

vehicles in the Study Area may increase during construction due to possible traffic delays associated with road closures and detours. The number of improvements and the time required to complete construction would have a corresponding impact on the fossil fuels consumed.

Construction of the Illiana Corridor would result in transportation system efficiencies; thereby reducing vehicle stopping and slowing conditions. This would result in less direct and indirect vehicular operational energy consumption for the preferred corridor(s) than the No-Action Alternative. Thus, it is expected that long term, post-construction operational energy requirements would offset construction requirements and result in a net savings in energy usage.

During the Tier Two NEPA studies, direct and indirect energy impacts will be evaluated, as required. Additional design details regarding the nature of the planned improvements will be available at this later project stage, allowing for an assessment of direct and indirect energy consumption.

Based on the results of these analyses, an evaluation of potential measures that could be implemented in the design, construction, operation, and maintenance of the project in order to reduce wasteful, inefficient, and unnecessary consumption of energy will be conducted. The findings will include recommendations of those measures that should be incorporated into the proposed project and which measures should be eliminated from further consideration.

3.8 Natural Resources

This section describes the existing natural resources found within the corridors, including upland habitats, wildlife resources, and threatened and endangered species, and presents potential impacts of the working alignments. The section concludes with a discussion of potential mitigation strategies.

3.8.1 Upland Communities

3.8.1.1 *Existing Conditions*

Existing upland community types within the corridors consist of agricultural land, urbanized land, forested areas, and riparian areas adjacent to stream corridors. In Illinois, the Illinois Natural Areas Inventory (INAI) identifies sites that are high quality natural areas, contain habitat for endangered species, and possess other significant natural features. Within the Study Area, there are 23 INAI sites totaling 11,524 acres. Manhattan Creek is the only INAI site within Corridor A3S2. The Kankakee River is the only INAI site within Corridors B3 and B4. There are no protected upland community types in Indiana within the corridors.

The western termini of the corridors are within the Midewin-Des Plaines-Goose Lake Prairie Conservation Opportunity Area (COA) and the Kankakee Sands COA. These areas were identified in the Illinois Comprehensive Wildlife Action Plan (WAP) as critical

for conserving wildlife and habitat within Illinois. The Illinois WAP was developed to comply with the US Department of Interior 2007 administrative guidelines for the State Wildlife Grant (SWG) (US Department of the Interior, 2006). The 2007 administrative guidelines for the SWG stipulated that each state must develop a comprehensive wildlife conservation plan to be eligible to receive federal funding for the Wildlife Conservation and Restoration Program (WCRP) and the SWG Program.

The Illinois WAP is a planning tool that identifies COA and conservation strategies. COAs were identified in the Illinois WAP as locations “(a) with significant existing or potential wildlife and habitat resources, (b) where partners are willing to plan, implement and evaluate conservation actions, (c) where financial and human resources are available, and (d) where conservation is motivated by an agreed upon conservation purpose and set of objectives (Illinois Department of Natural Resources (Illinois DNR), 2005).”

In 2008, a SWG was awarded to a project titled T-55 (Whiles, 2008). The goal of T-55 is to facilitate planning and coordination of COAs and provide coordination among conservation partners. The grant requires annual progress reports on the project status. Based upon the grant annual reports (Illinois DNR, 2009; Illinois DNR, 2010; Illinois DNR, 2011) and the Illinois Comprehensive WAP (Illinois DNR, 2005), no progress has been made regarding policies or protection of land, or establishment of specific conservation goals within the Midewin-Des Plaines-Goose Lake Prairie and the Kankakee Sands COAs.

The boundary of the Midewin-Des Plaines-Goose Lake Prairie COA was developed based on watersheds and roadways. Key action items identified in the Illinois WAP for the Midewin-Des Plaines-Goose Lake Prairie COA include, “(a) restoration and management of tallgrass prairie vegetation are on-going; (b) unnecessary legacy infrastructure (Midewin) and invasive woody vegetation are being removed; and, (c) the surrounding landscape is vulnerable to exurban and suburban development because of its proximity to Chicago. Preserving open space [within this COA] would help ease the impact of land lost to development and increase an already ecologically important grassland ecosystem (Illinois DNR, 2005).”

The boundary of the Kankakee Sands COA was developed based on a 3-mile buffer of the Kankakee Sands Section. Key action items identified in the Illinois WAP for the Kankakee Sands COA include, “working across state boundaries to restore channelized streams, stabilize stream banks, manage drainage practices to moderate water flows, and develop minimum flow standards; protect and restore remnant savanna, sand prairie and wetland habitat.” In addition, objectives identified for the Kankakee Sands COA include “restore and manage an additional 10,000 acres of black oak sand savanna, sand prairie and sand flatwoods within the Kankakee Sands Section; restore and manage 2,000 acres in the Momence Wetlands; and, restore in-stream habitat and natural process in the Kankakee River in Illinois and Indiana, especially issues of sand bed and sediment load (Illinois DNR, 2005).”

Agricultural Land

The major land use within the corridors is agricultural land. Table 3-54 summarizes the approximate area of existing major cover types within the corridors.

Table 3-54. Existing Cover Types within the Corridor

Cover Type	Approximate Area within Working Alignments (acres) (Approximate Percent of Area within Corridor)		
	Corridor A3S2 ¹	Corridor B3	Corridor B4
Agricultural Land	10,205	10,043	11,088
	(81%)	(87%)	(92%)
Urbanized Land	1,283	487	241
	(10%)	(4%)	(2%)
Riparian Areas	512	707	555
	(4%)	(6%)	(5%)
Forested Areas	563	367	165
	(4%)	(3%)	(1%)
Total	12,563	11,604	12,049

¹ Percentages do not total 100 percent due to rounding.

Source: Generalized land cover types were calculated from data created using Google Earth (2012) aerial photography and incorporated into the project GIS database.

A detailed discussion of agricultural land is presented in Section 3.3. Agricultural land such as crop fields, pastures, hayfields, fencerows, orchards, and associated farm ponds represent habitat for some animals. In general, fields with row crops provide minimal wildlife habitat opportunities but can provide seasonal cover and forage for species such as deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), and Canada geese (*Branta canadensis*).

Urbanized Land

Urbanized areas are located primarily at the eastern and western termini of the corridors. Corridor A3S2 has the highest amount of urbanized land as it is located adjacent to Monee, Joliet and Channahon, Illinois. There are limited urbanized areas within Corridors B3 and B4. In Illinois, urbanized areas in close proximity to the corridors include Wilmington, Symerton, Peotone and Beecher. In Indiana, urbanized areas include Lowell and Lake Dalecarlia. Generally, urbanized areas are habitat for species more tolerant of human disturbances and activities such as deer, raccoon, opossum (*Didelphis virginiana*), and various species of birds.

Riparian Areas

Riparian areas are located adjacent to streams and contain herbaceous or forested areas that often provide suitable wildlife foraging habitat, and corridors for movement. Several riparian corridors are present within the corridors. Generally, riparian areas within agricultural fields and urbanized land have been modified and provide minimal habitat for wildlife. Public lands adjacent to streams provide the best quality habitat for wildlife as they have larger riparian areas and a greater potential for suitable wildlife habitat. Reptiles, amphibians, and wildlife such as deer, muskrat (*Ondatra zibethicus*), and the North American beaver (*Castor canadensis*) may be present within riparian areas.

Forested Areas

Forests are a large and important resource in Illinois and Indiana. Forests are an important environmental resource and make a significant economic contribution, providing timber, employment, outdoor recreation, protection of soil and water resources, and habitat for many plant and animal species. Wildlife within forested areas may consist of deer, raccoon, and various species of birds, among other species.

In Illinois, a Memorandum of Understanding (MOU) between the Illinois DNR and IDOT (IDOT BDE Manual, 2011) requires IDOT to determine whether an alignment bisects or fragments forested areas greater than 20 acres. The INDOT does not have a similar agreement with the Indiana DNR; however, for consistency in assessing impacts for the Illiana Corridor, forested areas greater than 20 acres in Indiana were identified. Forested areas greater than 20 acres have the greatest potential for providing suitable wildlife habitat in more developed areas. Figure 3-24 depicts the location of public lands and forested areas greater than 20 acres. Several forested areas greater than 20 acres are located within the corridors (Table 3-55).

