State Forest. Because these Routes parallel an existing transmission line that crosses Richland Creek numerous times in a short distance, Alternative Routes H, I, L, and M essentially parallel Richland Creek. Paralleling Richland Creek, while also paralleling an existing cleared transmission line, would result in the loss of a wide swath of riparian forest within the State Forest.

Illinois Nature Preserves Commission Lands—The Alternative Routes do not cross any Illinois Nature Preserve Commission lands (i.e., Nature Preserves, Land and Water Reserves, and Natural Heritage Landmarks).

Illinois Natural Areas Inventory Sites—The Illinois Natural Areas Inventory (INAI) is a set of information about high-quality natural areas, habitats of endangered species, and other significant natural features. Information from the INAI is used to guide and support land acquisition and protection programs by all levels of government and by private landowners and conservation organizations. The Alternative Routes cross two INAI sites—the Embarras and Kaskaskia Rivers. All sites are aquatic sites and because no structures will be placed within them, no impact on the INAI sites is anticipated. Seven INAI sites are located within 0.5 mile of the Alternative Routes, including Brown Branch Hill Prairie, Embarras River, Brewster Hill Prairie, Kiser Creek Hill Prairie, Harmon Cemetery Site, Kaskaskia River, and West Branch.

Audubon Important Bird Areas

Audubon Important Bird Areas are sites that provide essential habitat for one or more species of birds and must also support one of the following: 1) species of conservation concern (e.g., threatened and endangered species); 2) restricted-ranges species; 3) species that are vulnerable because their populations are concentrated in one general habitat type or biome; or (4) species, or groups of similar species, that are vulnerable because they occur at high densities to their congregatory behavior. None of the Alternative Routes are within 1 mile of an Illinois Audubon Important Bird Area.

Table 5-2 provides a comparison of the Conservation Reserve Enhancement Program and IDNR lands and INAI sites along the Alternative Routes.

Table 5-2. Conservation Lands

Conservation Land	Unit of Measure		Alternative Routes																
			Segment 1		Segment 2					Segment 3								Segment 4	
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Conservation Reserve Enhancement Program	Crossed by ROW	count	0	0	0	1	1	6	6	1	1	1	1	1	1	1	1	0	0
	Area crossed by ROW	acreage	0	0	0	2	2	18	18	3	3	4	4	3	3	4	4	0	0
	Within 0.5 mile of route	count	0	0	0	1	2	9	10	2	2	5	5	1	1	4	4	0	0
IDNR land[1]	Crossed by ROW	count	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
	Area crossed by ROW	acreage	0	0	0	0	0	0	0	10	10	0	0	10	10	0	0	0	0
	Within 0.5 mile of route	count	1	1	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1
Illinois Natural Areas Inventory Sites[2]	Crossed by ROW	count	0	0	0	0	0	0	0	2	2	1	1	2	2	1	1	0	0
	Area crossed by ROW	acreage	0	0	0	0	0	0	0	1	1	1	<1	1	1	1	<1	0	0
	Within 0.5 mile of route	count	2	1	0	0	0	0	0	4	4	1	1	4	4	1	1	0	0
Conservation Opportunity Areas	Crossed by ROW	count	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	1	1
	Area crossed by ROW	acreage	334	335	338	338	338	319	319	0	0	0	0	0	0	0	0	152	161
	Within 0.5 mile of route	count	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	1	1

[1] IDNR lands data were obtained from IDNR and include all IDNR-owned land.

[2] INAI sites data were obtained from the IDNR as part of its Natural Heritage Inventory database.

General Impacts and Protection Measures

Vegetation and Habitat

During construction, trees and other tall-growing vegetation within the ROW will be removed to maintain appropriate clearances for the conductors. Tall-growing vegetation and the associated habitat will be removed from the ROW for the life of the transmission line. Smaller shrub species (less than 10 feet in height) or grasses will be encouraged to grow where compatible (i.e., non-farmed areas). Forest lands within the ROW would therefore be converted to shrubland or grassland communities. In pasture/grassland areas, little vegetation clearing would be required, and permanent impacts would be limited to the foundations of the structures and any areas requiring permanent access roads.

