Final Environmental Impact Statement and Section 4(f) Evaluation

Volume 1 of 3

Fox River Bridge Crossings
Kane County, Illinois

November, 2001

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FOX RIVER BRIDGES PROJECT
TO CONSTRUCT UP TO THREE NEW BRIDGES
ACROSS THE FOX RIVER
IN KANE COUNTY, ILLINOIS

FINAL ENVIRONMENTAL IMPACT STATEMENT
and SECTION 4(f) EVALUATION

Submitted Pursuant to 42 U.S.C. 4332(2)(c)
and 49 U.S.C. 303 by the

U.S. Department of Transportation
Federal Highway Administration
the
Illinois Department of Transportation
and the
Kane County Division of Transportation

11/1/01
Date of Approval

For FHWA

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This report discusses and evaluates the possible construction of up to five new crossings of the Fox River (with approach roads) between the Kane/McHenry County line and the Kane/Kendall County line. The final recommendation is for the construction of only three of those crossings. The three recommended bridge corridors are Bolz Road in the Villages of Carpentersville and Algonquin, CC&P/Stearns Road in the Village of South Elgin and near the Village of Wayne, and Illinois Route 56/Oak Street in the Village of North Aurora and the City of Aurora.

Based upon existing development trends, current traffic, and traffic projections, congestion is expected to increase on the existing crossings of the Fox River in Kane County, regardless of the construction of the bridge crossings proposed in this document. The proposed bridge crossings will (1) Serve existing land use through efficient access to central business districts, public service and employment and commercial centers; (2) Serve future land use in conformance with Kane County's *2020 Land Resource Management Plan* goals of encouraging compact, contiguous growth in the eastern portion of the County while preserving the pastoral qualities of the western portion; and (3) Provide alternate and more direct routes that enhance Kane County=s transportation network, thereby helping to reduce congestion. Important issues and socio-economic and environmental concerns include displacement of residences, traffic generated noise, involvement with Section 4(f) land and Section 6(f) property, avoidance of impact to Section 106 properties, disruption to and use of public recreational lands, and impact to wetlands and other water resources.

PREFACE

The typical roadway Environmental Impact Statement includes the discussion of a major linear highway project with easily identifiable, logical termini. This document includes the discussion of multiple roadways at differing locations. These roadways are not proposed as alternates to each other, but as complementary components of the roadway network. Thus, the document had to be prepared to satisfy readers concerned with the overall impacts of the project as well as readers concerned with impacts associated with specific roadways.

To satisfy both types of readers, the document is written with two distinct formats. The first section of Chapters 1 through 4 contains an overall discussion of the project defining the Purpose and Need, Affected Environment, Alternatives, and Environmental Consequences. Thus, each of these chapters begins with Section One - Overall Project, followed by Section Two - North Region, Section Three - Central Region, and Section Four - South Region. The regions were defined to include the roadway network and land uses which will impact, and be impacted by, a new bridge. Study of land use needs and traffic indicated that a bridge crossing in one region would have no noticeable effect on access or traffic in another region.

The attempt was made to produce regional discussions in their respective sections that could be read on their own, but cross-referencing was inevitable to prevent the document from becoming unwieldy and too repetitious for the reader reviewing the entire document. Some repetition has been included where it was judged not to be excessive and where cross-referencing would have affected the readability.

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Proposed Action

The action studied in the Draft Environmental Impact Statement was the construction of up to five new crossings of the Fox River (with approach roads) between the Kane/McHenry County line and the Kane/Kendall County line (see Exhibit 1.0-1). The five potential bridge corridors were Bolz Road in the Villages of Carpentersville and Algonquin, CC&P/Stearns Road in the Village of South Elgin, Red Gate Road near the City of St. Charles and the Village of Wayne, C&NW/Dean Street in the City of St. Charles, and Illinois Route 56/Oak Street in the Village of North Aurora. As a result of the studies and additional information and comments received since issuing the DEIS, the preferred action has been reduced to only three corridors: the Bolz Road Corridor, the CC&P/Stearns Corridor, and the Illinois Route 56/Oak Street Corridor. The actual prioritization of which corridors are selected and then constructed for the needed transportation network improvements rests with the Kane County Board based upon their assessment of need and funding availability.

The length of the Fox River in Kane County under study in this document is divided into three regions (North, Central and South - see Exhibit 1.0-1) which are defined to include the roadway network and land uses that will impact, and be impacted by, a new bridge. The Bolz Road corridor is in the North region; the CC&P/Stearns Road is in the Central region; and the Illinois Route 56/Oak Street corridor is in the South region. The need for this project is established by the existing and on-going development on the west side of the Fox River in Kane County. This land use trend has increased traffic demand and the need for access to serve these developments. Studies of the land use needs and traffic indicate that the roadway capacity and land use access needs in one region cannot be satisfied by a bridge crossing of the Fox River in a different region because of distance and intervening land use. Therefore, each region was studied independently for solutions to the needs in that region.

The proposed Bolz Road typical cross-section consists of two 3.6 meter (12 foot) lanes in each direction separated by a 5.5 meter (18 foot) median. Signalized intersection improvements will be provided at the western terminus at Huntley Road (at Boyer Road), and at Randall Road, Sleepy Hollow Road, Illinois Route 31, Illinois Route 25, and Illinois Route 62 (the eastern terminus). This road is approximately 9.0 kilometers (5.6 miles) long.

The proposed CC&P/Stearns Road typical cross section consists of two 3.6 meter (12 foot) lanes in each direction separated by a 5.5 meter (18 foot) median. Signalized intersection improvements will be provided at Randall Road (the western terminus), McLean Boulevard, Illinois Route 25, and Dunham Road. The intersections of Illinois Route 25 with Dunham Road and the intersection of Dunham Road with Stearns Road will be realigned into one intersection. The proposed roadway continues east of the intersection to join the four lane Stearns Road improvement constructed by DuPage County. Illinois Route 31 will be grade separated from the proposed road. The length of this improvement is 7.3 kilometers (4.6 miles).

The proposed Illinois Route 56/Oak Street typical cross section consists of two 3.6 meter (12 foot) lanes in each direction. East of Hart Road the median will be 15 meters (50 feet). West of Hart Road a 5.5 meter (18 foot) median will be provided. Signalized intersection improvements are proposed at Orchard Road (the western terminus), Randall Road, Illinois Route 31, Illinois Route 25, and Kirk Road. At Kirk Road the roadway cross section transitions to match the existing Illinois Route 56. The length of this improvement is 8.3 kilometers (5.2 miles).

All Build Alternatives in each region will accommodate bicycles and pedestrians by providing a three meter (10 feet) multi-use lane on or attached to each Fox River bridge and mixed use paths along the roadway will also be provided as practical.

Other Proposed Major Actions in the Area

There are no proposed major actions in the area that are relevant to this project.

Alternatives Considered

Several alternatives were evaluated to determine the type and location of transportation improvements appropriate for the corridor. The project alternative evaluations included:

- No-Action Alternative
- No-Action with Congestion Management Alternative
- Build Alternative

The No-Action Alternative and the No-Action with Congestion Management Alternative (this option includes transit or improvements to existing facilities option) were determined to be inadequate and eliminated from additional analysis as they did not address the identified purpose and need for the project (the need was defined in terms of three parameters: enhance Kane County's Transportation network; serve existing land use; and serve future land use to complement Kane County's *2020 Land Resource Management Plan*). The Build Alternatives in each region were studied to determine which would meet the purpose and need for the project with acceptable environmental impacts. The build alternatives evaluated were arterial roads in the corridors discussed. No other build alternatives were found to be acceptable considering the purpose and need or impacts.

An extensive screening process was used to determine possible bridge crossing alignments out of the large range of possibilities. As documented in Chapter One of this document, extensive official, public, and resource and regulatory agency involvement went into defining possible corridor crossing locations and then eliminating those that created unacceptable impacts or did not satisfy the purpose and need for this project. The result was the Build Alternative which consisted of the original five corridor crossings discussed in the Proposed Action above. These corridors are described more completely in Chapter Three of this document. Comments at the Public Hearing and additional agency comments were instrumental in eliminating the Red Gate Road and C&NW/Dean Street Corridors. The reasons for their elimination are also described in Chapter Three.

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The proposed CC&P/Stearns Road typical cross section consists of two 3.6 meter (12 foot) lanes in each direction separated by a 5.5 meter (18 foot) median. Signalized intersection improvements will be provided at Randall Road (the western terminus), McLean Boulevard, Illinois Route 25, and Dunham Road. The intersections of Illinois Route 25 with Dunham Road and the intersection of Dunham Road with Stearns Road will be realigned into one intersection. The proposed roadway continues east of the intersection to join the four lane Stearns Road improvement constructed by DuPage County. Illinois Route 31 will be grade separated from the proposed road. The length of this improvement is 7.3 kilometers (4.6 miles).

The table at the end of this summary lists some of the impacts of the individual preferred alignments.

Areas of Controversy

CC&P/Stearns Road Corridor

The primary controversy in the CC&P/Stearns Road Corridor was whether a road could be built near valuable wetlands without having an adverse impact to the wetlands from the operations of the road, e.g., salt spreading for deicing. As a result of an extensive coordination effort with resource and regulatory agencies, a mitigation and protection plan was developed that will result in no net harm to wetlands and adjoining water resources.

Citing possible safety concerns associated with additional traffic on a wider at-grade highway-railroad crossing, the CNIC Railroad has objected to the CC&P/Stearns Road Corridor.

The other corridors all have opposition because of the impacts created by the proposed roads. Since these impacts are not in dispute, this opposition is not considered as controversy.

Unresolved Issues with Other Agencies

- None

Other Federal Actions Required for the Project

There will be permit requirements for construction of the proposed alignments associated with the crossing and filling of water resources and wetlands. Section 404 permits will be filed as part of a joint application to the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency for wetlands filling or where any in-stream work is proposed. U.S. Fish and Wildlife Service will be involved in the review of the permit with mitigation plan. The completion of the joint application also requires a Section 401 water quality certification be obtained from the Illinois Environmental Protection Agency and floodway permits be obtained from Illinois Department of Natural Resources, Office of Water Resources for regulated streams.

A National Pollutant Discharge Elimination System Stormwater permit will be processed. Erosion control methods are required as part of the permit.

The National Park Service has to approve the Section 6(f), Land and Water Conservation Act (LAWCON) replacement property for the land purchased from the Dundee Township Park District's Hickory Hills site before the actual conversion to roadway usage can occur. They will also need to review all Section 4(f) issues.