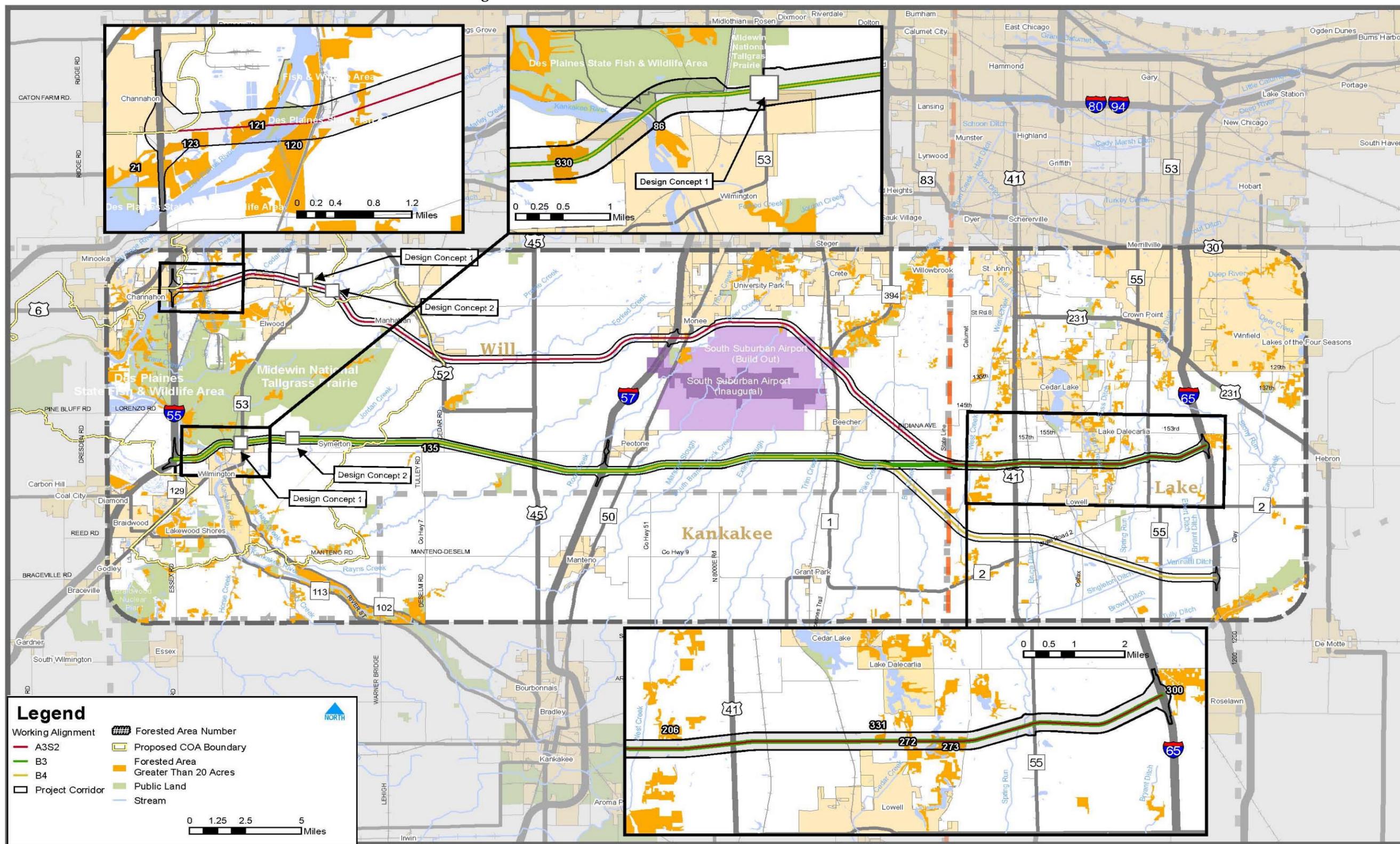
Illinois

Twelve forested areas greater than 20 acres are within Corridor A3S2 and three areas are within Corridors B3 and B4 in Illinois. No forested areas greater than 20 acres are located within the design concept areas. Forested Area #86 is an isolated forested area adjacent to the Kankakee River. Forested Area #151 is an isolated forested area adjacent to Black Walnut Creek. Forested Areas #21, #120, #121, #122, and #124 are forested areas adjacent to the Des Plaines River with a portion of #120 located within the Joliet Army Arsenal property. Forested Areas #123 and #144 are isolated and located adjacent to I-55 and I-57, respectively. Forested Areas #126 and #158 are isolated and are adjacent to agricultural fields. Forested Area #117 is part of intermittent pockets of a forested corridor along the riparian zone of Jackson Creek. Forested Area #330 is isolated and includes several residential units surrounded by agricultural land at the western terminus of Corridor A3S2. Forested Area #135 is part of intermittent pockets of a forested corridor along the Forked Creek riparian zone.

Indiana

Five forested areas greater than 20 acres are within Corridors A3S2 and B3 and one area (Forested Area #210) is within Corridor B4 in Indiana. These forested areas are associated with headwaters or riparian corridors. Forested Area #206 is located within the riparian corridor of an unnamed tributary to West Creek. Forested Area #210 is associated with West Creek. Forested Area #273 is associated with the headwaters of an unnamed tributary to Cedar Creek. Forested Areas #272 and #331 are located in a riparian area of Cedar Creek that extends south from Lake Dalecarlia. Forested Areas #272, #273, and #331 are parts of larger forested communities associated with Cedar Creek and its tributaries. Forested Areas #272, #273, and #331 are parts of a larger forested community fragmented in the past by road construction, agriculture, and residential development. Forested Area #300 is located at the eastern terminus of Corridors A3S2 and B3.

Figure 3-24. Forested Areas Greater than 20 Acres within the Corridor



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Table 3-55. Forested Communities Greater than 20 Acres within the Corridors

Forested Area Greater than 20 Acres ¹	Total Area (acres)	Corridor			Riparian Association
		A3S2	B3	B4	
Illinois					
Forested Area #21	75.4	●			Des Plaines River
Forested Area #86	51.1		●	●	Kankakee River
Forested Area #117	21.4	●			Jackson Creek
Forested Area #119	55.2	●			None
Forested Area #120	199.3	●			Des Plaines River
Forested Area #121	74.9	●			Des Plaines River
Forested Area #122	31.4	●			Des Plaines River
Forested Area #123	37.5	●			None
Forested Area #124	53.1	●			Des Plaines River
Forested Area #126	26.5	●			None
Forested Area #135	40.9		●	●	Forked Creek
Forested Area #144	24.6	●			None
Forested Area #151	27.8	●			Black Walnut Creek
Forested Area #158	25.3	●			None
Forested Area #330	91.2		●	●	None
Illinois Total	835.6	624.6	183.2	183.2	
Indiana					
Forested Area #206	86.7	●	●		Unnamed tributary to West Creek
Forested Area #210	72.7			●	West Creek
Forested Area #272	131.9	●	●		Cedar Creek
Forested Area #273	130.6	●	●		Unnamed tributary to Cedar Creek
Forested Area #300	98.9	●	●		Unnamed tributary to Stony Run
Forested Area #331	47.1	●	●		Cedar Creek
Indiana Total	567.9	495.2	495.2	652.4	
Total	1,403.5	1,119.8	678.4	835.6	

¹ Forested areas greater than 20 acres were determined from aerial imagery.

3.8.1.2 Methodology for Assessing Upland Community Impacts

Project impacts were based on approximate cover types that were identified through review of available GIS mapping. Potential direct upland community impacts were determined by reviewing aerial maps depicting cover types within the working alignments. A comprehensive cover type assessment utilizing available GIS data as well as field collected cover type data will be completed in the Tier Two NEPA studies to determine exact cover type locations with respect to the proposed limits of the corridor(s).