After construction, access roads can be re-vegetated with native grasses or agricultural crops. For areas where a road was cut into the landscape, the road can either be reclaimed back to the original grade or the road bed left in place and re-vegetated for future maintenance needs. Whether or not a road is reclaimed will depend on several factors, including landowner negotiations and need to access that particular section of the transmission line in the future.

Wildlife

Impacts to wildlife would either be short-term or long-term, depending on the type of impact and nature of the species impacted. Short-term impacts may include temporary displacement from an area due to construction-related noise or temporary modifications in habitat. Long-term impacts would occur if the habitat for the species is permanently removed, such as with the conversion of forested habitat to grassland, or less obviously, when the Project introduces a new feature that degrades the overall quality of the habitat for certain species.

Any impacts on habitats should be considered with respect to the current status of suitable habitats and the nature of the current wildlife assemblage. Many of the native grasslands and forest, savanna, and woodland habitats in the Study Area have long been cleared and are tilled yearly for farming. Species that are currently associated with these converted habitats are typically tolerant of farming operations. Forest dwelling species located adjacent to agriculture settings are typically either endemic to or tolerant of edge-type habitats. For many of the species now present, additional permanent impacts would be either unlikely or negligible as a result of the construction of the Project, especially when considering the nature of the species present and the ongoing impacts of other area land uses.

Although much of the Study Area is a mosaic of agricultural lands and small forested patches, there are some large relatively undisturbed tracts of forest remaining. These areas are prevalent mostly in the area between the Mississippi River and the Illinois River and in riparian forests of larger rivers and streams. Clearing the ROW in large tracts of forest would decrease the size of interior forest habitat and create new edge habitat. Although edge habitat supports

a wide diversity and abundance of species, species that require intact interior forest habitats would lose habitat, possibly altering distribution and migration patterns and isolating habitat patches. The Alternative Route that crosses the fewest large tracts of undisturbed forest and/or parallels existing ROWs would minimize impacts to interior-dwelling species. Alignments parallel to existing ROWs typically result in less potential for forest fragmentation effects, since an edge habitat is already present. Although interior habitat patch size may decrease, it would not be bisected and fragmentation would be minimized.

Avian collisions with power lines are a recognized concern for transmission line development. Typically, the risk of avian collision is associated with the smaller diameter and less visible shield wire. In areas with high bird use, collision risk can be avoided or minimized by marking the wire to increase visibility. To minimize avian risk and allow the Project to be constructed in high collision risk areas, Grain Belt Express will develop an Avian Protection Plan in accordance with the suggested guidance and best practices identified by the Avian Power Line Interaction Committee, and in compliance with Clean Line's corporate Avian Program, which outlines Clean Line's commitment to avian protection. The Avian Protection Plan will evaluate potential risks to avian species and develop specific measures to avoid, minimize, and mitigate avian collisions with the transmission line.

Although vegetation and wildlife habitats have been considered during Project siting to avoid or minimize impacts, the construction of any linear infrastructure project would result in some loss or change of habitat. Grain Belt Express has consulted with and will continue to consult with USFWS and IDNR to establish methods to avoid and minimize potential impacts.

Alternative Route Comparisons

The potential for each Alternative Route to impact habitats and wildlife can be generally assessed by comparing each Alternative Route with respect to the amount of natural land cover types crossed, such as forested land cover, wetlands, and grassland areas. Additional assessment criteria include the length of each route through grassland/pasture habitats and the length of new transmission line paralleling existing transmission lines and other linear features.

Segment 1

Both Alternative Routes in Segment 1 cross though forested bluffs within the first few miles east of the Mississippi River floodplain, which contain less fragmented forests and native habitats. Once outside of the Sny Island Drainage and Levee District, Segment 1 traverses several larger contiguous forested areas. The Alternative Routes are generally similar with respect to total length and acres of wetland and pasture/grasslands crossed; however, Alternative Route B crosses the fewest acres of forested habitat (**Table 5-3)**. Because Alternative Route B crosses the fewest acres of forested habitats, it would likely result in less forest clearing and forest fragmentation in the Mississippi River forested bluffs than Alternative Route A and would therefore have a lesser impact on wildlife and its habitat.