Summary of Preferred Corridors

	Bolz Road	CC&P/Stearns	IL 56/Oak St.	Totals*
Length (kilometers/miles)	9.0/5.6	7.3/4.6	8.3/5.2	25/15
Public Land (parks) (hectares/acres)	3.6/8.8	0.9/2.4	0.4/1.0	4.9/12.2
Total Land Acquisition (hectares/acres)	53/131	89/220	8.1/19.9	150/371
Houses Displaced	6	14	5	25
Businesses Displaced	0	4	0	4
# of Potential Employees Displaced	0	90	0	90
Wetlands filed (hectares/acres)	0.0	0.93/2.3	0.02/0.05	0.95/2.4
Construction Cost ($ Million)	42.0	61.3**	31.0	135.0
Design Engineering Cost ($ Million)	4.2	6.1	3.1	13.5
R.O.W., with Displacement Cost ($ Million)	15.0	25.0	6.0	46.0
Total Cost ($ Million)	61.2	92.4	40.1	194.5

* Totals are for illustration purposes. County is not committed to build all corridors concurrently Due to financial constraints

** Assumes restoration of quarry site by others prior to or in conjunction with corridor construction. Also assumes mitigation in CC&p/Stearns Road corridor per Environmental Corridor

CHAPTER ONE
PURPOSE AND NEED FOR THE ACTION

1.1 Overall Project

1.1.1 Purpose

The purpose of this proposal is to provide for a series of transportation improvements to increase access across the Fox River in Kane County. The Fox River represents a physical barrier which limits east-west access in Kane County. The purpose recognizes this barrier and refines the objectives to address it more precisely in terms of land use and transportation issues. The three objectives are:

- ***Enhance*** Kane County's transportation network by reducing congestion and providing alternate and more direct routes.

- ***Serve*** existing land use through efficient access to central business districts; public services; and employment and commercial centers.

- ***Serve*** proposed land use in conformance to Kane County's *2020 Land Resource Management Plan*, which encourages compact, contiguous growth in the eastern portion of the County and preserves the rural qualities of the western portion.

The Fox River Bridge Crossing Study was authorized under the Intermodal Surface Transportation Efficiency Act of 1991 as Demonstration Project 19 to "study, plan and construct up to eight bridges across the Fox River" between Illinois Route 62 in Algonquin, McHenry County, Illinois on the north and Illinois Route 47 in Yorkville, Kendall County, Illinois on the south.

As a result, the Federal Highway Administration determined that a collective evaluation of this series of transportation improvements is necessary because of the crossing corridors' common funding source (ISTEA Demonstration Project 19), sponsor (Kane County), purpose and need, and potential for significant individual and cumulative impacts.

The western terminus for all of the corridors is generally Randall Road. Randall Road is a logical terminus because it is a Strategic Regional Arterial which also serves as the approximate western limit of the county's Urban Corridor Area (as defined in Kane County's *2020 Land Resource Management Plan*). On the east, each corridor must connect with a compatible east/west arterial in order to provide system continuity for a meaningful length. Continuity is necessary to draw traffic off of the existing bridges' approach roads and to ensure that the new roadways will be effectively utilized. In practice, this generally means that the corridors will link to other roads having direct access to Illinois Route 59.

1.1.2 Project History

Planning for this project was initiated by the Fox River Bridge Advisory Committee (the Committee). The Committee, formed by Congressman Dennis Hastert in February 1990, included government representatives from the townships, municipalities and counties within the study area. The Committee commissioned the Chicago Area Transportation Study (CATS) to assess current and anticipated traffic conditions on bridges over the Fox River. The study did not rank or recommend sites but rather presented traffic data. The result was the 1990 *Fox River Bridge Study*.

In Kane, McHenry, and Kendall counties, the 1990 *Fox River Bridge Study* analyzed approximately twenty potential crossings (see Exhibit 1.1-1). Four of the original crossings had been advanced by other agencies (North End Bridge by the City of Elgin, Prairie by the City of St. Charles, Sullivan by the City of Aurora, and Orchard by Kendall County) and four other crossings were of limited continuity and could not make a contribution to the congestion relief sought by this study. Three crossings evaluated were variations of a single corridor bridge (Red Gate/New Road, Red Gate/Stearns, Red Gate/Army Trail). The Illinois Route 56/Oak Street and Mooseheart Road crossings were close enough that they are alignment variations within a corridor. This left nine independent crossings to be evaluated for Kane County at the beginning of this Environmental Impact Study.

The remaining nine corridors were evaluated as part of the *Corridor Analysis Document* (May 1994). These corridors from north to south were (see Exhibit 1.1-2):

- County Line Road
- Bolz Road
- Miller Road/Lake Marian Road
- Boncosky Road
- Chicago Central & Pacific Railroad (CC&P RR)/Stearns Road
- Red Gate Road
- Crane Road/Country Club Road
- Chicago & North Western Railroad (C&NW RR)/Dean Street
- Mooseheart Road/Illinois Route 56/Oak Street

Based on the *Corridor Analysis Document*, the Kane County Board agreed that four of the listed corridors were unacceptable because of major adverse impacts to the natural and human environment that were obvious and unavoidable. The four corridors and their unacceptable impact(s) were:

- County Line Road
  Displacement of approximately 50 homes and adverse impacts to community cohesion associated with bisecting a residential area.

- Miller Road/Lake Marian Road
  A wet sedge meadow (irreplaceable, high quality wetland) would be filled. Construction would have disturbed and potentially released contamination from a paint and chemical company, as well as an abandoned landfill.

- Boncosky Road
  Threatened and endangered species, hillside seeps, and other wetlands that are irreplaceable, high-quality wetlands would be displaced. Additionally, the eastern terminus of the corridor was too close to an off-ramp from I-90. The resultant design would have created traffic operation problems that would have restricted capacity and created a potential hazard.

- Crane Road/Country Club Road
  Displacement of a major business facility with associated displacement of employment that would cause a major economic impact to the City of St. Charles and Kane County.

The remaining five corridors (Bolz Road, CC&P/Stearns, Red Gate, C&NW/Dean Street, and Mooseheart/Illinois Route 56/Oak Street) are evaluated in more detail in this EIS (see Exhibit 1.1-3).

1.1.3 Need

1.1.3.1 Enhance Kane County's Transportation Network

Historical Perspective

In the year 1950 the population of Kane County was 150,388 and that of the Chicago metropolitan area was 5,495,364. Kane County was primarily agricultural and rural in character with the majority of the population living in communities dating from the nineteenth century. The remainder of the population lived in villages and on farms. The communities of Aurora, Batavia, St. Charles, Geneva, Elgin, West Dundee, Carpentersville, and Algonquin developed along the Fox River, centered around the bridges that provided access across the river. The commercial core of these communities was traditionally adjacent to these crossing points. The placement of these bridges was based on the network of highways and railroads, the influence of geography and the character of the river.

Between 1950 and 1990, the population of the Chicago metropolitan area grew from 5,495,364 to 7,451,578. This growth included a large in-migration of persons during the 1950's. During the 1960's, 70's and 80's, the region saw more natural growth from this base population. The change in the metropolitan area's pattern of growth occurred with a significant shift in population and development from the nucleus of Chicago to the surrounding counties. This growth pattern was quite different from the more compact and contiguous growth experienced before 1950, when public transportation conveyed a majority of the work force to concentrations of employment in the City of Chicago. Chicago and the inner ring of municipalities lost 771,000 persons from 1970 to 1990 while the outer band of municipalities gained more than one million persons. The

Northeastern Illinois Planning Commission (NIPC) projects another 1,372,000-person increase in suburban population by the year 2020.

The residential growth over the last thirty years has occurred in a widely dispersed and low-density pattern: by example, according to NIPC between 1970 and 1990 the population of the metropolitan area increased 4.1 percent while the land devoted to urban uses increased by 35 percent. This pattern reflects changing lifestyles and markets and also the dominant influence of the automobile. The number of automobile registrations in Kane County doubled over the twenty year period between 1970 and 1990. There was also a marked increase in the number of trips and miles of travel by each household between 1980 and 1990.

A shift, similar to that which occurred in the distribution of population, has also taken place in the distribution of jobs. Between 1970 and 1990, the suburbs' share of total metropolitan area employment increased from 44 percent to 61 percent. The County's largest incremental increase in population occurred during the 1950's. The ratio of jobs to housing has increased in DuPage, Kane, and McHenry Counties since the 1980 Census, and this shift provided additional market demand for residential construction. As the population and employment in the City of Chicago and the inner ring of suburbs has declined, there has been a corresponding increase in the surrounding counties. As land availability declines and land and development costs escalate in DuPage County and other suburban areas, development pressure extends further and further into Kane County. These trends are indicated in Table 1.1-1, which compares the population growth in both absolute numbers and percent change for the City of Chicago, the Chicago Metropolitan Area and DuPage, Kane and McHenry Counties.

Table 1.1-1
COMPARISON OF POPULATION GROWTH

Area	1950	1960	1970	1980	1990	Increase 1950-1990	2020 (Projected)	Increase 1990-2020
DuPage	154,599	313,459	491,882	658,858	781,666	405%	985,704	26%
Kane	150,388	208,246	251,005	278,405	317,471	111%	552,944	74%
McHenry	50,656	84,210	111,555	147,897	183,241	262%	361,598	97%
City of Chicago	3,620,962	3,550,404	3,369,359	3,005,072	2,783,726	-23%	3,005,338	8%
Metro	5,495,364	6,220,913	6,974,750	7,103,624	7,451,578	40%	9,045,000	21%

Source: 1960 U.S. Census of Population, General and Social Economic Characteristics; 1970 U.S. Census of Population, U.S. Summary; General, Social and Economic Characteristics, U.S. Department of Commerce; 1980 Census of Population and Housing; 1990 Census of Population and Housing summary; Social, Economics and Housing Characteristics; NIPC Reports, March 1994; NIPC Final Population, Household, and Employment Forecast Results for 2020, adopted November 1997.

The Northeastern Illinois Planning Commission (NIPC), the official land use planning agency for the Northeastern Illinois area, projects this growth trend in housing and jobs to continue to the year 2020 when Kane County's population is projected to reach 552,944, a 74% increase over the 1990 population. This is an average increase of nearly 25% for each of the three intervening decades.

Since 1950, only six bridge crossings have been built across the Fox River in Kane County between McHenry County and I-88: Illinois Street, St. Charles in 1956; Interstate 90 (Northwest Tollway) in 1958; Interstate 88 (East-West Tollway) in 1958; Illinois Route 20 in 1960; Fabyan Parkway in 1973; and Prairie Street, St. Charles in 1994. The increase in population, and associated trips, has exceeded the increases in the capacity of the transportation network, and this trend is continuing.

Capacity Deficiencies and Congestion

The Chicago Area Transportation Study (CATS) has provided data for analysis of the current and projected traffic on the existing Fox River crossings (see Table 1.1-2). Additionally, CATS has provided daily capacity data. The daily capacity determination starts with a peak hour capacity and then assumes that for arterial roads (non-freeway) the all day capacity is ten times the peak hour capacity. For freeways, CATS assumes approximately 12 times the peak hour capacity for daily capacity. The data shows that, overall, there is adequate capacity between Illinois Route 62 and I-88 at this time. There is, however, an imbalance at individual crossings that causes delay. Drivers are experiencing backups and delays at some of the major crossings such as Illinois Route 64 in the City of St. Charles and Illinois Route 62 in the Village of Algonquin.

Table 1.1-2 also shows that there will be a general shortfall in capacity (or capacity deficiency) in excess of 150,000 vehicle equivalents by the year 2010 in the overall project area (note: a vehicle equivalent is used to determine capacity in terms of automobiles. Other vehicles are converted to a number of vehicle equivalents. Additional note: CATS was unable to provide in time for the issuance of this document comparable numbers for the year 2020, though they did provide numbers for each corridor. The corridor numbers confirm that the shortfall in capacity is expected to grow). The table indicates that projected shortfalls in capacity are not uniformly distributed across locations or road types. This shortfall and imbalance has major implications for the traveling public if capacity with good system linkage is not added.