3.8.1.3 Impacts

This section describes upland communities that would potentially be impacted by the working alignments. Upland community impacts associated with the proposed roadway improvements would include habitat destruction and cover type change. Impacts could be either direct or indirect. Direct upland community impacts would result from destruction of communities. Indirect impacts could result from instances such as fragmenting upland communities, hydrology changes, or induced development. Table 3-56 identifies the impacts to existing cover types within the working alignments.

Agricultural Land

Agricultural land would be the most affected cover type impacted by the working alignments. Impacts to agricultural land are discussed in Section 3.3.

Table 3-56. Impacts to Existing Cover Types

Cover Type	Approximate Area within Working Alignments (acres) ¹ (Approximate Percent of Area within Working Alignments)		
	A3S2 Working Alignment	B3 Working Alignment	B4 Working Alignment
Agricultural Land	2,523 - 2,559 ²	2,576 - 2,635 ²	2,553 - 2,589 ²
	(82%)	(90%)	(82%)
Urbanized Land	284 - 286 ²	122 - 125 ²	284 - 286 ²
	(9%)	(4%)	(9%)
Riparian Areas	95	133	88
	(3%)	(4%)	(3%)
Forested Areas	179	74	179
	(6%)	(3%)	(6%)
Total	3,080 - 3,119 ²	2,905 - 2,967 ²	3,104 - 3,142 ²
	(101%) ³	(101%) ³	(100%)

¹ The range provided for the working alignments accounts for the range in impacts associated with the design concepts.

² Design Concept 1 has the greatest impact.

³ Percentages do not total 100 percent due to rounding.

Source: Generalized land cover types were calculated from data created using Google Earth (2012) aerial photography and incorporated into the project GIS database.

Urbanized Land

Due to the rural setting of the working alignments, urbanized land is the least affected cover type. The Villages of Channahon, Manhattan, and Monee in Illinois represent the urbanized lands within the working alignment within Corridor A3S2. Wilmington and Symerton in Illinois, represent the urbanized lands within the working alignments within Corridors B3 and B4.

Riparian Area

There is the potential for riparian habitat to occur along streams within the working alignments. Potential riparian habitat within the working alignment within Corridor A3S2 includes Prairie Creek and Plum Creek. Potential riparian habitat within the working alignments within Corridors A3S2 and B3 includes West Creek, an unnamed tributary to Cedar Creek, Cedar Creek, Spring Run, an unnamed tributary to Griesel Ditch, and an unnamed tributary to Stony Creek. Potential riparian habitat within the working alignments within Corridors B3 and B4 includes Jordan Creek, Forked Creek, South Branch of Forked Creek, Pike Creek, and West Creek. Potential riparian habitat within the working alignment within Corridor B4 includes Cedar Creek.

The majority of the streams crossed by the working alignments are located within agricultural land and have been channelized. Agriculture generally affects land up to the banks of the streams within the working alignments. Because of the number of channelized or ditched streams within the working alignments, there is limited riparian habitat. An extensive network of agricultural ditches and Singleton Ditch, which are tributary to the Kankakee River, are present at the western terminus of working alignment within Corridor B4.

Forested Areas

The working alignment within Corridor A3S2 impacts eight forested areas greater than 20 acres in Illinois and four areas in Indiana. The working alignment within Corridor B3 impacts one forested areas greater than 20 acres in Illinois and four areas in Indiana. The working alignment within Corridor B4 impacts one forested areas greater than 20 acres in Illinois and none in Indiana. Table 3-57 depicts the impacts to forested communities greater than 20 acres. Fragmentation of habitats can be detrimental to certain wildlife and plant species, although some species benefit from the creation of edge habitat. In general, fragmentation or creation of edges has a greater affect on species that are restricted to specific habitat types, that have large minimum size requirements for habitat or in the case of wildlife, have limited mobility. Additionally, fragmenting large forested stands can provide opportunities for invasive species or edge tolerant species to become established in areas that prior to construction were forest interior areas.

Illinois

The working alignment within Corridor A3S2 would impact eight forested areas greater than 20 acres in Illinois. The working alignment within Corridor A3S2 would encroach on Forested Areas #21, #122, #123, #124, #126, and #144. The resulting area of Forested Areas #21, #122, #124, and #126 are greater than 20 acres; the resulting area of Forested Areas #123 and #144 are less than 20 acres. Forested Areas #120 and #121 are forested stands within the

Table 3-57. Impacts of Working Alignments to Forested Communities Greater than 20 Acres

Forested Area Greater than 20 Acres	Total Area (acres)			Impact Area (acres)			Percent of Forested Area Impacted (%)			Number of Remnant Forested Areas			Area of Remnant Forested Areas (acres)		
	A3S2	B3	B4	A3S2	B3	B4	A3S2	B3	B4	A3S2	B3	B4	A3S2	B3	B4
Illinois															
Forested Area #21	75.4			0.4	--	--	0.05	--	--	1	--	--	74.9	--	--
Forested Area #120	199.3			6.8	--	--	3.4	--	--	2	--	--	43.9; 148.6	--	--
Forested Area #121	74.9			15.6	--	--	20.8	--	--	2	--	--	36.9; 22.4	--	--
Forested Area #122	31.4			6.4	--	--	20.4	--	--	1	--	--	25	--	--
Forested Area #123	37.5			24.4	--	--	65	--	--	1	--	--	13.1	--	--
Forested Area #124	53.1			0.03	--	--	0.06	--	--	1	--	--	53.1	--	--
Forested Area #126	26.5			3.9	--	--	14.7	--	--	2	--	--	11.4; 11.2	--	--
Forested Area #144	24.6			6.8	--	--	27.6	--	--	1	--	--	17.7	--	--
Forested Area #330	91.2			--	17	17	--	18.6	18.6	--	2	2	--	28.7; 45.5	28.7; 45.5
Indiana															
Forested Area #300	98.9			0.9	0.9	--	0.9	0.9	--	1	1	--	98	98	--
Forested Area #331	47.1			6.4	6.4	--	13.6	13.6	--	2	2	--	1.6; 39.1	1.6; 39.1	--
Forested Area #272	131.9			10.9	10.9	--	8.3	8.3	--	2	2	--	57.4; 63.6	57.4; 63.6	--
Forested Area #273	130.6			30.1	30.1	--	23	23	--	6	6	--	4.4; 4.5; 5.0; 0.04; 2.5; 84.06	4.4; 4.5; 5.0; 0.04; 2.5; 84.06	--
Grand Total	931.2	499.7	91.2	112.7	65.3	17	12.1	13.1	18.6	22	13	2	N/A	N/A	N/A

riparian area of the Des Plaines River, and are bisected by the working alignment within Corridor A3S2. Bisecting Forested Areas #120 and #121 would result in forested areas greater than 20 acres north and south of the working alignment within Corridor A3S2.

The working alignments within Corridor B3 and B4 would impact one forested area greater than 20 acres in Illinois (Forested Area #330). Forested Area #330 would be bisected by the working alignments within Corridors B3 and B4. Bisecting Forested Area #330 would result in forested areas greater than 20 acres north and south of the working alignments within Corridors B3 and B4. The resulting forested areas greater than 20 acres would provide sufficient habitat for wildlife.

Indiana

Four forested areas greater than 20 acres would be impacted by the working alignments within Corridors A3S2 and B3 in Indiana. The southern portion of Forested Area #331 would be bisected by the working alignments within Corridors A3S2 and B3. The remnant forested area on the north side of the working alignments within Corridors A3S2 and B3 would be greater than 20 acres, while the remnant forested area on the south side would be less than 20 acres. Forested Area #272 would be split into two forested areas greater than 20 acres. The working alignments within Corridors A3S2 and B3 would bisect a portion of Forested Area #273 and create three separate forest stands less than 20 acres. The remnant forest stand on the south side of the working alignments within Corridors A3S2 and B3 would be greater than 20 acres. The working alignments within Corridors A3S2 and B3 would encroach on five separate edges of Forested Area #300. The resulting forested stand of Forested Area #300 would be greater than 20 acres.