Table 5-3. Wildlife Habitat within Alternative Routes

Category	Alternative Routes																
	Segment 1		Segment 2					Segment 3								Segment 4	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Total Length (miles)	12.9	13.0	83.3	85.9	86.0	85.0	85.1	93.6	94.7	99.8	98.5	97.5	98.7	97.8	96.5	11.0	11.7
Habitat Type (within ROW)																	
Forested (acres)	110	74	450	564	571	583	590	388	445	492	504	398	454	497	509	67	59
Wetlands (acres)[1]	26	40	29	33	35	36	38	24	30	32	38	25	31	29	35	6	5
Pasture/grasslands (acres)	27	33	124	147	155	170	178	119	119	95	93	121	120	97	95	5	2
Parallel with Existing Linear Features																	
Parallel transmission ROW (miles)	1.8	0	0.2	0.2	0.2	0	0	35.1	17.5	20.2	2.6	35.1	17.5	20.2	2.6	11.0	3.6
Parallel road/railroad (miles)	0.4	2.8	2.3	6.8	6.8	5.5	5.5	0.7	2.2	1.3	2.8	1.5	3.0	2.1	3.7	0	0

[1] USFWS (2014)

Segment 2

In Segment 2, the southern Alternative Routes cross the most tracts of contiguous forest, whereas the northern routes cross more agricultural fields. Alternative Routes F and G are the two routes that stay to the south for their entire lengths, and therefore, cross the most forested land and would result in the most forest fragmentation and impacts on forest-dwelling species. The western portions of Alternative Routes F and G also approximately parallel the Mississippi River floodplain, approximately 2 to 3 miles to the east of the levee, staying in the forested bluffs for approximately 20 miles. Conversely, Alternative Route C is the only route in Segment 2 that remains along a northerly route for its entirety. As such, Alternative Route C crosses the least amount of forested habitat (**Table 5-3)** and crosses mostly smaller patches of forest that are unlikely to support forest-interior dwelling wildlife species. Alternative Route C also crosses the least amount of pasture/grassland habitat, so this route would have the least impact to grassland-dwelling birds. The wildlife habitat assemblage along Alternative Route C is likely already tolerant of edge-habitat; therefore, Alternative Route C would have the least impact on vegetation and wildlife habitat in Segment 2.

Segment 3

The Alternative Routes in Segment 3 vary in length from 93.6 miles (Alternative Route H) to 99.8 miles (Alternative Route J) with the amount of forested habitat generally corresponding to overall length (**Table 5-3**). The shortest Alternative Route (H) crosses the fewest acres of wetlands and forest habitat. Overall, the western portion of Segment 3 is predominantly pasture/grassland or agricultural with only small forested areas, primarily along the riparian buffers of larger streams or rivers. Once reaching Shelby County, the central and eastern portions of Segment 3 are similar, except all the Alternative Routes cross more extensive forested riparian systems, such as along the Kaskaskia, Little Wabash, and Embarras Rivers.

Alternative Routes H and L parallel existing transmission lines for more than a third of their lengths, and Alternative Routes J, I, M, and N parallel existing transmission lines for approximately 20 percent of their lengths, whereas Alternative Routes K and O parallel existing transmission lines for less than 3 percent of their lengths. As discussed previously, paralleling existing transmission lines reduces forest fragmentation, so those Alternative Routes with more parallel would have less of an impact interior-dwelling species. However, Alternative Routes H, I, L, and M cross Hidden Springs State Forest and Richland Creek within the State Forest, while paralleling an existing transmission line. In this case, both linear features parallel a stream and its riparian forest instead of crossing it perpendicularly; therefore, the forest would be completely removed along a large length of stream. Because Alternative Routes H, I, L, and M parallel a transmission line while also paralleling approximately 0.4 mile of Richland Creek, constructing these Alternative Routes would result in the loss of riparian forest in this section well beyond the width the existing ROW.

Alternative Routes J, K, N, and O avoid the Hidden Springs State Forest and the subsequent impacts to Richland Creek, making them preferable to the other Alternative Routes. Alternative Routes J, K, N, and O also cross the least amount of pasture/grassland habitat, so these routes would have the least impact on grassland birds. The differences between Alternative Routes J, K, N, and O in terms of vegetation and wildlife impacts are negligible; however, because Alternative Routes J and N parallel considerably more existing linear features through forested habitats than Alternative Routes K and O, they would cause less forest fragmentation.