The effect of congestion is felt by the public in terms of additional time spent traveling, fuel consumed and air pollution levels experienced when traffic inches forward in a stop and go fashion, below posted speed limits, and with multiple traffic signal light changes to get through an intersection. Congestion is manifested by queues at the crossing approaches (especially at signalized intersections), increased travel time, and an increase in accidents as congestion increases conflicts and driver stress. A driver's response to congestion may be an acceptance of longer travel times, adjustment of his/her travel schedule to avoid the peak travel period of the day (i.e., the period during which traffic congestion peaks), selection of an alternate route or alternate trips, or elimination of the trip.

Table 1.1-2
PROJECTED TRAFFIC CAPACITY AND VOLUMES
FOR THE YEAR 2010

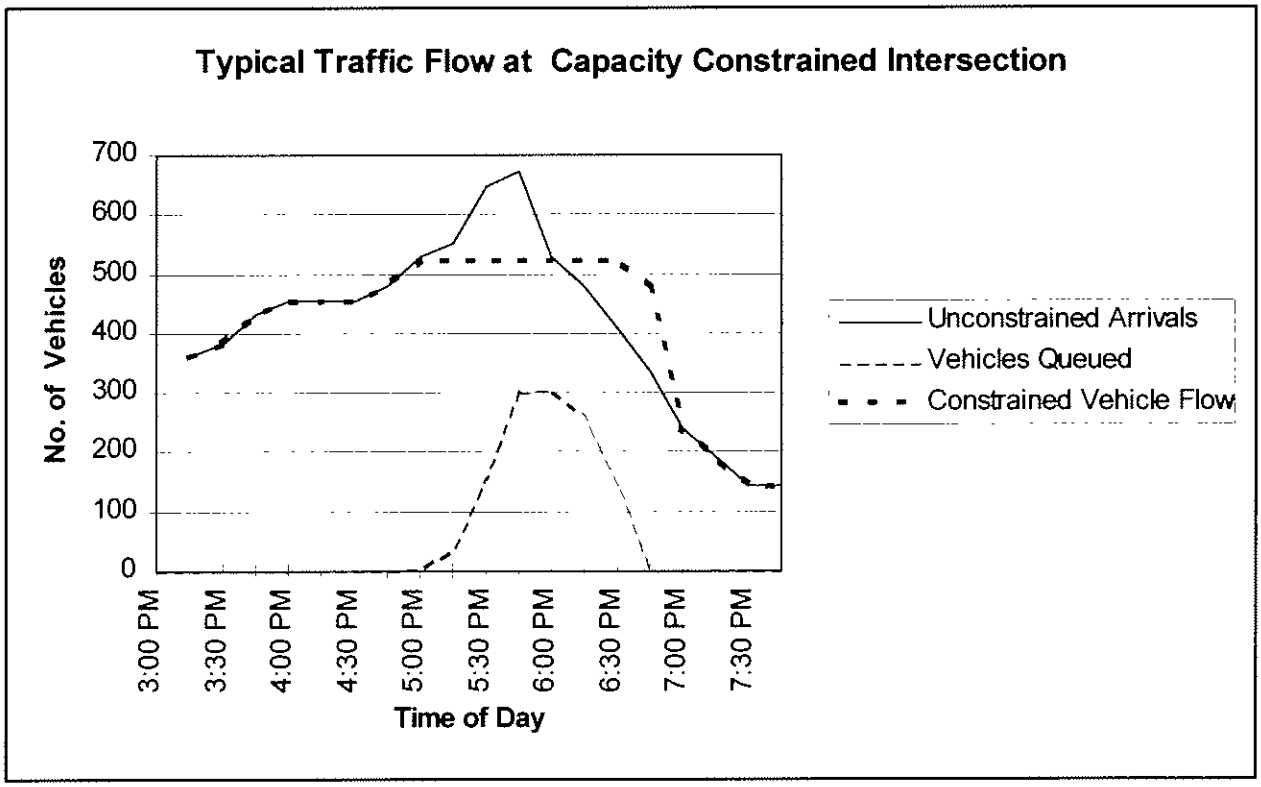
Crossing Name	Crossing's Daily Vehicle Equivalent Capacity *	1990 Vehicle Equivalents	Projected Vehicles Equivalents	Projected Number of Vehicle Equivalents Over Capacity
Illinois Route 62	30,000	23,000	58,200	28,200
Main Street	16,000	19,500	26,700	10,700
Illinois Route 72	24,000	27,600	38,000	14,000
I-90 (Northwest Tollway)	99,000	65,300	89,300	-9,700 ‡
Kimball	24,000	10,250	38,500	14,500
Chicago/ Highland	48,000	32,400	56,400	8,400
National	24,000	11,500	25,900	1,900
US 20	55,000	27,100	80,000	25,000
State	15,000	13,000	21,700	6,700
St. Charles CBD**	51,000	42,800	72,400	20,700
Illinois Route 38	24,000	21,600	38,700	14,700
Fabyan Parkway	30,000	22,600	45,600	15,600
Wilson	12,000	14,200	23,800	11,800
Illinois Route 56	13,000	10,700	17,100	4,100
I-88 (East-West Tollway)	66,000	39,700	50,400	-15,400 ‡
TOTAL	**531,000**	**381,250**	**682,700**	**151,700**

* These capacities are for Level of Service (LOS) D. This corresponds to moderate delay. While these volumes could be increased by 40%, the resultant LOS of F is generally considered unacceptable because of excessive delay. Capacity in vehicle equivalents means the capacity in terms of passenger cars. Other vehicles are then treated as a number of cars depending upon how the affect capacity, e.g. a truck may count as three cars.

** The three bridges in St. Charles' central business district (Illinois Route 64, Illinois Street and Prairie Street) have been grouped together because the CATS modeling process can not distinguish between bridges less than one mile apart. Actual experience has indicated that the capacity has not been distributed according to the demand.

‡ The tollways are projected to have a traffic capacity surplus.

Increased traffic means that the approach queues (and their associated delays) will lengthen (i.e., more drivers will be waiting for longer periods). Not only will individual delays increase but the overall period of congestion will increase. To avoid the longest delay, drivers learn to shift their travel times to avoid the peak period. The result is a lengthening of the peak period. For example, what now may be an hour-long "peak period" in the evening might lengthen to three hours nightly if capacity is not added. The graph below helps to illustrate this concept. Furthermore, drivers will reroute to save time even if the trip length increases. This wastes energy and increases air pollution. Thus, a secondary effect of congestion is alternate trips or the elimination of trips.



Reducing congestion is a component of this proposal's overall needs. This includes, where possible, redistributing traffic to a new crossing to relieve congestion on an existing bridge. Depending on the specific location, a new crossing may help to divert through traffic to less congested areas. With or without new bridges, the congestion of bridge crossings and the connecting roadway network is projected to worsen due to continued growth of population, employment and automobile usage. New crossing points are also expected to attract travel from other overcrowded links in the regional network. In some locations a new bridge may decrease congestion on a nearby crossing and its connecting roadways. More typically, however, the realistic purpose is to slow the rate of increase in congestion on these existing bridges.

System Linkage

The level of congestion on a bridge crossing the Fox River is strongly influenced by the crossing location and the quality and continuity of the roadway system linked to that crossing. In other words, a bridge's vehicle capacity is not the sole determinant of system congestion. The existing Fox River crossings that are the most congested are those within built up areas where many trips end or originate and are on roads with good system continuity (i.e., they are continuous and without excessive local interference for a significant length). In order to ensure that they are effectively used, and to avoid circuitous travel and excessive turning movements at intersections, new bridges must connect to roads with extensive service areas; this connectivity is a necessary component of the ability to relieve congestion safely and efficiently.

In recognition of the importance of roadway system continuity, the Illinois Department of Transportation and the Chicago Area Transportation Study (CATS) have developed a network of Strategic Regional Arterials (SRAs). The SRA system was devised to supplement the overburdened freeway system. Improvements to designated SRA routes enhance accessibility in the region without the major investment and impacts associated with new freeways. SRA Routes can be links of several roads forming a continuous travel route. Currently, many of the nearby east-west SRAs stop near the Kane County/DuPage County line (See Exhibit 1.0-1 and Table 1.1-3). New bridge crossings with good system linkage would be excellent candidates for SRA extensions in Kane County. Improving east-west access, especially if it complements the SRA system, is part of the purpose of this project.

Table 1.1-3 STRATEGIC REGIONAL ARTERIALS IN THE STUDY AREA				
ROAD	**FROM**	**TO**	**COUNTY**	**DIRECTION**
Orchard	US Route 30	Randall Road	Kane	North-South
Randall Road	Orchard Road	IL Route 31	Kane, McHenry	North-South
Farnsworth	US Route 34	IL Route 56 (Kirk Road)	Kane	North-South
Kirk Road	IL Route 56 (Farnsworth)	Dunham Road	Kane	North-South
Dunham Road	Kirk Road	IL Route 25	Kane	North-South
Illinois Route 25	Dunham Road	IL Route 62	Kane	North-South
Illinois Route 59	DuPage-Cook Line	DuPage-Will Line	DuPage	North-South
Illinois Route 56	Kirk Road	Kane-DuPage Line	Kane	East-West
Fabyan Parkway	Randall Road	IL Route 38	Kane, DuPage	East-West
Illinois Route 64	Kane-DeKalb Line	DuPage-Cook Line	Kane, DuPage	East-West
Stearns Road	Dunham Road	US Route 20	Kane, DuPage	East-West
Illinois Route 72	Illinois Route 25	City of Chicago	Kane, Cook	Northwest-Southeast
Illinois Route 62	Kane-McHenry Line	IL Route 58	McHenry, Kane, Cook	Northwest-Southeast

Note: The limits presented do not represent the total length of the SRA. Instead, the limits presented include the areas of interest to this project.

1.1.3.2 Serve Existing Land Use

Central Business Districts

Older downtowns, while valuing the potential business from travelers, are often negatively affected by the noise, vibration and congestion associated with through traffic (traffic with origins and destinations outside the business area). Because many existing crossings are in fully

developed areas, it is impractical to widen them. Furthermore, many of the central business districts along the Fox River are listed on or eligible for the National Register of Historic Places. Roadway widenings which would negatively affect the historic character of the districts are contrary to Kane County's historic preservation goal.

In addition, much of the ongoing development is outside the historic town centers, making travel through the downtowns circuitous and undesirable for many drivers.

This proposal is intended to reduce the existing congestion in commercial areas, particularly in the historic business districts next to existing bridges, by the provision of alternates routes for motorists who do not have a need to be in the congested area. Congestion impairs pedestrian and vehicle movement and constrains on-street parking. Furthermore, it can reach levels where it makes an area unattractive to those seeking to purchase goods and services.

Public Services

The distance between bridges makes it inefficient and time-consuming to make necessary trips between destinations separated by the Fox River, even within the same municipality. This lack of bridges adds to the congestion on the roadway network serving the crossing points and affects adjacent land uses and neighborhoods.

Schools and hospitals, parks and trails, fire departments and law enforcement agencies serve residents and businesses on both sides of the Fox River. This proposal is intended to improve access to and from public use areas and facilitate emergency services, providing flexibility and alternative routes for these functions. Creating more direct access to certain areas can reduce travel times, increase the level while decreasing the cost of services provided, and substantially enhance non-peak period travel for areas linked by new bridges.