Invasive Species

Invasive species are generally present within urbanized and agricultural areas due to disturbance. Invasive species are those whose introduction may cause harm to the associated habitat, environment, economy, or human health. Executive Order 13112, February 3, 1999, Federal Register Volume 64, Number 64, Invasive Species, directs federal agencies to expand and coordinate their efforts to combat the introduction and spread of plants and animals not native to the US. FHWA has indicated that consideration of invasive species should occur during all phases of the environmental process to fulfill the requirements of NEPA as amended.

Construction of the proposed project would create conditions that may allow for the establishment of populations of invasive/noxious species of plants. These species may be occurring presently in the Study Area. Invasive or noxious species can become established within the right-of-way during initial construction or afterwards due to maintenance practices. It is not anticipated that the project would introduce or increase the amount of invasive or noxious species present. IDOT has developed Special Maintenance Provisions to comply with the Executive Order on Invasive Weeds. INDOT is a member of the Invasive Plant Species Assessment Group (IPSAWG). This group assesses which plant species threaten natural areas in Indiana and develops recommendations regarding the use of particular plant species. IDOT provisions and

the IPSAWG include use of herbicides and other measures to control invasive and noxious species in the highway rights-of-way. These provisions also apply to construction activities during the construction of roadways.

3.8.1.4 Avoidance and Minimization

Development of the working alignments included consideration of avoidance and minimization of impacts to upland communities. The majority of natural areas with the highest potential for high quality upland communities, such as the Midewin National Tallgrass Prairie, have been avoided during the preliminary corridor selection process. Avoidance and minimization of impacts to upland communities will continue to be studied during the project development process. Measures to minimize or avoid impacts could include narrower medians, steeper side slopes and other design variations in the cross-section.

3.8.1.5 Mitigation

The sequence of addressing wildlife impacts is avoidance, then minimization, and then for those impacts that cannot be avoided or further minimized, mitigation is implemented. Forest mitigation could be provided by participating in the purchase of vacant land and planting trees to replace forested areas removed by construction. In Illinois, mitigation of impacts to forested areas greater than 20 acres will follow IDOT BDE Departmental Policies Preservation and Replacement of Trees (IDOT BDE-18, 2002). In Indiana, tree replacement will follow INDOT policy on the replacement of trees. The twenty-acre size threshold used in Illinois is not utilized for mitigation in Indiana, but was utilized to assign impacts consistently across the entire length of the project.

Specific measures and coordination to mitigate upland community impacts will be detailed in the Tier Two NEPA studies.

3.8.2 Wildlife Resources

3.8.2.1 Existing Condition

The predominant land use within the corridors is agricultural land (Table 3-54). Agricultural lands provide minimal habitat opportunities but can provide seasonal cover and forage. Agricultural land can provide short-term habitat for migratory avian species. Urbanized areas are generally considered habitat for species tolerant of human disturbance and activities. Additional species may be present within these lands and within forested areas.

Areas with the highest potential for high quality wildlife habitat within 1 mile of Corridor A3S2 occur within seven natural areas: Des Plaines State Conservation Area (DPSCA)/Des Plaines State Fish and Wildlife Area (DPSFWA), Joliet Arsenal, FPDWC Laughton Preserve, Manhattan Creek, FPDWC Monee Reservoir, Raccoon Grove Nature Preserve, FPDWC Black Walnut Creek Preserve, and Goodenow Grove Nature Preserve. The Raccoon Grove Nature Preserve and Goodenow Grove Nature Preserve are

designated INAI sites. A site visit of the working alignment within Corridor A3S2 within the Joliet Arsenal indicates this area may include remnant prairie and savannah.

Areas with the highest potential for high quality wildlife habitat within 1 mile of Corridors B3 and B4 occur within four natural areas: Kankakee River INAI site, Midewin National Tallgrass Prairie, DPSCA/DPSFWA, and Hitts Siding Prairie Nature Preserve. With the exception of a small portion of the DPSCA/DPSFWA, these natural areas were avoided during the selection of Corridors B3 and B4.

Generally, wildlife movement and dispersal occur along contiguous linear habitats, such as fence rows, vegetated edges of rights-of-way, and stream/riparian corridors that have suitable habitat components present. These contiguous linear habitats are referred to as wildlife corridors, which can be used for dispersal of young, migration, or movement of resident species. Within the corridor, riparian areas associated with smaller streams are narrow linear features that consist of fragmented forest stands. Several streams have been channelized and dredged to provide storage and conveyance of agricultural field run-off and drainages. Typically these channelized streams through agricultural fields provide minimal habitat potential and do not provide adequate wildlife corridors. Wildlife presence and utilization within the corridor was determined from land cover types and limited visual observations during a site visit. Urban and agricultural lands are interspersed with forested areas and riparian corridors. Generally, wildlife within the corridors consists of species tolerant of urban and agricultural land uses. Existing conditions for wildlife species do not change for any of the design concepts developed for the proposed project.

In addition to the threatened and endangered species discussed in Section 3.8.4, a variety of wildlife species such as wading birds, waterfowl, raptors, various songbird species, beaver, muskrat, miscellaneous small mammals, frogs, fish, mussels, and turtles may be present or utilize the habitat along stream corridors. A total of 24 rivers/creeks and their tributaries occur within the corridors. Generally, the majority of stream corridors within the corridors are narrow with fragmented wooded stands that provide minimal habitat for wildlife. These stream corridors can be characterized as channelized agricultural ditches with minimal wildlife habitat. Riparian corridors of higher habitat value to wildlife may be adjacent to high quality streams.

The corridors cross the USGS North American Breeding Bird Survey Route 34017 (USGS, 2001). Bird Survey Route 34017 runs north-south between IL-1 and the Indiana state line from south of US 30 in Cook County to Sherburnville, Illinois, in Kankakee County. The route can be used as a basis for avian species distribution within the corridors. The most recent data for Route 34017 indicates 51 species, 1,267 individuals, of breeding birds are present. Dominant avian species include the ring-billed gull (*Larus delawarensis*), red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), and common grackle (*Quiscalus quiscula*). These species are abundant in open areas and areas of human habitation.

The proposed project is within the eastern half of the Mississippi flyway, which is used by migratory birds in the US and Canada. Many birds that migrate through the Study

Area also nest within or adjacent to it, including neotropical migrants. Neotropical migrants, including all or part of their population, fly through or breed in the US and Canada but winter in the tropical habitats of Latin America and/or the Caribbean. Neotropical migrants may use the habitats found in (and adjacent to) the corridors (e.g., wetlands, grasslands, woodlands, and shrublands) for breeding. Some species rely on large stands of mature forests for breeding.

The Bird Survey Route 34017 identified a total of 15 species of neotropical migrants. The neotropical migrants made up only 5 percent of the total individuals (1,267) identified on the route. The dominant neotropical migrants included the house wren (*Troglodytes aedon*), chimney swift (*Chaetura pelagica*), dickcissel (*Spiza americana*), barn swallow (*Hirundo rustica*), and indigo bunting (*Passerina cyanea*). All of these species are common visitors to Illinois and Indiana and occupy open habitats such as agricultural lands, grasslands, abandoned fields, and open woodlands (Kleen, et al., 2004). Known habitat for upland sandpiper (*Bartramia longicauda*), willow flycatcher (*Empidonax traillii*), sedge wren (*Cistothorus platensis*), loggerhead shrike (*Lanius ludovicianus*), Bell's vireo (*Vireo bellii*), grasshopper sparrow (*Ammodramus savannarum*), and bobolink (*Dolichonyx oryzivorus*) are present within the Midewin National Tallgrass Prairie (GIS Database, 2012).

In addition, although the bald eagle (*Haliaeetus leucocephalus*) has been de-listed from the federal threatened and endangered species list, the species remains protected under the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (as amended in 1962) and the Migratory Bird Treaty Act (MBTA). The BGEPA prohibits anyone from taking, possessing, or transporting a bald eagle or golden eagle, or the parts, nests, or eggs of such birds, without prior authorization. This includes inactive nests as well as active nests. Activities that directly or indirectly lead to a take are prohibited without a permit (US Fish and Wildlife Service (USFWS), 2010).