Segment 4

The two Alternative Routes within Segment 4 are generally similar with respect to total length and acres of wetlands, forested lands, and pasture/grasslands crossed; however, Alternative Route P parallels an existing transmission line for its entire length (**Table 5-3**). Because of this, Alternative Route P would have fewer impacts that result in forest fragmentation and would have the least impact on wildlife and its habitat.

5.1.3 Special Status Species

Grain Belt Express coordinated with USFWS, IDNR, and The Nature Conservancy to identify threatened and endangered species or sensitive species that may potentially be affected by the Project. A search of the USFWS, IDNR, and Illinois Natural Heritage Survey (INHS) websites resulted in a list of threatened and endangered and rare wildlife and plant species with known current ranges within the counties where the Alternative Routes occur (USFWS 2015a; IDNR 2015c; INHS 2015b). **Table 5-4** presents all federally listed and state-listed species that may occur in the counties crossed by the Alternative Routes.

Specific information for the location of known occurrences of federally threatened or endangered species was obtained from the Illinois Natural Heritage Database. In addition, potential impacts to special status species were determined using historical/current county occurrence information and the potential for suitable habitat to occur along the Alternative Routes. **Figure 5-2** below illustrates the distribution of special status species located within the Illinois Study Area.

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Mammals												
Gray bat	*Myotis grisescens*	FE/SE	Caves	X								
Northern long-eared bat	*Myotis septentrionalis*	FPE	Caves, mines, woodland, forest	X	X	X	X	X	X	X	X	X
Indiana bat	*Myotis sodalis*	FE/SE	Caves, mines, stream corridors, riparian forest	X	X	X	X	X	X	X	X	X
Franklin's ground squirrel	*Spermophilus franklinii*	ST	Tallgrass prairie, edge habitats				X		X			
Gray/timber wolf	*Canis lupus*	FE/ST	Forest, prairie	X								
Birds												
Piping plover	*Charadrius melodus*	FE/SE	Shelby County during migration							X		
American bittern	*Botaurus lentiginosus*	SE	Freshwater marshes, marshy lake shores, wet meadows, and prairie sloughs							X		
Least bittern	*Ixobrychus exilis*	ST	Shallow freshwater lakes and marshes							X		
Northern harrier	*Circus cyaneus*	SE	Marsh, grassland, shrubland	X								
Black-crowned night-heron	*Nycticorax nyxticorax*	SE	Bottomland forest, marsh							X		
King rail	*Rallus elegans*	SE	Marsh							X		
Upland sandpiper	*Bartramia longicauda*	SE	Prairies, pastureland and hayfields						X	X		
Loggerhead shrike	*Lanius ludovicianus*	SE	Open agricultural areas interspersed with grassland	X		X			X	X	X	
Barn owl	*Tyto alba*	SE	Grassland, marsh, agricultural fields	X				X	X	X		X

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Mississippi kite	*Ictinia mississippiensis*	ST	Mixed bottomland forest, mixed forest, marshes, fallow fields, openings	X								
Wilson's phalarope	*Phalaropus tricolor*	SE	Wetland, wet meadow, upland grassland							X		
Amphibians and Reptiles												
Jefferson salamander	*Ambystoma jeffersonianum*	ST	Upland deciduous forest, ephemeral pools									X
Mudpuppy	*Necturus maculosus*	ST	Permanent lakes, ponds, impoundments, streams, and rivers			X						
Illinois chorus frog	*Pseudacris illinoensis*	ST	Sandy areas on river lowlands		X							
Smooth softshell	*Apalone mutica*	SE	Large rivers and streams, lakes, impoundments, bogs, sandbars, mudflats	X		X					X	
Blanding's turtle	*Emydoidea blandingii*	SE	Marshes, bogs, fens, prairie wetlands, sedge meadows, shallows lakes, ponds, floodplains, streams, oxbow lakes								X	
Kirtland's Snake	*Clonophis kirtlandi*	ST	Wet meadows, open swamp forests, reservoirs, wet vacant urban areas						X	X		
Ornate box turtle	*Terrapene ornata*	ST	Prairies, pasture, fields, sandhills, and open woodlands	X	X		X	X		X		
Timber rattlesnake	*Crotalus horridus*	ST	Forests, bluffs and rock outcrops, crop fields	X	X	X						X