Another objective of improved access is to facilitate trips by alternate modes within the community by providing additional access and routes. Where distances to the nearest existing crossing are excessive, bicycling and walking to areas directly across the river -- including linking up with existing and proposed recreational facilities -- are discouraged. New, appropriately placed and configured crossings with mixed use paths are intended to help link the communities via modes other than the automobile.

Employment and Commercial Centers

The rapid growth of various industries along and on either side of the Fox River has greatly increased the need for linkages within the County between places of employment, commercial developments, and places of residence. These concentrations are as varied as riverboat gambling, new corporate headquarters, modern office-business parks and outlet malls. The proposal intends to facilitate access to concentrations of employment for workers and for the distribution of goods and services.

1.1.3.3 Serve Proposed Land Use

The Kane County *2020 Land Resource Management Plan,* adopted June 1996, identifies nine goals in their general development policy (page 10):

- **Employment**
  Kane County's present position as an economically balanced community (employment equal to labor force) should be maintained.

- **People**
  All types of people should be able to live in Kane County so that a labor force with diversified skills and training is available.

- **Housing**
  Housing of all sizes, types and prices should be available.

- **Environmental Considerations**
  Every person has the right to live in an attractive and healthful environment.

- **Natural Resources**
  All development decisions should consider the conservation and wise use of the soil, air, water resources, and the natural environment of Kane County.

- **Agricultural Preservation**
  Support the conservation, protection, development, and improvement of agricultural land for the production of food and other agricultural products.

- **Historic Preservation**
  Protect and maintain local historic and cultural resources that contribute to the character of Kane County.

- **Transportation**
  Provide safe, efficient transportation systems compatible with land use.

- **Cooperative Planning**
  Work with the various jurisdictions located within Kane County to achieve a shared community vision.

Official policies provide the framework to achieve these goals. Kane County has endorsed the policy of encouraging the compact and contiguous growth of existing communities at densities which facilitate the cost-effective and environmentally sound extension of public utilities and services. This strategy serves as the foundation for the *2020 Land Resource Management Plan* (see Exhibit 1.1-4), calling for a balance between natural resource protection and community development. The Conceptual Land Use Strategy (see Exhibit 1.1-5) identifies three distinct land use areas and emphasizes a need for open space protection, water resource management, balanced

community development, coordination of transportation improvements with land use management, protection of agriculture, and a cooperative planning process with the municipalities.

From east to west the three distinct land use areas identified in the Conceptual Land Use Strategy are: the Urban Corridor Area, which includes the Fox River Valley; the Critical Growth Area, which is concentrated in the central tier of townships with a mixture of countryside residential, farmland, and small villages; and the Agricultural/Village Area, which includes the balance of the rural, western townships characterized by productive farms and small villages.

Different types and densities of development are appropriate for the three distinct land use planning areas. The Urban Corridor Area is targeted for the most new growth concentrated adjacent to existing municipalities in the corridor. The Critical Growth Area is a planned transition zone of carefully designed, clustered development and open space. Development in the Agricultural/Village Area should be limited to planned expansions of the rural villages, which minimize the disruption of agricultural uses.

In the elements of the Land Use Strategy in the *2020 Land Resource Management Plan*, the County endorses a strategy of coordinating transportation planning with land use planning, so that transportation systems can accommodate the travel needs generated by planned land use, rather than solely reacting. The *2020 Plan* "supports infill development within municipal boundaries that takes advantage of substantial infrastructure investments that have already been made." Thus, the plan proposes that "connections and access to the Fox River should be expanded and improved" as a means of achieving growth and development (i.e., infilling) within municipal boundaries and of preserving existing resources. This idea of providing the appropriate improvements only to the appropriate area is further emphasized when the *Plan* states that "balancing the need for additional transportation capacity with land use will help maintain the countryside character of the Critical Growth Area." The proposed project is intended to create new access across the Fox River (i.e., within the Urban Corridor) without providing additional through-capacity in the Critical Growth Area or to the Agricultural/Village Area.

1.2 North Region

The North Region is generally bounded by the Kane County/McHenry County line on the north and Interstate 90 (Northwest Tollway) on south. The municipalities in the region are the Villages of Algonquin, Barrington Hills, Sleepy Hollow, Carpentersville, East Dundee and West Dundee (see Exhibit 1.2-1).

1.2.1 Purpose

The purpose of this proposal is to provide transportation improvements which would increase access across the Fox River in the North Region of Kane County. The Fox River represents a physical barrier which limits east-west access in this region. The purpose recognizes this barrier and refines the objectives to address it more precisely in terms of land use and transportation issues. The three objectives are:

- ***Enhance*** the North Regions's transportation network by reducing congestion and providing alternate and more direct routes.

- ***Serve*** existing land use in the region through efficient access to central business districts, public services, and employment and commercial centers.

- ***Serve*** proposed land use in conformance to local and county land use and resource management plans, which encourage compact, contiguous growth in the eastern portion and preserve the rural qualities of the western portion of the region.

1.2.2 Project History

In the mid-1980's, the Village of Algonquin (in cooperation with IDOT and McHenry County) initiated an environmental study for a bridge north of the existing Illinois Route 62 crossing. This proposed bridge was known as the "North Bypass." At that time, there was strong public opposition to the North Bypass.

Planning for a new bridge in the North Region was revived with the Fox River Bridges Advisory Committee in 1990. At the initiation of studies for this project there were four corridors under study in the region:

- County Line Road
- Bolz Road
- Miller Road/Lake Marian Road
- Boncosky Road

Only the Bolz Road corridor survived the screening process of the *Corridor Analysis Document*. Based on the *Corridor Analysis Document*, Kane County concluded that County Line Road, Miller Road/Lake Marian Road and Boncosky Road were unacceptable because of adverse impacts to the human and natural environment that were obvious and unavoidable.

In 1996, McHenry County initiated a study to review the problem of existing and projected congestion at the intersection of Illinois Route 62 with Illinois Route 31 in the Village of Algonquin, just north of Kane County. Illinois Route 62 crosses the Fox River and Illinois Route 31 is west of the crossing. The combination of traffic at this point exceeds the capacity of the intersection. In January 1998, the County Transportation Committee recommended the implementation of a strategy for phased implementation of a solution to the existing and projected congestion problem. The first step is the provision of an improvement to the existing intersection in the form of a turn lane for the westbound to northbound movement. A subsequent step is the "Western Bypass." The "Bypass" reduces the Illinois Route 31 traffic at the intersection by diverting it to another location. The Committee further recognized that, depending on actual traffic growth, the "Western Bypass" may not be sufficient and assumed the Bolz Road crossing would also be needed to address the congestion. This would be because the projected traffic crossing the Fox River on Illinois Route 62 would still exceed the capacity of Illinois Route 62. Even with intersection improvements, the "Western Bypass", and the Bolz Road crossing, McHenry County recognized they will need to evaluate additional improvements, including a crossing north of Illinois Route 62, in another 10 to 15 years to provide additional crossing capacity.

1.2.3 Need

1.2.3.1 Enhance the Transportation Network

Historical Perspective

The north region has been experiencing growth similar to the rest of Kane County (see Table 1.2.-1). The Villages of Algonquin and Carpentersville in particular are growing westward at a rapid pace and closing the gaps between the communities; much of the growth in Algonquin has been southward into Kane County because of adjoining developments in McHenry County. Land is being annexed and new developments are being approved at a rapid rate.

While development has proceeded on, the last bridge constructed in the North Region was the Interstate 90 (Northwest Tollway) bridge in 1958. In 1998 the Northwest Tollway across the Fox River had a lane added in each direction to provide three lanes in each direction From Illinois Route 25 to Illinois Route 31.

Table 1.2-1 North Region Population Growth						
Area	**1950**	**1980**	**1990**	**Increase 1950-1990**	**2020 (Projected)**	**Increase 1990-2020**
Kane County	150,388	278,405	317,471	111%	552,944	74%
V. of Algonquin	N/A	5,834	11,663		38,211	228%
V. of Barrington Hills	N/A	3,631	4,202		5,504	31%
V. of Sleepy Hollow	N/A	2,000	3,241		5,384	66%
V. of Carpentersville	1,523	23,272	23,049	1,413%	36,884	60%
V. of East Dundee	1,466	2,618	2,721	86%	4,552	67%
V. of West Dundee	1,948	3,551	3,728	91%	7,921	112%

Source: NIPC Final Population, Household, and Employment Forecast Results for 2020, adopted November, 1997; 1990 U.S. Census, 1930 through 1990 U.S. Census

Capacity Deficiencies and Congestion

The distance between the Illinois Route 62 bridge in Algonquin and the Main Street bridge in Carpentersville is 6.4 kilometers (4 miles). Furthermore, Main Street terminates shortly east of the Fox River at Williams/Wisconsin Road (Exhibit 1.2-1). To the south, Illinois Route 72 is the next crossing. Both Illinois Route 62 and 72 are projected to be over capacity by the year 2010. As a result, backups and delays will continue to increase.

As shown in Table 1.1-2, of the four bridges in the North Region, two currently have traffic demand which exceeds capacity: Illinois Route 72 (Main Street in West Dundee) and Main Street in Carpentersville. With the exception of the Northwest Tollway, all of the existing bridges in the North Region will have large capacity deficiencies by the year 2010.

Drivers on Illinois Route 72 currently experience congestion on the bridge approaches in the form of intersection queues of 30 or more vehicles (approximately 240 meters or 800 feet) long. The peak travel period (defined as that period when it is unlikely that the driver can proceed through the intersection in one traffic signal light cycle) is currently 45 minutes long.

Under the No-Build alternative, the peak travel period may last three and a half hours and the queues may reach 2.4 kilometers (one and a half miles) long, extending through several intersections. Illinois Route 62 is projected to have a similar duration of congestion and backup length by the year 2010. It should be noted that the rate of increase in queue length is much greater than the rate of increase in traffic.

Table 1.1-2 also shows a capacity deficiency in the North Region in excess of 40,000 vehicle equivalents in the year 2010. Capacity deficiency is defined as the traffic demand (measured in number of vehicle equivalents) above the capacity of the roadway. Although specific capacities are dependent upon various factors, a four-lane roadway with standard design features (based upon CATS models) can generally accommodate 24,000 to 30,000 vehicle equivalents per day with acceptable delays.

The quantity of the capacity shortfall alone does not indicate its full impact. The deficiency also causes motorists to rearrange their trip-making to longer, less congested alternatives or to alternate times, and to lose valuable time in excess travel. Also, many of these trips require local access; tollway capacity cannot be directly substituted for other roadway capacity.

System Linkage

Regional east-west access in this area is dependent on Illinois Routes 62 and 72 and Interstate 90 (Northwest Tollway). These arterial roadways and the Tollway are regional because they are continuous for a considerable length and, therefore, provide access to a large area without the need for excessive turns or circuitous travel. Main Street in Carpentersville is primarily local in function because it terminates at Williams/Wisconsin Street, just east of the river. The distance between Illinois Route 62 and Illinois Route 72 is 7.5 kilometers (4.7 miles), and the distance between Illinois Route 72 and Interstate 90 (Northwest Tollway) is 3.5 kilometers (2.2 miles).