Potential habitat for bald eagles is located adjacent to the corridors and within the working alignments. The DPSCA/DPSFWA along the Kankakee River, adjacent to the working alignments, may provide suitable habitat for bald eagles. Cedar Lake and Lake Dalecarlia in Indiana are within developed areas, which bald eagles tend to avoid. The working alignments require a crossing of the Kankakee River and the Des Plaines River within and adjacent to the DPSCA/DPSFWA. As a result, the project could impact bald eagle habitat. It is anticipated that surveys will be conducted for the presence of bald eagles in the Tier Two NEPA studies.

3.8.2.2 Methodology for Assessing Wildlife Impacts

This section describes the methods for assessing wildlife resources impacted by the working alignments. The impacts developed for this Tier One DEIS are based on cover types that were identified through review of available GIS mapping. Potential direct wildlife impacts were determined by reviewing potential wildlife habitat within the working alignments.

3.8.2.3 *Impacts*

Land use within the working alignment within Corridor A3S2 is forested through the DPSFWA. The working alignment within Corridor A3S2 would bisect the southern portion of the DPSFWA located on Treat Island within the Des Plaines River. Approximately 10.3 acres of the DPSFWA would be impacted by the working alignment within Corridor A3S2. The DPSFWA site has the highest potential for high quality areas within the working alignment within Corridor A3S2. The working alignment within Corridor A3S2 is not anticipated to directly impact Raccoon Grove Nature Preserve or Goodenow Grove Nature Preserve. Land use within the working alignment within Corridor A3S2 adjacent to the nature preserves is primarily agricultural interspersed with urbanized land. Wildlife utilizing the nature preserves may be impacted by the working alignment within Corridor A3S2. The working alignment within Corridor A3S2 crosses Manhattan Creek, an INAI site. Limited riparian area is present along Manhattan Creek at the A3S2 crossing since the adjacent land use is agricultural.

Forested Areas #120, #121, #122, and #124 provide the highest potential for wildlife utilization within the working alignment within Corridor A3S2 as these forested areas are within or adjacent to the DPSFWA and are part of larger forested riparian corridor of the Des Plaines River. Forested Areas #272 and #273 provide the highest potential for wildlife utilization within the working alignments within Corridors A3S2 and B3 as these forested areas are part of larger forested riparian corridors. Impacts to forested areas are presented in Section 3.7.2.3 and Table 3-56.

Land use within the working alignments within Corridors B3 and B4 is agricultural interspersed with tree lines and small forested areas through the DPSCA/DPSFWA. The DPSCA/DPSFWA site has the highest potential for high quality areas within the working alignments within Corridors B3 and B4. Currently, the Des Plaines Game Propagation Center, which is located within the DPSCA/DPSFWA, includes over 240 huntable acres and 134 different habitat types. Approximately 2.9 acres of the DPSCA/DPSFWA Des Plaines Game Propagation Center would be impacted by the working alignments within Corridors B3 and B4. In order to minimize impacts to the area, the working alignments within Corridors B3 and B4 would encroach on the southeastern tip of the DPSCA/DPSFWA parallel to and south of an existing ComEd 345kV electric transmission line. Wildlife and game species within the Des Plaines Game Propagation Center may be utilizing land within the working alignments within Corridors B3 and B4 for nesting and foraging.

Wildlife would be impacted by construction and operational activities that reduce habitat/cover types, fragment existing habitats, or obstruct and eliminate wildlife travel corridors. The existing natural communities are currently fragmented by agricultural land as well as urban areas, roads, pipelines, electric transmission lines, and other development. Increased fragmentation of natural habitats from the proposed project would generally be detrimental to wildlife species; although, some species benefit from the creation of additional habitat edges.

Loss of habitat within the working alignments could also impact wildlife species by severing travel routes and increasing the potential for collisions with vehicles. The interruption of the existing habitat could benefit edge species, such as the red-tailed hawk.

Although riparian habitats make up a small percentage of the working alignments, amphibian species may be present. Amphibian species use aquatic areas for reproduction and other habitats (e.g., floodplain forest, upland forest, grassland) for foraging and hibernation and often move from one habitat type to another. Reptiles also may use different habitats for hibernation, reproduction, and foraging. Reptiles and amphibians can be impacted by roads during seasonal migration, breeding, and nesting. As the majority of the working alignments consist of agricultural land, natural amphibian and reptile communities are already severely fragmented.

3.8.2.4 Avoidance and Minimization

Development of the working alignments includes consideration of avoidance and minimization of impacts on wildlife resources. The majority of natural areas with the highest potential for high quality communities have been avoided to the greatest extent possible. Avoidance and minimization of impacts to wildlife habitat areas will continue during further refinement of the working alignments. Avoidance and minimization techniques may include wildlife bridges, bridging riparian corridors, and/or the use of oversized culverts with natural bottoms. Each individual riparian crossing will be assessed in more detail in the Tier Two NEPA studies.

3.8.2.5 Mitigation

The sequence of addressing wildlife impacts is avoidance, then minimization and then for those impacts that cannot be avoided or further minimized, mitigation is implemented. Measures to mitigate wildlife impacts will be detailed in the Tier Two NEPA studies and based on meetings with resource agencies and field surveys.

3.8.3 Threatened and Endangered Species

3.8.3.1 Existing Condition

Threatened and endangered species are protected under the Endangered Species Act (ESA) (16 U.S.C. 1531-1544, 1973). The ESA provides a program for the conservation of threatened and endangered plants and animals and their habitats. The lead federal agency for implementing the ESA is the USFWS. The law requires federal agencies, in consultation with the USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species (USEPA, 2011).

Federal Species

Federal threatened and endangered species listed as occurring in Will and Kankakee counties (USFWS List dated February 2012) and Lake County (USFWS List Undated) are discussed below. Additional information regarding these species was obtained from the Illinois DNR, Indiana DNR, IDOT biological survey results, and various documents from the USFWS (USFWS, 2011) such as listing documents, recovery plans, and 5-Year

review documents. These species and their habitat types are identified in Table 3-58 and are further discussed below.

The lakeside daisy (*Hymenoxys herbacea*) is listed as occurring in Will County and is known from two sites, the Lockport and Romeoville Prairie Nature Preserves, where the species was transplanted in 1988 (USFWS, 2010). Neither of these sites occurs within the corridors. Habitat for the lakeside daisy includes dry rocky prairies, which is not present within the corridors. Therefore, the project would have no effect on the lakeside daisy.

The leafy prairie clover is listed as occurring in Will County and is known from several sites (near Romeoville, Lockport Prairie Nature Preserve, and Keepataw Forest Preserve) in the Des Plaines River Valley (USFWS, 1996). The species also occurs within the Midewin National Tall Grass Prairie (Hill, 2007) approximately 2 miles south of the working alignment within Corridor A3S2 and 5 miles north of the working alignments within Corridors B3 and B4. Habitat for the leafy prairie clover includes prairie remnants on thin soil over limestone, which is not present within the corridors. Therefore, the project would have no effect on the leafy prairie clover.

Mead's milkweed is listed as occurring in Will County and Lake County. The species has been extirpated from these two counties; however, the species has been re-established at a number of locations in these two counties (USFWS, 2003; Bowles, et al., 2001). The nearest re-establishment site to the corridors is the Biesecker Prairie State Nature Preserve in Lake County that occurs north of the working alignments within Corridors A3S2, B3, and B4. The working alignments within Corridors A3S2, B3, and B4 cross a roadside prairie remnant that occurs between the Illinois Central Railroad (now the CN) and IL-50 from Monee, Illinois, south to the Will/Kankakee County line. No Mead's milkweed or other listed plant species were identified within this prairie remnant (Handel, et al., 2004). Habitat for Mead's milkweed includes late successional tall grass prairie, which is only present within the roadside prairie remnant in the corridors; however, Mead's milkweed was not observed within the roadside prairie remnant (Handel, et al., 2004). Therefore, the project would have no effect on Mead's milkweed.

Pitcher's thistle is listed as occurring in Lake County. The species is restricted to Lake Michigan shores, stabilized dunes, and blowout areas. This type of habitat does not occur within the corridors. Therefore, the project would have no effect on the Pitcher's thistle.