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Fish												
Lake Sturgeon	*Acipenser fulvescens*	SE	Mississippi, Rock, and Ohio Rivers and bottoms of large lakes	X		X						
Gravel chub	*Erimystax x-punctatus*	ST	Rock and Wabash Rivers									X
Bigeye chub	*Hybopsis amblops*	SE	Vermilion River and Brouilletts Creek	X						X	X	X
Greater redhorse	*Moxostoma valenciennesi*	SE	Illinois, Vermilion, and Fox Rivers									X
River chub	*Nocomis micropogon*	SE	Little Vermilion River									X
Eastern sand darter	*Ammocrypta pellucidum*	ST	Vermilion, Embarras, and Little Wabash Rivers								X	
Harlequin darter	*Etheostoma histrio*	SE	Embarras and Wabash Rivers								X	
Pugnose shiner	*Notropis anogenus*	SE	Lakes, low-gradient streams								X	
River redhorse	*Moxostoma carinatum*	ST	Mississippi River	X		X						
Western sand darter	*Ammocrypta clarum*	SE	Mississippi, Kankakee, and Kaskaskia Rivers	X						X		
Starhead topminnow	*Fundulus dispar*	ST	Glacial lakes, floodplains lakes, swamps, marshes	X								
Bigeye shiner	*Notropis boops*	SE	Tributaries to the Mississippi and Wabash Rivers							X		

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Invertebrates												
Spectaclecase	*Cumberlandia monodonta*	FE/SE	Mississippi River	X								
Sheepnose	*Plethobasus cyphus*	FE/SE	Kaskaskia River							X		
Fat pocketbook	*Potamilus capax*	FE/SE	Rivers in Pike County	X								
Higgins eye	*Lampsilis higginsii*	FE/SE	Shallow areas in large rivers	X								
Rabbitsfoot	*Quadrula cylindrica*	FT/SE	Wabash River									X
Snuffbox	*Epioblasma triquetra*	FE/SE	Small to medium-sized creeks and larger rivers								X	
Elephant-ear	*Elliptio crassidens*	ST	Ohio and Wabash Rivers	X								X
Ebonyshell	*Fusconaia ebena*	ST	Mississippi River	X	X							
Butterfly	*Ellipsaria lineolata*	ST	Kaskaskia, Rock, Wabash, Ohio and Mississippi Rivers	X								
Black sandshell	*Ligumia recta*	ST	Mississippi River	X						X		
Cobweb skipper	*Hesperia metea*	ST	Sand dunes, loess-sand prairies, loess hill prairies, barrens	X	X	X						
Ottoe skipper	*Hesperia ottoe*	SE	Sand prairies, dunes, loess-sand hill prairies		X							
Swamp metalmark	*Calephelis muticum*	SE	Meadows, marshes, bogs					X				
Regal fritillary	*Speyeria idalia*	ST	Tallgrass prairie, wet meadow, open habitats, sandy area	X	X							

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Plants												
Decurrent false aster	*Boltonia decurrens*	FT/ST	Wet floodplain forest, on lake/wetland borders	X	X	X						
Eastern prairie fringed orchid	*Platanthera leucophaea*	FT/SE	Mesic to wet prairies and meadows		X	X	X	X	X	X	X	X
Blazing star	*Liatris scariosa var. nieuwlandii*	ST	Mesic savannas	X			X	X	X			
American orpine	*Sedum telephioides*	ST	Sandstone rocky bluffs						X			
Ear-leaved foxglove	*Tomanthera auriculata*	ST	Forest thickets, dry prairies, dry-mesic savannas, successional fields				X	X	X			
Royal catchfly	*Silene regia*	SE	Dry prairies, dry upland forests, dry barren savannas				X	X				X
Tube beardtongue	*Penstemon tubaeflorus*	SE	Dry to mesic upland forests, dry prairies, dry-mesic and mesic savannas, dry to mesic barren savannas, limestone glades							X	X	
Pale false foxglove	*Agalinis skinneriana*	ST	Forest thickets, dry sand prairies, savannas, bluffs	X		X						
Pink milkwort	*Polygala incarnata*	SE	Dry sand or gravel prairies, glades			X						
Prairie spiderwort	*Tradescantia bracteata*	ST	Dry prairies, dry sandy prairies, developed lands	X		X						
Large ground plum	*Astragalus crassicarpus var. trichoc*	SE	Dry rocky prairies, glades, glacial till prairies, open woods, blufftops				X					

Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Bunchflower	*Melanthium virginicum*	ST	Forest thickets, wet prairies, bluffs, agricultural or successional fields				X	X				
Eastern blue-eyed grass	*Sisyrinchium atlanticum*	ST	Mesic prairie				X	X				
Green trillium	*Trillium viride*	SE	Mesic upland forests, mesic floodplain forests, mesic prairies, lake borders, glades, non-rocky bluffs				X					
Buffalo clover	*Trifolium reflexum*	ST	Dry prairies, dry-mesic savannas, lake borders, glades, successional fields	X				X		X		
Narrow-leaved green milkweed	*Asclepias stenophylla*	SE	Dry upland forest, loess hill prairies, limestone glades and cliffs	X								
Blue hearts	*Buchnera americana*	ST	Mesic prairies, mesic barren savannas, lake/wetland borders, limestone glades	X								
Spotted coral-root orchid	*Corallorhiza maculata*	ST	Mesic to dry upland forests	X								
Wild blue larkspur	*Delphinium carolinianum*	ST	Dry upland forest, dry sand forests, dry sand prairies, dry barren savannas, sandstone and limestone glades, successional fields	X								
Heart-leaved plantain	*Plantago cordata*	SE	Wet floodplain forests, seeps and springs, lake borders, creeks	X								
Wolf's bluegrass	*Poa wolfii*	SE	Mesic upland forests, rocky cliffs, lake borders	X								

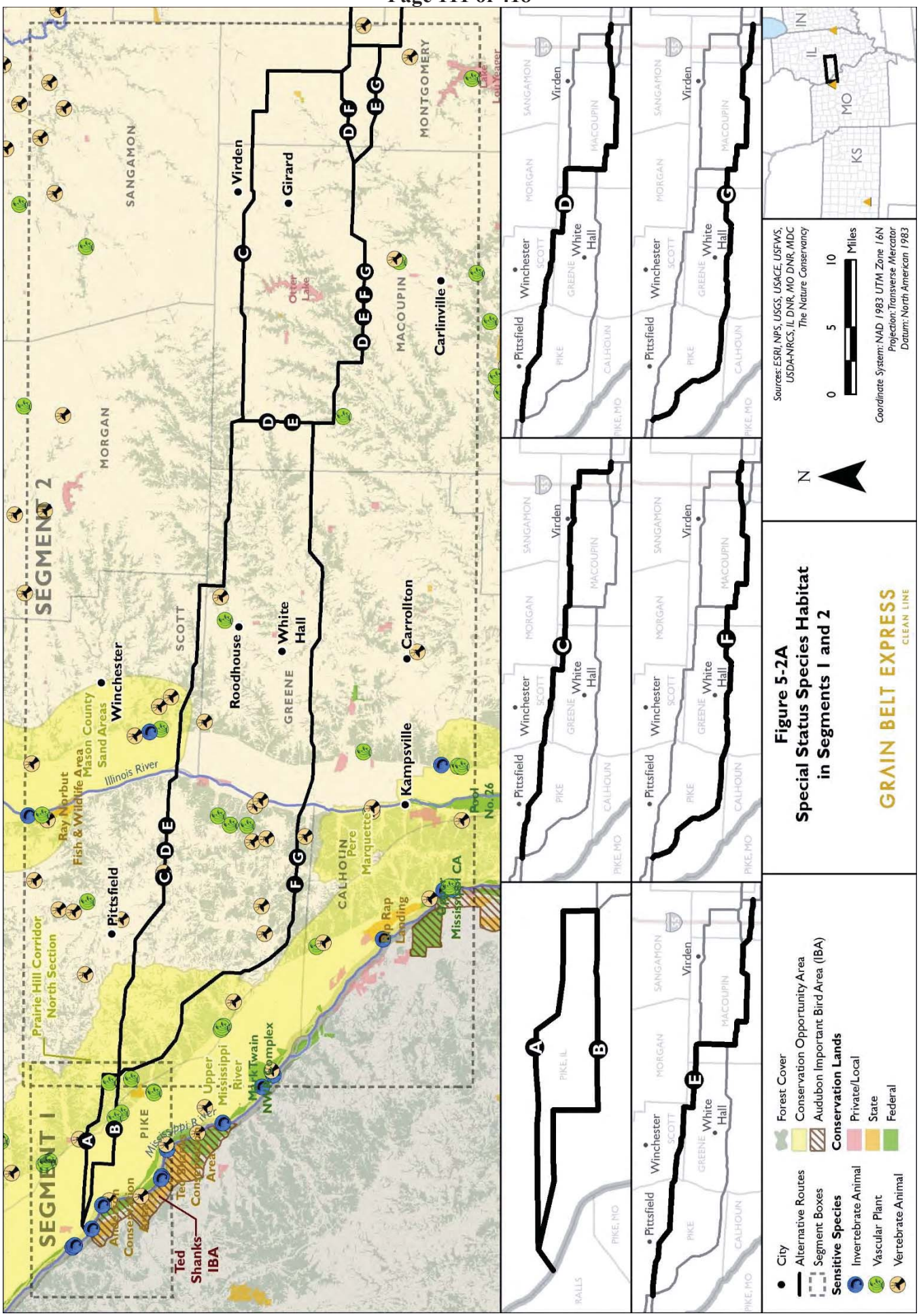
Table 5-4. Federal and State Special Status Species