There are two north-south Strategic Regional Arterials (SRA) in the North Region: Illinois Route 25 and Randall Road. The only east-west SRA (see Section 1.1.4.3 for SRA definition) that crosses the river in the region is Illinois Route 62. However, the SRA designation on Illinois Route 62 ends at Illinois Route 31 (Main Street), 0.1 kilometer (0.05 mile) west of the river. The actual roadway continues as Chicago Street, a downgraded arterial.

1.2.3.2 Serve Existing Land Use

The Fox River crossings of Illinois Route 62 in Algonquin and Main Street in Carpentersville are 6.4 kilometers (4.0 miles) apart without another crossing between them (see Exhibit 1.2-1). Both routes are currently congested, and this congestion is predicted to grow. They pass through the Central Business Districts of Algonquin and Carpentersville, respectively. Illinois Route 72, approximately 1.6 kilometers (1 mile) south of Main Street in Carpentersville, passes through the business district of West Dundee. Illinois Route 72 also passes through portions of the Dundee Township Historic District, a district listed on the National Register of Historic Places. The provision of an alternate east-west route is intended to better serve the existing land use, reducing congestion by reducing through traffic. Such traffic is disruptive to locally-oriented pedestrian

and vehicular movement. It is also intended to protect the historic integrity of the downtown areas, providing a more direct alternate route for some trips.

This project proposes to improve access for people from existing and planned residential areas to schools, police, fire, emergency services, and other public use facilities in Algonquin, Carpentersville, Sleepy Hollow, East Dundee and West Dundee.

The area along Randall Road south of I-90 from Big Timber Road north to Illinois Route 72 has been undergoing major commercial/industrial/warehouse development, and this is expected to continue. In 1990, Dundee Township had 20,504 jobs. By 2020, this figure is expected to grow to 38,167. Immediately to the west in Rutland Township, employment is expected to grow from 635 to 7,447 (*Source: NIPC Final Forecast Results, November 6, 1997*). The projected and ongoing growth in Rutland and Dundee Townships, as well as growth in nearby northwest Cook County, has helped spur the major residential development in surrounding communities as shown by the recent and projected growth shown in Table 1.2-1.

1.2.3.3 Serve Proposed Land Use

A purpose of this project is to provide access to proposed land uses in the Northern Region which are compatible with Kane County's *2020 Land Resource Management Plan* and local land use plans. Presently, there are no regional river crossings in the 8 kilometer (5 mile) gap between Illinois Route 62 and Illinois Route 72. Yet, the area west of the Fox River in this gap is in the Urban Corridor as defined in the *2020 Land Resource Management Plan* and is planned for development by the adjoining municipalities.

The area west of the Fox River, including the Randall Road/Interstate 90 corridor, is a focus of growth in the North Region. The communities of Algonquin and Carpentersville are annexing land near the Randall Road corridor and have major developments planned. As stated earlier, the communities have seen fit to reserve a corridor along the proposed Bolz Road alignment to serve the potential land uses.

1.3 Central Region

The Central Region is generally bounded by the State Street Bridge in the Village of South Elgin on the north and downtown St. Charles on the south. The municipalities in the region are the Villages of South Elgin and Wayne and the City of St. Charles (see Exhibit 1.3-1). The City of Elgin, while bordering the North and Central Region, fits into neither as defined for this project because of its own specific problems and independent planning process to address those problems. Prior to the initiation of this Environmental Impact Statement the City of Elgin had pursued their own solution to transportation across the Fox River in the form of the North End Bridge Project. Their study concluded in 1996 with a Record of Decision (FHWA-IL-EIS-82-02) recommending the No-Build Alternative as the "only prudent alternative" "because the negative social and economic impacts of the Build Alternatives proposed in the FEIS are unacceptable." Furthermore, bridge crossing solutions for the City of Elgin would be more local than the purpose of this project and have no regional benefits.

Two of the three corridors (CC&P/Stearns Road and C&NW/Dean Street) in the Central Region involve active railroads. Since the initiation of this project, both railroads have changed ownership. The Chicago Central & Pacific (CC&P) Railroad was sold to the Illinois Central Railroad and the Chicago & NorthWestern Railroad is now owned by the Union Pacific Railroad. In the interest of consistency with previous reports, the corridor names will remain CC&P/Stearns Road and C&NW/Dean Street. Any discussion of the railroad within the text, however, will refer to the current owner.

1.3.1 Purpose

The purpose of this proposal is to provide transportation improvements which would increase access across the Fox River in the Central Region of Kane County. The Fox River represents a physical barrier which limits east-west access in this region. The purpose recognizes this barrier and refines the objectives to address it more precisely in terms of land use and transportation issues. The three objectives are:

- ***Enhance*** the Central Region's transportation network by reducing congestion and providing alternate and more direct routes.

- *Serve* existing land use in the region through efficient access to central business districts; public services; and employment and commercial centers.

- *Serve* proposed land use in conformance to local and county land use and resource management plans, which encourage compact, contiguous growth in the eastern portion and preserve the rural qualities of the western portion of the region.

1.3.2 Project History

The concept of additional bridges across the Fox River in the Central Region has been included in County and municipal planning and transportation studies since the early 1900's. In 1969, the *Fox River Valley Transportation Study* recommended two bridges for construction by the year 1985: Fabyan Parkway in Batavia and Illinois Route 25/McLean in the community of Valley View. Of these, only the Fabyan Parkway bridge was built.

In 1992, both the Village of Wayne and the City of St. Charles sponsored feasibility studies for a new bridge in their region of Kane County. The Village of Wayne's study looked exclusively at a corridor which followed the Chicago & NorthWestern Railroad (C&NW RR -currently the Union Pacific) within the City of St. Charles, while the St. Charles study evaluated two additional corridors: the Prairie/Adam Corridor and the Division/Gray Corridor.

The St. Charles study focused on developing a consensus for a local project to address impending traffic concerns. The C&NW RR corridor that was evaluated began at Illinois Route 31 on the west and followed the railroad east to Illinois Route 25. The roadway was two lanes and shared the existing right-of-way with the railroad. The Wayne study focused on a regional solution and evaluated a four-lane roadway which straddled the then C&NW RR and went from Randall Road on the west to Illinois Route 64 on the east.

Both the St. Charles and Wayne studies showed favorable results in the area of congestion relief for a C&NW corridor. However, neither of the studies adequately addressed the railroad's safety and operational requirements.

At the initiation of studies for this project's Environmental Impact Statement there were four corridors under study in the region:

- Chicago Central & Pacific Railroad (CC&P RR)/Stearns Road
- Red Gate Road
- Crane Road/Country Club Road
- Chicago & NorthWestern Railroad (C&NW RR)/Dean Street

The *Corridor Analysis Document* concluded that the Crane Road/Country Club Road corridor should be excluded from further study. Crane Road/Country Club Road adversely impacted the Arthur Andersen training complex just east of the Fox River, north of St. Charles. The loss of this facility was determined unacceptable by Kane County due to the major economic impact on St. Charles and the surrounding area. This left the CC&P Stearns Road, Red Gate, and C&NW/Dean Street corridors.

1.3.3 Need

1.3.3.1 Enhance The Transportation Network

Historical Perspective

As shown in Table 1.3-1, the Central Region has been experiencing a rate of growth similar to the rest of Kane County. As was noted in Section 1.3.1.1, the growth of bridge crossings of the Fox River has not kept pace with the growth in population in the region.

Table 1.3-1
Central Region Population Growth

Area	1950	1980	1990	Increase 1950-1990	2020 (Projected)	Increase 1990-2020
Kane County	150,388	278,405	317,471	111%	552,744	74%
Village of South Elgin	1,220	5,970	7,474	513%	26,492	254%
Village of Wayne	N/A	940	1,541		5,960	287%
City of St. Charles	6,709	17,471	22,501	235%	38,872	73%

Source: NIPC Final Population, Household and Employment Forecasts for 2020, adopted November 1997

Capacity Deficiencies and Congestion

As shown in Table 1.1-2, neither the State Street Bridge in South Elgin nor the St. Charles Central Business District (CBD) bridges are currently operating with traffic demand over their capacity. However, when viewed individually the Illinois Route 64 bridge has a capacity shortfall and the Illinois Street and Prairie Street Bridges in South Elgin are under capacity. Per CATS projections, the State Street Bridge crossing will be experiencing a capacity deficiency by the year 2010 of approximately 7,000 vehicle equivalents and the St. Charles CBD of approximately 21,000.

The traveling public is currently experiencing congestion on Illinois Route 64 in the St. Charles CBD during the peak travel period in the form of intersection queues of 50 car lengths (0.8 kilometer or .5 mile) and back-ups lasting for one and a half hours. If new bridges are not added in the Central Region by the year 2010 and traffic grows per projections, the queues will be 5 kilometers (3 miles) long and the peak travel period will be two and a half to three hours long. The State Street Bridge in the Village of South Elgin is not experiencing traffic related delays at

this time. However, with the No-Build Alternative, State Street will be experiencing queues and peak periods comparable to Illinois Route 64 by the year 2010.

System Linkage

Illinois Route 64 is the only bridge crossing in this area that provides regional east-west access. Illinois Route 64 is regional because it is continuous for a considerable length and, therefore, provides access to an entire region. The two other bridges in St. Charles' CBD, Illinois Street and Prairie Street, serve primarily local traffic because they do not provide direct connections to east-west arterials. State Street in South Elgin is primarily local in function because it is only continuous for 0.8 kilometers (0.5 miles).

The closest regional, east-west arterial to Illinois Route 64 is Illinois Route 38 in the City of Geneva, 2.9 kilometers (1.8 miles) to the south. The next east-west arterial north of Illinois Route 64 is U.S. Route 20 in the City of Elgin, 11 kilometers (7 miles) away. The lack of regional, east-west arterials, particularly north of Illinois Route 64, places an undue burden on the St. Charles downtown area to handle through traffic.

The City of St. Charles is proceeding with plans to build a bicycle/pedestrian bridge, cantilevered off of the Union Pacific Railroad bridge piers, to provide a connection to a proposed bicycle path on Illinois Route 31. The Fox River Trail bicycle path crosses the river on an abandoned railroad bridge near the river bend just south of the Village of South Elgin. The distance between these two bicycle crossings is in excess of 5.6 kilometers (3.5 miles).

1.3.3.2 Serve Existing Land Use

The *City of St. Charles Comprehensive Plan* (adopted by Ordinance No. 1990-M-89 on November 5, 1990) focuses heavily on east-west traffic movements through the St. Charles Central Business District. The comprehensive plan states that,

> "Traffic has increased with the development and change in character of eastern Kane County and the Fox River Valley. Additional east-west traffic in eastern Kane County is particularly troublesome because it must be confined to those few roadways that bridge the Fox River. In the case of St. Charles, east-west traffic is funneled onto Main and Illinois Streets, the only river crossings between South Elgin and Geneva."

One purpose of this project is to reduce congestion in the Central Region on Illinois Route 64 (Main Street) which passes through downtown St. Charles, a district eligible for listing on the National Register of Historic Places. Existing and projected traffic congestion is disruptive to locally oriented pedestrian and vehicular movement and adds to the frustrations of people making necessary trips to and through the area.