The eastern prairie fringed orchid is listed as occurring in Will and Kankakee counties. The species is known to occur in the Grant Creek Prairie Nature Preserve (USFWS, 2010; Hill, 2007), which occurs adjacent to I-55 south of Blodgett, Illinois. The Grant Creek Prairie Nature Preserve is located approximately 4 miles south of the working alignment within Corridor A3S2 and 3 miles north of the working alignments within Corridors B3 and B4. Habitat for the eastern prairie fringed orchid varies from mesic to wet prairies, sedge meadows, and marsh. Though the eastern prairie fringed orchid is not known from the corridors, there may be suitable habitat for this species within the working alignments. An area west of the Kankakee River and east of I-55 and the Des Plaines River contains wetlands of unknown type and quality that may be suitable for this species. Field studies will be undertaken for this species as part of the Tier Two NEPA studies.

Table 3-58. Federally Listed Species within the Corridor Counties

Common Name (Scientific Name)	Type	County, State	Habitat Types	Status
Snuffbox (<i>Epioblasma triquetra</i>)	Mollusk	Will, IL Kankakee, IL	Small to medium-sized creeks and some larger rivers, in areas with a swift current	Federal Endangered
Sheepnose (<i>Plethobasus cyphus</i>)	Mollusk	Will, IL Kankakee, IL	Large rivers	Federal Endangered, Illinois Endangered, Indiana Endangered
Lakeside daisy (<i>Hymenopsis herbacea</i>)	Plant	Will, IL	Dry rocky prairies	Federal Threatened
Leafy-prairie clover (<i>Dalea foliosa</i>)	Plant	Will, IL	Prairie remnants on thin soil over limestone	Federal Endangered, Illinois Endangered
Mead's milkweed (<i>Asclepias meadii</i>)	Plant	Will, IL Lake, IN	Late successional tallgrass prairie, tallgrass prairie converted to hay meadow, or glades or barrens with thin soil	Federal Threatened, Indiana Endangered
Pitcher's thistle (<i>Cirsium pitcherii</i>)	Plant	Lake, IN	Lakeshores, stabilized dunes, and blowout areas	Federal Threatened, Indiana Threatened
Eastern prairie fringed orchid (<i>Platanthaera leucophaea</i>)	Plant	Will, IL Kankakee, IL	Moderate to high quality wetlands, sedge meadow, marsh, or mesic to wet prairies	Federal Threatened, Illinois Endangered, Indiana Endangered
Hine's emerald dragonfly (<i>Somatochlora hineana</i>)	Wildlife (Insect)	Will, IL	Spring fed wetlands, wet meadows, and marshes	Federal Endangered, Illinois Endangered
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	Wildlife (Insect)	Lake, IN	Oak savannas and pine barrens with dry sandy soils and containing wild blue lupine (<i>Lupinus perennis</i>)	Federal Threatened
Indiana bat (<i>Myotis sodalis</i>)	Wildlife (Mammal)	Lake, IN Kankakee, IL	Caves, mines (hibernacula), small stream corridors with well developed riparian woods, and upland forests (foraging)	Federal Endangered
Eastern massasauga (<i>Sistrurus catenatus</i>)	Wildlife (Mammal)	Will, IL	Graminoid dominated plant communities (fens, sedge meadows, peatlands, wet prairies, open woodlands, and shrublands)	Federal Candidate, Illinois Endangered, Indiana Endangered

Source: USFWS, 2012.

The Hine's emerald dragonfly is listed as occurring in Will County and is apparently limited to areas along the Des Plaines River Valley near Lemont and Lockport, Illinois. Critical habitat areas have been designated for the Hine's emerald dragonfly by the USFWS (USFWS, 2010). None of the critical habitat areas are within or adjacent to the corridors. The closest critical habitat area is greater than 8 miles from the working alignment within Corridor A3S2 and greater than 15 miles from the working alignments within Corridors B3 and B4 (GIS database, 2012). The Hine's emerald dragonfly is not known to occur outside of these critical habitat areas. Habitat for the Hine's emerald dragonfly includes calcareous spring fed marshes/sedge meadows overlying dolomite bedrock, which are not present within the corridors. The project would have no effect on the designated critical habitat or the Hine's emerald dragonfly.

The Karner blue butterfly is listed as occurring in Lake County. The species occurs in oak savannas and pine barrens with dry sandy soils that contain wild blue lupine. Wild blue lupine is the only known food plant of larval Karner blues and is an essential component of its habitat (USFWS, 2003). In Lake County, the species occurs within the Indiana Dunes National Lakeshore and has been re-introduced in an area of West Gary, Indiana. There is no habitat for this species within the corridors. Therefore, the project would have no effect on this species.

The Indiana bat is listed as occurring in Lake County (USFWS, 2007) where it is known from a single maternity colony. The closest hibernaculum is in La Salle County, Illinois, where more than a thousand Indiana bats are known to hibernate in Blackball Mine, which is approximately 40 miles west of the western terminus of the corridors (IDOT Prairie Parkway DEIS, 2006). There are no known caves or mines in the Study Area that could be used for wintering by Indiana bats. During the breeding season (June to August) the bat roosts beneath slabs of exfoliating bark. Potential Indiana bat roost maternity trees may occur in the wooded riparian corridors within the corridors.

Trees used by Indiana bats in Illinois have been found in upland and floodplain forests, a swamp, and pastures. Many known maternity roost trees are relatively large in size, with a diameter at breast height of at least 12 inches. The Indiana bat is known to use the following tree species for maternity habitat: shagbark hickory (*Carya ovata*) and shellbark hickory (*Carya laciniosa*) that may be dead or alive, and dead bitternut hickory (*Carya cordiformis*), American elm (*Ulmus americana*), slippery elm (*Ulmus rubra*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), white oak (*Quercus alba*), red oak (*Quercus rubra*), post oak (*Quercus stellata*), and shingle oak (*Quercus imbricaria*) (IDOT Prairie Parkway DEIS, 2006).

Mist-netting was conducted at six sites along Prairie Creek and two sites on Grant Creek at Midewin National Tallgrass Prairie during May and June 2007 in Will County (Hofmann, et al., 2008). Though netting was successful (big brown and eastern red bats) at three sites, no Indiana bats were netted. Previous mist netting in Will County along the Des Plaines River at Keepataw Forest Preserve and Lockport Prairie in 2005, Prairie and Grant Creeks at the Joliet Arsenal (now Midewin) in 1993, and at Forked Creek (near Wilton Center) and Plum Creek (at Old Post Road) in 1991 did not capture Indiana bats.

Some of the streams in the corridors contain woody riparian habitat that include some of the species of trees mentioned above. There is potential maternity habitat for the Indiana bat in the corridors. Surveys will be conducted and presented in the Tier Two NEPA studies.

The snuffbox mussel is listed as occurring in Will County. The species was last recorded from the Kankakee River in 1991 (USFWS, 2012). Suitable habitat may occur within the corridors for this species. Mussel surveys within the corridors crossing of the Kankakee River will be conducted and the results will be presented in the Tier Two NEPA studies.

The sheepnose mussel is listed as occurring in Will County and has been known to occur in the Kankakee River at Wilmington, Illinois (USFWS, 2011). Suitable habitat for this species may occur within the corridors. Mussel surveys within the corridors will be conducted and the results will be presented in the Tier Two NEPA studies.

The eastern massasauga rattlesnake is a federal candidate species. Candidate species are those species for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened. Candidate species receive no legal protection; however, conservation is encouraged since they may warrant future protection under the ESA. Eastern massasauga habitat includes wet areas such as wet prairies, marshes, and low areas along rivers and lakes. The eastern massasauga also uses adjacent uplands during part of the year. They often hibernate in crayfish burrows but may also be found under logs and tree roots or in small mammal burrows (USFWS, No Date). The species is extant in Will County. Multiple known locations for the eastern massasauga are known from within the Goodenow Grove Nature Preserve adjacent to Corridor A3S2. There is potential habitat for this species in the corridors around the Kankakee River.