Common Name	Scientific Name	Status[1]	Habitat Association	Known Current Range Within Study Area								
				County[2]								
				Pk	Sc	Gr	Ma	Mo	Ch	Sh	Cu	Cl
Arrowwood	*Viburnum molle*	ST	Dry upland forests, rocky bluffs	X								
Bent milk vetch	*Astragalus distortus*	SE	Dry sand prairies, dry gravel prairies, dry-mesic savannas, dry barren savannas, limestone/ sandstone glades		X							
Fibrous-rooted sedge	*Carex communis*	ST	Mesic, dry-mesic, and dry upland forests							X		
Violet collinsia	*Collinsia violacea*	SE	Dry-mesic savannas, dry barrens, sandstone glades							X		

Source: USFWS (2015a); IDNR (2015c); Heckert and Ebinger (2002); Nyboer et al. (2006); Mankowski (2010); Nyboer and Ebinger (2004)

[1] FE= Federally Endangered, FT= Federally Threatened, FPE= Federally Proposed Endangered, FT/SA=Threatened/Similar Appearance, SE=State Endangered, ST=State Threatened

[2] Counties: Pk=Pike, Sc=Scott, Gr=Greene, Ma=Macoupin, Mo=Montgomery, Ch=Christian, Sh=Shelby, Cu=Cumberland, Cl=Clark


SEGMENT 1
SEGMENT 2
SANGAMON
MORGAN
SCOTT
GREENE
MACOUPIN
MONTGOMERY
PIKE
CALHOUN
Pittsfield
Winchester
Roodhouse
White Hall
Virden
Girard
Carlinville
Carrollton
Kampsville
Illinois River
Mississippi River
Prairie Hill Corridor North Section
Ray Norbut Fish & Wildlife Area
Mason County Sand Areas
Upper Mississippi River
Mark Twain NWR Complex
Ted Shanks IBA
Pere Marquette
Rip Rap Landing
Mississippi CA
Pool No. 26
Otter Lake
Lake Springfield
Lake Vaeger
A
B
C
D
E
F
G
PIKE, IL
PIKE, MO
RALLS
Figure 5-2A
Special Status Species Habitat in Segments 1 and 2
GRAIN BELT EXPRESS
CLEAN LINE
N
0
5
10
Miles
Sources: ESRI, NPS, USGS, USACE, USFWS, USDA-NRCS, IL DNR, MO DNR, MDC
The Nature Conservancy
Coordinate System: NAD 1983 UTM Zone 16N
Projection: Transverse Mercator
Datum: North American 1983
IN
IL
MO
KS
City
Alternative Routes
Segment Boxes
Sensitive Species
Invertebrate Animal
Vascular Plant
Vertebrate Animal
Forest Cover
Conservation Opportunity Area
Audubon Important Bird Area (IBA)
Conservation Lands
Private/Local
State
Federal