Traffic studies conducted by the City of St. Charles show that 25% to 30% of the total traffic in St. Charles is through traffic (traffic that enters and exits St. Charles without stopping).

The Transportation Goals and Objectives stated in the *City of St. Charles Comprehensive Plan* include the following:

- Minimize the impact of truck traffic through St. Charles.
- Provide sufficient river crossing capacity whenever possible in advance of need so as to reduce congestion and disharmony in the vicinity of existing river crossings.
- Strongly encourage and support Kane County in the development and construction of a regional bridge connecting Illinois Routes 31 and 25.
- Encourage the State of Illinois to develop a Illinois Route 64 by-pass.

The Fox River is a visual and recreational amenity which links some areas, activities and groups. However, it is also a functional barrier between communities whose governmental, educational, cultural, shopping, recreation, employment, and institutional uses serve persons on both sides.

The distance between the State Street Bridge in the Village of South Elgin and the Illinois Route 64 bridge in the City of St. Charles is approximately 9 kilometers (5.5 miles). One purpose of additional crossings is to link each of these communities more closely together across the river and to reduce the time involved traveling to these centralized functions from the opposite side of the River.

West of the Central Region in Campton Township are a large number of very low density single family estates. The area covered by these exclusively residential enclaves demands total reliance on the automobile for access to daily needs such as schools, shopping and employment for most of the residents. The 1990 census indicated that more than 40 percent of the Campton Township work force travels outside the county for employment.

In 1990, employment in Campton Township (west of St. Charles) was 634 and in St. Charles Township it was 20,322. By the year 2020, employment in these two townships is expected to be 1,858 and 30,090, respectively (*Source: NIPC Final Forecast Results, November 6, 1997).* This on-going and projected growth in employment has spurred major residential development proposals in surrounding communities.

1.3.3.3 Serve Proposed Land Use

Major employment, shopping and residential growth is occurring between Randall Road west of the river, and Illinois Route 59 east of the river, which creates the need for additional crossings in the Central Region as well as in areas west of Randall Road.

The DuPage County Airport located just east of St. Charles, the St. Charles Business Park located at Illinois Route 64 and Kirk Road, and the growing commercial/industrial corridor developing along Randall Road illustrate continued growth pressures which will create additional transportation needs throughout the Central Region. The Airport Authority alone controls over 280 hectares (700 acres) which are planned and zoned for commercial and industrial uses. Many of the employees of these future developments will live in existing and committed developments to the west, across the Fox River.

1.4 South Region

The South Region is generally bordered by Wilson Street Bridge in the City of Batavia on the north and Interstate 88 (East-West Tollway) in the Village of North Aurora on the south. The South Region includes the Village of North Aurora, the City of Batavia and the City of Aurora (see Exhibit 1.4-1).

1.4.1 Purpose

The purpose of this proposal is to provide transportation improvements which would increase access across the Fox River in the South Region of Kane County. The Fox River represents a physical barrier which limits east-west access in this region. The purpose recognizes this barrier and refines the objectives to address it more precisely in terms of land use and transportation issues. The three objectives are:

- ***Enhance*** the South Region's transportation network by reducing congestion and providing alternate and more direct routes.

- *Serve* existing land use in the region through efficient access to central business districts; public services; and employment and commercial centers.

- *Serve* proposed land use in conformance to local and county land use and resource management plans, which encourage compact, contiguous growth in the eastern portion and preserve the rural qualities of the western portion of the region.

1.4.2 Project History

The concept of additional bridges across the Fox River in this area has been included in Kane County and municipal planning and transportation studies since the early 1900's. In 1969, the *Fox River Valley Transportation Study* recommended construction of a Fabyan Parkway crossing in Batavia. This crossing was built in 1973.

The Mooseheart Road/Illinois Route 56/Oak Street Corridor is located in the Village of North Aurora, the City of Aurora and unincorporated Kane County (See Exhibit 1.4-1). The corridor had two distinct alignments both of which served the same purpose and need for the South Region: the Mooseheart Alignment and the Illinois Route 56/Oak Street Alignment. Although there were several areas of concern in this corridor, it was determined that further evaluation was appropriate.

1.4.3 Need

1.4.3.1 Enhance the Transportation Network

Historical Perspective

Population growth in the South Region is clearly evident in the past trends and in the official projections to the year 2020 illustrated in Table 1.4-1 below. As was noted in Section 1.3.1.1, however, the growth of bridge crossings of the Fox River has not kept pace with the growth in population in the region.

Table 1.4-1
South Region Population Growth

Area	1950	1980	1990	Increase 1950-1990	2020 (Projected)	Increase 1990-2020
Kane County	150,388	278,400	317,471	111%	552,944	74%
Batavia	5,838	12,574	17,076	192%	31,067	82%
North Aurora	921	5,205	5,940	545%	15,748	165%
Aurora*	50,576	79,610	99,556	97%	178,137	79%

Source: NIPC Final Population, Household and Employment Forecast for 2020, adopted November 1997

* Kane County portion only

Capacity Deficiencies and Congestion

Of the four bridge crossings in the South Region, only Wilson Street in the City of Batavia is currently operating with a capacity deficiency (see Table 1.1-2). By the year 2010, however, only the East-West Tollway (I-88) is projected to operate with a capacity surplus. Due to limited access, the surplus on the Tollway does not relieve congestion at other locations. Additionally, the function of a Tollway is to serve longer trips.

With the projected increase in traffic and without any improvements, Illinois Route 56 (Oak Street) will have peak travel periods lasting two hours with queues at intersections of up to 170 car lengths (1.3 kilometers or 0.8 mile) by the year 2010. Wilson Street will experience comparable delays.

System Linkage

Illinois Route 56 (Oak Street) in North Aurora turns south immediately west of the Fox River. Wilson Street in Batavia is continuous only as a local road for 1.1 kilometer (0.7 mile) west of the

Fox River. Only Fabyan Parkway and I-88 provide regional east-west access in the south region and they are 3.8 kilometers (2.4 miles) apart.

1.4.3.2 Serve Existing Land Use

One purpose of the project is to reduce the rate of congestion increase in the South Region on existing bridges which pass through downtowns. To the north, an existing bridge at Main Street passes through downtown Batavia. To the south, Illinois Route 56 (State Street) passes through downtown North Aurora. Existing and projected traffic congestion is disruptive to locally oriented pedestrian and vehicular movement and adds to the frustrations of people making necessary trips to and through the area.

The distance between the Illinois Route 56 (State Street) bridge over the Fox River in the Village of North Aurora and the Wilson Street Bridge in the City of Batavia is approximately 5 kilometers (3 miles). One purpose of additional crossings is to link each of these communities more closely across the river and to reduce the time involved traveling to these centralized functions from the opposite side of the River.

There is significant industrial development along the Fabyan Parkway, and shopping centers accessed by the major north-south arterial roadways which are located in Aurora, Batavia and Geneva.

In 1990, employment in Aurora Township was 47,875 and growing. By the year 2020, employment is expected to increase to 57,789. Batavia Township is expecting an increase in employment from 7,800 to 13,635. Currently, a large commercial development is being undertaken along Oak Street west of Randall Road. These employment increases require access and generate additional regional traffic.

1.4.3.3 Serve Proposed Land Use

West of the City of Batavia, the new town of Mill Creek is being developed. It will contain approximately 2,700 dwelling units at build out.

The *Village of North Aurora's Land Use Plan* together with their Transportation Plan and Community Facilities Plan articulate the Village's development policy for the future. The Plan's major development features include an extensive west side commercial district along Orchard Road, the creation of a high-quality office/research "business park" located within the Interstate 88 Tollway corridor, and the creation of new neighborhoods west of Randall Road.

CHAPTER TWO
AFFECTED ENVIRONMENT

2.1 Overall Project

2.1.1 Socioeconomics

2.1.1.1 Land Use

Kane County's historical land use development pattern has been to establish higher densities and compact development to the east and rural/agricultural land uses to the west. This pattern of development dates from the middle 19th century when settlers from the East Coast first came to northeast Illinois. As settlers arrived, traditional town centers developed along the Fox River, where transportation linkages provided access to the concentrations of housing, employment, shopping, recreation, and the other daily needs of the emerging communities. Western Kane County contained fertile land for agriculture, which supported a vigorous agricultural economy. Small villages were established in more remote areas to serve the daily needs of the surrounding farming community. Over time this initial east/west development pattern has been reinforced. Communities along the Fox River have continued to grow in area, population, and jobs while the agricultural resources in the western portion of the county have been passed from generation to generation. Weaving a web throughout the County is a rich and diverse open space system and natural resource base.

Kane County desires to retain and reinforce this historical pattern of development. To retain both agricultural and non-agricultural land use patterns, the County's *2020 Land Resource Management Plan (June 1996)* identifies three separate, conceptual land use strategy areas: the Urban Corridor, the Critical Growth Area, and the Agricultural/Village Area (see Exhibit 1.1-5 for land use areas). The goals for these areas are explained in more detail in Chapter 1.0: Purpose and Need, but they essentially aim to promote future development along the Fox River (Urban Corridor) and maintain agriculture as a viable land use and way of life in the western third of the County (Agricultural/Village Area). The central portion of the County is envisioned as a transitional area with limited development potential that is sensitive to the rural character. For analytical comparisons in this document, the Urban Corridor has been approximated by the eastern townships in the County, the Critical Growth Area by the central townships, and the Agricultural/Village Area by the western townships.

2.1.1.2 Kane County Population

In 1990, Kane County was home to 317,471 people. The Northeastern Illinois Planning Commission (NIPC) projects that population will reach 552,944 people by the year 2020 (see Table 1.1-1). These figures indicate that 254% more growth is anticipated during the 30 years following 1990 than occurred in the twenty years preceding 1990. In comparison, the population of the entire Chicago metropolitan region is expected to grow by only 21 percent from 1990 to the

year 2020. Consistent with the *2020 Land Resource Management Plan,* most of the County's future growth (71 percent) is expected to occur in the eastern townships (see Exhibit 2.1-1 for Township definitions and see Table 2.1-1 for growth projections).

Table 2.1-1
Kane County Population

Township	1990	2020	Percent Change
Urban Corridor			
Aurora	101,769	127,087	25%
Batavia/Geneva	36,331	68,325	88%
Dundee	39,070	72,717	86%
Elgin	72,355	123,353	70%
St. Charles	33,112	59,457	80%
Sub-Total	282,637	450,939	60%
Percent of Total	89.0%	81.6%	
Critical Growth Area			
Blackberry	3,658	12,288	236%
Campton	9,473	12,288	117%
Plato	3,469	5,503	57%
Rutland	2,549	30,140	1,082%
Sugar Grove	5,514	19,054	246%
Sub-Total	24,663	87,563	255%
Percent of Total	7.8%	15.8%	
Agricultural/Village Area			
Big Rock	1,948	2,385	22%
Burlington	1,555	1,973	27%
Hampshire	3,398	6,227	83%
Kaneville	1,367	1,642	20%
Virgil	1,903	2,215	16%
Sub-Total	10,171	14,442	42%
Percent of Total	3.2%	2.6%	
Total	317,471	552,944	74%

Source: Final Population, Household, and Employment Forecast Results for 2020, Northeastern Illinois Planning Commission, adopted November 1997.