Illinois

In Illinois, the State ESA established the Illinois Endangered Species Protection Board. The Illinois Endangered Species Protection Board determines which plant and animal species are threatened or endangered in the state and advises the Illinois DNR on means of conserving those species (Illinois DNR, No Date). Endangered species coordination is initiated through the Illinois DNR Ecological Compliance Assessment Tool (EcoCAT). The findings of the EcoCAT coordination may require endangered species surveys. Endangered species surveys can only be completed during certain portions of the year, depending on the species.

The Illinois List of Endangered and Threatened Species by County (Illinois Endangered Species Protection Board, 2011) lists 33 different plant species as threatened or endangered in Will County and 25 different plant species in Kankakee County. Six different plant species are listed as threatened in both Will and Kankakee counties. Of the 33 different plant species in Will County, 17 species are listed as threatened and 16 plant species are listed as endangered. Of the 25 different plant species in Kankakee County, 10 are listed as threatened and 15 are listed as endangered. None of the 52 plant species listed within Will and Kankakee counties are reported within the corridors (GIS Threatened and Endangered Species database). The closest known location for an

Illinois threatened or endangered plant is one-half mile from the working alignments within Corridors A3S2, B3, and B4 (GIS Threatened and Endangered Species database).

No wildlife species listed by the state ESA as threatened or endangered in Kankakee County are reported within or adjacent to Corridor B4. A total of 18 Illinois threatened or endangered species are reported within or adjacent to the corridors in Will County. These species, their habitat, and distribution within or adjacent to the corridors are discussed in the following paragraphs.

One known habitat location for the state endangered false mallow (*Malvastrum hispidum*), a plant, and the state threatened blue sage (*Salvia azurea ssp. pitcheri*), a plant, occurs adjacent to Corridor A3S2 within the Joliet Arsenal (GIS Threatened and Endangered Species database). The false mallow habitat is limited to dry to mesic dolomite prairies with very thin soils (normally less than 10 cm deep) over dolomite 'pavement', often occurring at the margins of dolomite exposed at the ground surface (Illinois Natural History Survey (INHS), 2009). It is found in three counties in Illinois, including between the Des Plaines and Kankakee rivers in Will County. Habitat and distribution data for blue sage is not well understood. Since Corridor A3S2 crosses the Joliet Arsenal where the false mallow and blue sage are known to occur there is potential for the species to occur within Corridor A3S2.

Multiple known locations for the eastern massasauga, state endangered, and the Kirtland's snake (*Clonophis kirtlandi*), state threatened, are known from within the Goodenow Grove Nature Preserve adjacent to Corridor A3S2. Habitat for the eastern massasauga is presented above. Habitat for the Kirtland's snake includes prairie wetlands, wet meadows, and grassy edges of creeks, ditches, and ponds, usually in association with crayfish burrows (INHS, 2011). Land use within Corridor A3S2 adjacent to the Goodenow Grove Nature Preserve, which includes the riparian area of Plum Creek, may contain habitat for the eastern massasauga and Kirtland's snake.

The Franklin's ground squirrel (*Spermophilus franklinii*), a state threatened species, is known to occur in several areas of Will County; southwest of Manhattan, Illinois, along an abandoned railroad, within the DPSFWA south of Blodgett Road, and within the Des Plaines Game Farm. The latter location occurs adjacent to the working alignments within Corridors B3 and B4. The Franklin's ground squirrel is a prairie species that occupies the ecotone between woodlands and grasslands, forest openings, thickets, and marsh borders. An important habitat requirement is a tall, dense cover of grasses, forbs, shrubs, and small trees. It avoids the short grasses of grazed pastures and mowed areas (Hofmann, 2005). There is potential habitat for the Franklin's ground squirrel within the working alignments within Corridors B3 and B4.

Two known habitat locations for the state endangered Eryngium stem borer (*Papaipema eryngii*), an insect, occur adjacent to the corridors. This species occurs in prairie remnants containing populations of the plant, rattlesnake master (*Eryngium yuccifolium*). These two populations are located between the UPRR/IL-53 and CN/IL-50 rights-of-way. There is potential for the species to occur within the corridors. Surveys will be conducted as part of the Tier Two NEPA studies.

The red-tailed prairie leafhopper (*Aflexia rubranura*) distribution in Will County is not well understood. The species is known to occur in prairie areas around the I-55 and Arsenal Road Interchange area. The species is a flight limited herbivorous insect that feeds on one particular species of perennial prairie grass, the prairie dropseed (*Sporobolus heterolepis*). Roadside prairie remnants exist along IL-50 at the CN Railroad. The prairie remnant contains prairie dropseed and tall dropseed (*Sporobolus asper*), with the former being more abundant from Peotone, Illinois, north and the latter more abundant south of Peotone. Based on the above information, there is potential habitat in the corridors for the red-tailed prairie leaf hopper. Surveys will be conducted as part of the Tier Two NEPA studies.

Known locations for the state endangered Blanding's turtle (*Emydoidea blandingii*) occur both north and south of the corridors as well as on both sides of the Kankakee River. Habitat for this semi-aquatic turtle is in prairie type wetlands (grassy marshes, mesic prairies, backwater sloughs, shallow slow moving rivers, and shallow lakes). Records for the turtle are known from the Des Plaines Game Propagation Center and Hitts Siding Prairie. These sites occur adjacent to the working alignments within Corridors B3 and B4 where it crosses the Kankakee River and joins I-55. Within the working alignments within Corridors B3 and B4 at this location, a series of woodlands and wetlands (scrub-shrub, shallow marsh/wet meadows, and deep marsh) occur that could provide suitable habitat for the turtle. Surveys will be conducted as part of the Tier Two NEPA studies.

Multiple known locations for the upland sandpiper (*Bartramia longicauda*) and the loggerhead shrike (*Lanius ludovicianus*) are known from within the Midewin National Tallgrass Prairie adjacent to the corridors. Both of these species are grassland birds but occupy slightly different habitat conditions. The upland sandpiper occurs in short grass fields and pastures whereas, the loggerhead shrike occurs in open fields with scattered trees, open woodland, and shrubland containing thorny trees. There is habitat for both of these species within the corridors. Surveys will be conducted as part of the Tier Two NEPA studies.

A number of aquatic species are listed as threatened or endangered in Illinois. Most of these species occur in the Kankakee River. The snuffbox (state endangered), sheepnose (state endangered), purple wartyback (*Cyclonaias tuberculata* - state threatened), and the black sandshell (*Ligumia recta* - state threatened) mussels occur within the Kankakee River in Will County. These mussel species are known to occur in areas upstream (IL-53 bridge in Wilmington, Illinois) and downstream (I-55 bridge) of the corridors. There is habitat for some of these mussel species within the corridors. Known locations for the slippershell (*Alasmidonta viridis*) mussel (state threatened) are present within Black Walnut Creek, Exline Slough, and Trim Creek adjacent to the working alignments within Corridors B3 and B4. Surveys will be conducted as part of the Tier Two NEPA studies.

According to the Illinois Natural History Fish Collection Database the state endangered western sand darter (*Ammocrypta clara*), pallid shiner (*Hybopsis amnis*), and the state threatened river redhorse (*Moxostoma carinatum*) are known to occur in the Kankakee River in Will County (INHS, 2011). Known locations for these species are present within

the portion of the Kankakee River within and adjacent to the working alignments within Corridors B3 and B4. Surveys will be conducted as part of the Tier Two NEPA studies.

Indiana

In Indiana, animal species listed as endangered under the ESA or designated as endangered by the state are also protected under the Nongame and Endangered Species Conservation Act (NESCA). Plant species designated as endangered under the ESA and plant and animal species designated as threatened by the ESA or by Indiana are not protected under NESCA unless the species affected is on state land. Private property owners are not under legal obligation to protect state-listed plants, or to mitigate in the event that site development impacts state-listed plants. Endangered species coordination is initiated through Indiana DNR. The findings of the coordination with the Indiana DNR may require endangered species surveys during the Tier Two NEPA studies.