The racial composition of Kane County is predominantly white as seen from the following table. This table also indicates a large Hispanic population in the County (13.7 percent). The racial composition of municipalities is presented in the respective regional discussions.

Table 2.1-2
Kane County Population by Race

	Total Persons	White	Black	Amer. Indian/ Eskimo	Asian or Pacific Islander	Other Race	Hispanic (any race)
Number	317,471	269,675	19,006	620	4,474	23,696	43,535
Percent	100%	84.9%	6.0%	0.2%	1.4%	7.5%	13.7%

Source: 1990 Census of Population and Housing." Summary Tape File 1A (CD-Rom). East North Central Division (Volume 2). U.S. Department of Commerce, Bureau of the Census, Data User Services Division. September 1991.

2.1.1.3 Community Cohesion

Community cohesion refers to functional and social relationships within a defined area that give it a unique character and identity. The more intense, frequent and localized the relationships, the stronger the cohesion or "social fabric" of the area.

Historically, the Fox River was a factor in generating and linking community development. It provided transportation, energy, food, water and recreation. Centers of economic activity, both commercial and industrial, developed around the highway and rail crossings. Residential growth surrounding these concentrations became town centers which provided a wide range of goods and services to the surrounding residential neighborhoods. The river provided opportunities for shared activities and a unique aesthetic identity. As growth emanated away from the river, new centers of commerce and industry and new residential communities developed which were not as directly related to the river. However, many service districts were established reflecting the original settlement pattern along the river. Consequently, the river crossings played an important role in linking people with services and facilities on the opposite side. The crossings represent a key factor in maintaining the cohesion between elements of communities physically separated by the river corridor.

As the communities have grown, as described in Section 1.1.3, the population has become automobile oriented both in terms of auto ownership and vehicle miles of travel per household. Consequently, automobile volumes utilizing the existing bridges have expanded, increasing amounts of through traffic mixing with local traffic. The result has been an increase in congestion, which constrains the movement of people and goods across both the Fox River and across the arterials which lead to the bridges. Communities which have historic town centers surrounding the river crossing support retail functions which encourage pedestrian movement, on street parking and direct property access. These localized uses and functions often conflict with

the function of the arterials carrying high volumes of through traffic. During peak hours, public service and emergency functions, as well as a wide range of personal trips requiring access across the river, are delayed due to congestion.

Public service districts define areas within which there are social and functional relationships. Exhibits 2.1-2, 2.1-3, and 2.1-4 show that the river divides the service districts (school, fire, and park, respectively) in the Fox River communities. Within the service districts are smaller areas which further reinforce a sense of identity and social cohesion. These include: subdivisions, neighborhoods, institutions such as colleges, historic districts, and traditional central business districts (downtowns). Smaller areas exhibiting aspects of social cohesion generally are not bisected by major roadways or the Fox River. Historic downtowns are a notable exception.

2.1.1.4 Kane County Economics

The distribution of jobs in the Chicago metropolitan areas followed a similar pattern to that of population in the years following 1950. The suburban share of total Chicago metropolitan area employment increased from approximately 44 percent to 61 percent in the 20 years between 1970 and 1990. Job growth is expected to continue in Kane County. The NIPC projections indicate there were an estimated 145,350 jobs in the County in 1990 (see Table 2.1-5). Of this total, approximately 90 percent were located in the eastern townships, or Urban Corridor, as defined by the *2020 Land Resource Management Plan*. The central townships (Critical Growth area) and the western townships (Agricultural/Village Area) accounted for only 8 percent and 2 percent of total employment, respectively. The NIPC projections also indicate that Kane County's job base is expected to expand approximately 53 percent by the year 2020. In comparison, the entire metropolitan region is expected to sustain a 37.3 percent increase in jobs. Approximately 89 percent of the projected job growth in Kane County will occur within the Urban Corridor.

The 1990 Census data comparing household income, poverty and unemployment rates in Kane County, DuPage County, the Chicago Metropolitan Region, and Illinois are provided in Table 2.1-3.

A total of 28.2% of the 160,944 employed persons 16 years of age or older residing in Kane County are employed in service industries (includes: business/repair services, personal services, entertainment, health, education, and other professional services). Manufacturing and retail trades contain the next highest employment levels with 26.0% and 15.5% of those working, respectively. No other industry employs greater than 7 percent of the Kane County Employment base. The agriculture, forestry and fishery industries account for only 1.6% of the total. Conversely, agriculture is the largest land user in Kane County (64.3% of total acreage) and residential development is second (14.9%) (Source: NIPC Bulletin 95-1).

There were approximately 749 manufacturing establishments in Kane County in 1987, and 2,636 retail, 579 wholesale, and 1,994 service establishments (including banks and savings institutions). Kane County's largest employers are listed below in Table 2.1-4. Growth in County employment is indicated in Table 2.1-5.

Table 2.1-3 1990 Income, Unemployment and Poverty Statistics			
Area	**Median Household Income**	**Percent Persons Unemployed[i]**	**Percent Persons Below Poverty Level[ii]**
Kane County	$40,080	4.7%	6.8%
DuPage County	$48,876	3.1%	2.7%
Chicago Region[iii]	N/A	6.7%	11.3%
Illinois	$32,252	6.6%	11.9%

Source: 1990 Census of Population and Housing. Summary Social, Economic and Housing Characteristics. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. June 1992.

[i]Civilian labor force
[ii]Does not include institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.
[iii]Includes: Cook, DuPage, Kane, Lake, McHenry, and Will Counties.

Table 2.1-4 Kane County's Largest Employers	
Company	**Estimated Employment**
Caterpillar Tractor Company (Aurora)	3,050
Fermi Lab (Batavia)	2,400
Sherman Hospital (Elgin)	1,800
First Chicago (Elgin)	1,800
Hollywood Casino (Aurora)	1,500
Fox Valley Health Services Corp. (Aurora)	1,500
Safety Kleen (Elgin)	1,400
Illinois Department of Mental Health (Elgin)	1,200
Arthur Andersen & Co. (St. Charles)	1,100
Jewel/Osco Stores (Countywide)	1,100
Metropolitan Life Insurance (Aurora)	1,100
Mercy Health Care Services (Aurora)	1,000
St. Charles School District (St. Charles)	1,000

Source: Economic Profile of Kane County. Illinois Department of Commerce and Community Affairs. 1991-1992.

Table 2.1-5 Kane County Employment			
Township/Area	**1990**	**2020**	**Percent Change**
Urban Corridor			
Aurora	47,875	57,789	20.7%
Batavia/Geneva	16,972	27,631	62.8%
Dundee	20,504	38,167	86.1%
Elgin	32,775	45,595	39.1%
St. Charles	20,322	30,090	48.1%
Sub-Total	138,448	199,272	43.9%
Percent of Total	95.3%	89.3%	
Critical Growth Area			
Blackberry	1,427	2,827	98.1%
Campton	634	1,858	193.1%
Plato	197	1,111	464.0%
Rutland	635	7,447	1072.8%
Sugar Grove	1,586	5,204	228.1%
Sub-Total	4,479	18,447	311.9%
Percent of Total	3.1%	8.3%	
Agri./Village Area			
Big Rock	527	899	70.6%
Burlington	258	500	93.8%
Hampshire	865	2,728	215.4%
Kaneville	276	432	56.5%
Virgil	352	762	116.5%
Sub-Total	2,278	5,321	133.6%
Percent of Total	1.6%	2.4%	
Kane County	145,350	223,040	53.5%

Source: Final Population, Household and Employment Forecast Results, Northeastern Illinois Planning Commission, adopted November 1997.

2.1.1.5 Environmental Justice

Environmental Justice; is to avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and/or low-income populations. Environmental Justice ensures full and fair participation by all potentially affected communities in the transportation decision-making process and finally Environmental Justice is to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations. This project must comply with Executive Order12898, dated February 11,1994

Poverty guidelines are Federal poverty measures, which are issued each year in the Federal Register by the Department of Health and Human services (HHS). The guidelines are a simplification of the poverty thresholds used for administrative purposes, for instance, determining financial eligibilities for certain federal programs.

Since this project is encompassing the three regions within the Kane County proper and each region has its own specific Environmental Justice issues, the particular region's environmental justice issues, will be addressed under each specific region's section in this EIS.

2.1.2 Agriculture

2.1.2.1 County Perspective

The project area is within the Urban Corridor defined in Kane County's *2020 Land Resource Management Plan* (see Exhibit 1.1-4). Agricultural areas within the study corridors are fragmented by rapidly expanding urban development. The *2020 Land Resource Management Plan* designates the western portion of the County (outside of the project area) as an Agriculture Priority Area. That means this western area is will be zoned for agriculture. Since the agricultural areas under review as part of this project are wholly within the municipal boundaries and/or planning jurisdictions of the communities along the Fox River (extending up to 2.4 kilometers - 1.5 miles outside their boundaries), and are officially planned and/or zoned for more intense, urban, non-agrarian uses, coordination with U.S. Department of Agriculture and the Illinois Department of Agriculture is not required for this project.

Kane County adopted the Agricultural Conservation Easement and Farmland Protection Program in April 2001. This program aims to protect farm operations while maintaining the rural character of Kane County. In order to ensure that land is utilized for agriculture, the county is allowed to make payment to farmers with the stipulation that their land is reserved for agricultural purposes only. Furthermore, this program permits the County to acquire conservation interests from willing owners and re-sell the land with the stipulation that it be used for farming. In addition, environmentally significant areas, including wetlands, lakes and streams, as well as, scenic vistas are permanently preserved.

As shown in the *Illinois Agricultural Statistics Annual Summary - 1996*, Kane County in 1992 had 703 farms encompassing 82,390 hectares (203,590 acres) (note: this figure does not include 334

hectares in the Conservation Reserve Program) out of a total 134,700 hectares (332,800 acres) in the County, or 61%. By contrast, in 1974 the approximate acreage in agriculture was 102,800 hectares (254,000 acres). Nearby DuPage County in 1992 had 95 farms on 7,368 hectares (18,206 acres).

The value of all cash crops in Kane County in 1994 was $80,381,000. By contrast, in DuPage County it was $24,154,000. All livestock and products cash receipts in Kane County in 1994 were $24,430,000, of which 51% was in cattle and calves and 23% was in hogs and pigs. Nearby DuPage County had receipts of $836,000, of which less than 10% was in cattle and 36% in hogs and pigs.

2.1.2.2 Prime and Other Farmland

Farmland is a valuable resource. The Illinois Farmland Preservation Act (505 ILCS 75/1) and the federal Farmland Protection Policy Act (7 USC 4201-4209) recognize this and provide guidance on how to minimize the loss of farmland.

The U.S. Department of Agriculture classifies soils based upon their potential value to agricultural production. Prime farmland is that land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses (i.e., the land can be cropland, pastureland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods.

Farmland of statewide importance is defined as land that is valuable for the production of food, feed, forage, fiber and oilseed crops. It does not have the physical or chemical characteristics to be classified as prime.

Other lands (those that are of limited value for production due to physical or chemical criteria), urban built-up land, and water areas, are not evaluated for agricultural impacts.

Based upon worksheets provided by the National Resources Conservation Service (formerly the Soil Conservation Service) of the U. S. Department of Agriculture, 79.7% (10,568 hectares - 261,138 acres) of Kane County is prime farmland and 17.4% (23,036 hectares - 56,921 acres) of Kane County is of statewide importance farmland. In DuPage County 53.3% is prime farmland (45,757 hectares - 113,066 acres) and 10.6% is of statewide importance (9,119 hectares - 22,534 acres).