Within Lake County, four plants listed as Indiana State endangered, including two that are also listed as state rare plants, are reported within the Study Area. Six plants listed as Indiana State threatened are reported within the Study Area. The hairy-fruit sedge (*Carex trichocarpa*), an Indiana State watch list species, is reported within the Study Area. None of the plant species are reported within the corridors (GIS Threatened and Endangered Species database).

A total of 19 Indiana State rare, three Indiana State Species of Concern, 15 Indiana State threatened, and seven Indiana State endangered wildlife species are reported within the Study Area. Additional species listed on the Indiana County Endangered, Threatened, and Rare Species List for Lake County not previously identified within the Study Area may be present. No known wildlife species locations are reported within the corridors (GIS Threatened and Endangered Species database).

No mollusk or fish species identified on the Endangered, Threatened and Rare Species List for Lake County are reported within the Study Area (GIS Threatened and Endangered Species database).

A total of two Indiana endangered, threatened, or rare species are reported within or adjacent to the corridors in Lake County. These species, their habitat, and distribution within or adjacent to the corridors are discussed in the following paragraphs.

A historic record for the Franklin's ground squirrel, state endangered, is located adjacent to Corridor B4 in Lake County. Land cover is predominantly agricultural at this location with urban area and limited riparian areas adjacent to Singleton Ditch and Griesel Ditch. There is potential habitat for the Franklin's ground squirrel within the working alignment within Corridor B4.

A known location for the prairie crayfish (*Procambarus gracilis*), state threatened, is known from SR 55 over Singleton Ditch, adjacent to Corridor B4. The prairie crayfish frequents burrows in banks of ponds, roadside ditches, small sluggish creeks, marshes, swamps, and small artificial lakes, as well as wet pastures and flat fields in prairies.

Therefore, there is potential habitat for the prairie crayfish within the working alignment within Corridor B4.

Surveys will be conducted as part of the Tier Two NEPA studies for the corridor(s) carried forward from Tier One.

3.8.3.2 Methodology for Assessing Threatened and Endangered Species Impacts

This section describes the methodology for determining threatened and endangered species potentially affected by the corridors carried forward. Threatened and endangered species impacts associated with the proposed project would include mortality of threatened and endangered species and habitat destruction. Impacts could be either direct or indirect. Direct impacts to threatened and endangered species could result in mortality during roadway operation or destruction of habitat during construction. Indirect impacts could result from destruction of potential threatened and endangered species habitat that could result in mortality or dispersion of these species.

The impacts developed for this Tier One DEIS are based on approximate habitat types and known locations of specific threatened and endangered species identified through review of available GIS mapping. Potential direct impacts were determined by reviewing known locations of specific threatened and endangered species within the working alignments. A comprehensive threatened and endangered species assessment will be conducted for species with known habitat and distribution data identified in Sections 3.8.3.3 and 3.8.3.4.

The accuracy of available data does not allow a conclusive determination of specific impacts to state- and federal-listed species. As part of the environmental surveys, potential presence of threatened and endangered species previously identified and removed from consideration may be present. Future work associated with the project would include detailed threatened and endangered species field surveys (if necessary) and the required consultation with the Illinois DNR, Indiana DNR, and USFWS during the Tier Two NEPA studies.

3.8.3.3 Impacts to Federally Listed Species

The working alignments within the corridors would not impact known federal threatened or endangered species locations; however, unknown populations of federal listed threatened and endangered species may be present within the corridors. Federally listed species that have the potential to occur within the corridors are identified below. These species were discussed in Section 3.8.3.1.

- Snuffbox mussel – Kankakee River
- Sheepnose mussel – Kankakee River
- Indiana bat – Woody riparian corridors of stream crossings
- Eastern Prairie Fringed Orchid – Wet areas between Kankakee River and I-55

In addition, there is potential for the federal candidate species, the eastern massasauga rattlesnake, to occur in wet areas associated with the Kankakee River and Plum Creek adjacent to the Goodenow Grove Nature Preserve.

Potential impacts to these federally threatened and endangered species and their habitats within the corridors will be determined during the Tier Two NEPA studies. If potential impacts are identified, additional coordination through the Section 7 process would be conducted with the USFWS and the appropriate state DNR.

3.8.3.4 Impacts to State Listed Species

Several Illinois State listed threatened and endangered species and several Indiana endangered, threatened, or rare species are known to occur within the Study Area. State listed species that have the potential to occur within the working alignments, and their potential location, are identified below. These species were discussed in Section 3.8.3.1.

- False Mallow – Joliet Arsenal
- Blue sage – Joliet Arsenal
- Franklin’s ground squirrel – Abandoned railroad within the DPSFWA; Agricultural area adjacent to Singleton Ditch and Griesel Ditch
- Upland sandpiper – Midewin National Tallgrass Prairie
- Loggerhead shrike – Midewin National Tallgrass Prairie
- Eryngium stem borer – UPRR
- Red-tailed prairie leafhopper – Prairie areas around the I-55 and Arsenal Road Interchange
- Blanding’s turtle – Kankakee River
- Slippershell – Black Walnut Creek, Exline Slough, and Trim Creek
- Western sand darter – Kankakee River
- Pallid shiner – Kankakee River
- River redhorse – Kankakee River
- Prairie crayfish – SR 55 over Singleton Ditch

Surveys will be conducted in the Tier Two NEPA studies to determine whether any of these species occur within the working alignment(s) carried forward into Tier Two. If any of these species are impacted by the proposed project, these impacts would be coordinated with the Illinois DNR.

At this time, no known Indiana State listed endangered, threatened, or rare species are known to occur within the corridors. Further coordination with Indiana DNR will occur during the Tier Two NEPA studies.

3.8.3.5 Avoidance and Minimization

Due to the proximity of known threatened and endangered species occurrences to the corridors and the mobility of certain species, threatened and endangered species identified in Section 3.8.3.3 and Section 3.8.3.4 may be present within the corridors. Development of the corridors included consideration of avoidance and minimization of affects to threatened and endangered species. A comprehensive threatened and endangered species assessment for species identified as occurring or having potential to occur will be completed in the Tier Two NEPA studies.

3.8.3.6 Mitigation

The sequence of addressing threatened and endangered species impacts is avoidance and minimization, and then for those impacts that cannot be avoided or further minimized, mitigation. Measures to mitigate threatened and endangered species impacts will be detailed in the Tier Two NEPA studies. Mitigation measures will include, but not be limited too, field surveys, identification of best management practices, and avoidance of sensitive seasons. Specific mitigation measures will be developed as necessary based on the types of species that may occur in the region.

3.9 Water Resources and Aquatic Habitats

This section describes the water resources (e.g., streams and ponds) and aquatic habitats in the corridors, identifies methodologies for assessing impacts to water resources, describes the impacts from the working alignments within the corridors, and discusses potential mitigation strategies.

3.9.1 Existing Conditions

3.9.1.1 Watersheds

The three corridors are located within three drainage sub-basins as catalogued by the USGS: the Kankakee (Hydrologic Unit Code (HUC) 07120001), the Chicago/Calumet (HUC 07120003), and the Des Plaines (HUC 07120004).¹² Corridor A3S2 crosses through all three sub-basins. Corridors B3 and B4 are entirely located in the Kankakee sub-basin. The three sub-basins collectively drain a total of 5,072 square miles in four states: Illinois, Indiana, Michigan, and Wisconsin. The sub-basins have been divided into smaller sub-watersheds, which vary in size from 7.7 to 91.7 square miles (Figure 3-25).¹³

Land use within a sub-watershed may impact receiving waters. Assessing the drainage area and characteristics of a sub-watershed provides information relative to stream health and potential causes of water quality impairment. The predominant sub-watershed land use near the corridors is agriculture, mainly row crops such as corn and soybeans. If not managed properly, agricultural practices and stormwater runoff can impact water quality and result in elevated nutrient levels/eutrophication, increased sedimentation, and fecal coliform bacteria in receiving waters (see Section 3.9.1.5). Open

¹² The Chicago/Calumet sub-basin name is based on nomenclature of the Illinois State Water Survey.

¹³ The sub-watersheds are derived from 12-digit HUCs in Illinois and 14-digit HUCs in Indiana.