2.1.2.3 Centennial Farms

The Illinois Department of Agriculture maintains a list of Centennial Farms. These are properties that have been maintained in agricultural usage by the same family for over 100 years. While in July 1997 there were 28 centennial farms in Kane County and 5 in DuPage Count, none are near any of the proposed corridors.

2.1.3 Special Lands (Forest Preserves, Parks, etc.)

The designation "special lands" used here applies to publicly owned parks, recreation areas or wildlife and wildlife refuges. It also includes those properties that have received Land and Water Conservation Funds, regardless of whether they are in a publicly owned park, recreation area, or wildlife refuge. Within the project area, this designation involves only forest preserves, park properties, and trails.

The project area is rich with forest preserves and local parks (see Exhibit 2.1-5 for a map of those in the project area). While the Kane County Forest Preserve has holdings throughout the County, much of their program has been focused along the Fox River. Kane County Forest Preserve District owns 38 forest preserves and numerous trails occupying over 2,800 hectares (7,000 acres). The activities accommodated include camping, picnicking, golf, hiking, fishing, and an events center. The Forest Preserve District has designated a number of areas as Natural Areas. The Forest Preserve District intends to restore these Natural Areas to the natural plant communities that existed before farming activities. The Forest Preserve system is supplemented by an extensive local parks system, focused more strongly on local recreational concerns.

The only special lands of interest to more than one region are the Fox River Trail and the Illinois Prairie Path. They are discussed below. The other properties, including those under the jurisdiction of the Illinois Department of Natural Resources, the Kane County Forest Preserve, the DuPage County Forest Preserve, the Dundee Township Park District, the Village of Wayne, the St. Charles Park District and the Fox Valley Park District are discussed in their respective regions.

Fox River Trail - Kane County Forest Preserve, St. Charles Park District, Fox Valley Park District

The Fox River Trail is a multi-purpose, non-motorized trail made up of County forest preserve land, local parks, rail-to-trail conversions, local streets and sidewalks that form a 52.3 kilometer (32.5 mile) greenway along the Fox River in McHenry, Kane and Kendall Counties. Within Kane County the Fox River Trail exists on one and sometimes both riverbanks for the entire length of Kane County (see Exhibit 2.1-5). The Fox River Trail is connected to the Illinois Prairie Path in Elgin, Geneva, Batavia and Aurora, and to the Great Western Trail in St. Charles.

The majority of the Fox River Trail is owned and maintained by the Forest Preserve District of Kane County and goes through or by various forest preserves. The Fox Valley Park District owns and maintains the portions of the trail within Batavia and Aurora Townships. The St. Charles Park District owns and maintains that portion within the City of St. Charles. Within St. Charles, much of the trail is on local streets with signs marking it.

Illinois Prairie Path - Kane County Forest Preserve, St. Charles Park District, Fox Valley Park District

The Illinois Prairie Path is a 88 kilometer (55 mile) hiking, biking, equestrian, nature trail in

Cook, DuPage and Kane Counties. The trail follows the right-of-way of the former Chicago, Aurora and Elgin Railway, an electric commuter line which suspended operations in 1957 and abandoned the property in 1961. The right-of-way forms a horizontal 'Y' shape: starting on the east at First Avenue in the Village of Maywood, the trail proceeds west to the City of Wheaton where it branches north to Elgin and south to Aurora. There are also side spurs off the north and south branches to Geneva and Batavia respectively (see Exhibit 2.1-5). In 1971, the trail was designated a recreation trail in the National Trail System, the first trail in Illinois so designated.

In January 1972 the Illinois Department of Conservation (now the Department of Natural Resources) acquired the Kane County segments of the old Chicago, Aurora and Elgin Railway and at first leased, and later sold, the property to the Forest Preserve District of Kane County and the Fox Valley Park District as part of the Illinois Prairie Path. In Kane County, the Illinois Department of Natural Resources' interests in the Illinois Prairie Path have been transferred to the Forest Preserve District of Kane County - 35 hectares (86 acres), the Fox Valley Park District - 0.4 hectare (1 acre), and the Sanitary District of Elgin - 0.05 hectare (0.1 acre). Most municipalities along the trail also cooperate in maintenance of the path.

2.1.4 Transportation

The Chicago Area Transportation Study has been developing the *Destination 2020/Regional Transportation Plan*. This plan was adopted December of 1997 and updated with a year 2000 edition. Within the plan are recommended components of the regional transportation system, including improvements to transit and highway facilities.

As a supplemental planning effort, Metra (the commuter rail provider) is undertaking a Major Investment Study for improved transportation in Central Kane County. This study is to be a "framework for a collaborative planning process to ensure that the best possible investment decision is made". This study was completed with a recommendation that commuter rail service should be extended on the UP West line to Elburn. Other corridors that had been considered at one point, i.e., the Great Western corridor in St. Charles and the CNIC South Elgin, are not being considered further.

2.1.4.1 Roadway

The Fox River is a natural barrier to the east-west component of the roadway network in Kane County (see Exhibit 1.0-1). East-west traffic movement is focused onto the few bridge crossings of the Fox River, resulting in local and regional traffic congestion around the Fox River at the bridge crossing locations (see Section 1.1.4.3 for additional discussion).

Interstate Route 90 (Northwest Tollway) and Interstate Route 88 (East-West Tollway) are the two primary east-west highway river crossings within the project area. Other east-west arterial crossings are Illinois Routes 62, 72, 64, 38 and 56, U.S. Route 20, and Fabyan Parkway. The remaining eight river crossings within the project area are local, two-lane streets. The arterials in the north-south direction within the project area are Illinois Route 25 on the east side of the Fox

River and Illinois Route 31 and Randall Road on the west side of the river. Illinois Route 59 is east of the study area. These north-south arterials parallel the river for its entire length in Kane County. For most of their length in Kane County, Illinois Routes 31 and 25 are two lane winding roads.

The Strategic Regional Arterial (SRA) system was devised to supplement the overburdened freeway system. Improvements to designated SRA routes enhance accessibility in the region without the major investment and impacts associated with new highways. Currently, most of the east-west SRA's stop near the Kane County/DuPage County line (See Exhibit 1.1-6 and Table 1.1-3). As densities increase and traffic grows, this system can be reevaluated and expanded.

The Orchard Road Bridge in Yorkville, Kendall County was opened to traffic in the September of 2001. The Sullivan Road Bridge in Aurora, Kane County, is still in the design and right-of-way acquisition phase due to jurisdictional problems. Both of these bridges were analyzed in the Chicago Area Transportation Study's (CATS) 1990 *Fox River Bridge Study* (see Section 1.1.2 for project history).

Nearby roadway improvements listed in the CATS *2020 Regional Transportation Plan* are an additional lane in each direction on the Northwest Tollway (I-90) from Randall Road to Illinois Route 25 and an additional lane in each direction on the East-West Tollway (I-88) from Illinois Route 31 to east to I-290.

2.1.4.2 Transit

Metra (Northeast Illinois Regional Commuter Railroad Corporation)

Existing Metra commuter rail lines in Kane County are the Milwaukee District West Line which runs from Union Station in Chicago to the Big Timber station in the City of Elgin, the Chicago & NorthWestern (Union Pacific) West Line which runs from the NorthWestern Station in Chicago to the City of Geneva, and the Burlington Northern Line which runs from Chicago's Union Station to the City of Aurora.

In the *Future Agenda for Suburban Transportation*, the joint comprehensive plan for Metra and Pace, Metra proposes to extend all three lines which currently terminate in the project area. The Milwaukee District West Line track would be extended more than 17 kilometers (11 miles) northwest to the Village of Huntley and more than 17 kilometers (11 miles) southwest to the Village of Hampshire. The Chicago & NorthWestern West Line would be extended more than 13 kilometers (8 miles) to the Village of Elburn. The Burlington Northern Line would be extended more than 11 kilometers (7 miles) west to the Village of Sugar Grove and less than 5 kilometers (3 miles) south to the Village of Montgomery.

New rail service is proposed on the Elgin, Joliet, and Eastern (EJ&E) Railway, a circumferential freight line which runs in a semicircle at the periphery of the Chicagoland Region. This proposed suburb-to-suburb line is included in the *2020 Regional Transportation Plan*. The shortest practicable segment of the EJ&E which appears to be physically implementable extends from the

Burlington Northern Line in the City of Aurora to the Chicago & NorthWestern Northwest Line in the Village of Barrington, a distance of approximately 45 kilometers (28 miles). This line would connect to the three existing Metra lines in Kane County.

Metra also has an ongoing process of examining long-range opportunities in other corridors identified as "corridors of the future." There are currently six "corridors of the future" within the Fox River Bridges project area: the Illinois Central (formerly the CC&P) line from the City of Rockford in Winnebago County to the City of Elmhurst in DuPage County; an extension of the Chicago & NorthWestern West Line from the Village of Elburn to DeKalb; the former C&NW Fox Valley right-of-way from the City of Aurora in Kane County to the City of Crystal Lake in McHenry County; along Randall Road from the City of Aurora to the City of Crystal Lake; the former Chicago Great Western right-of-way from the City of Lombard in DuPage County to the City of St. Charles; the East-West Tollway and former CGW right-of-way from the Village of Forest Park to the Village of North Aurora; and along the Elgin-O'Hare expressway.

Pace

Bus service in the region is provided by Pace, the suburban bus division of the Regional Transportation Authority. Pace provides four different types of transit service: traditional fixed routes, limited express bus, dial-a-ride and custom services. Within the overall project area there are 26 existing fixed route lines. Kane County currently has no limited express service, although one route is proposed for the year 2010. Dial-a-ride is a service designed for compliance with the Americans with Disabilities Act (ADA). Through dial-a-ride, Pace offers curb-to-curb transit service to the general public with particular emphasis on the mobility-limited population. Dial-a-ride service is available throughout most of the eastern third of the county and is proposed to be available countywide by the year 2010. Custom services such as subscription bus service, midday circulators, seasonal routes and vanpool operations are currently available in limited areas of Kane County. The bulk of proposed expansion of the custom services is earmarked for vanpool and subscription bus service.

Pace's *Comprehensive Operation Plan* (1992) identifies a number of proposed system improvements in the project area. Park-n-Ride facilities are the primary collection points for Pace customers. Pace currently serves two Park-n-Ride lots in Kane County and has proposed another nine. Transportation Centers serve six or more bus routes and often contain passenger structures, and include a variety of passenger amenities. Transfer facilities serve five or less bus routes and are essentially smaller versions of transportation centers. Pace currently operates two transportation centers and no transfer facilities in Kane County. Pace proposes two new transportation centers and five transfer facilities in Kane County by the year 2010.

2.1.4.3 Non-Motorized Transportation

There are three long-distance trails of statewide significance in Kane County (as defined by the Illinois Department of Natural Resources): the Fox River Trail, the Great Western Trail and the Illinois Prairie Path. A segment of the Illinois Prairie Path and the portion of the Fox River Trail north of the City of St. Charles are also sections of the proposed Grand Illinois Trail. For a more

complete description of the trails potentially affected by the project, see Section 2.1.3.

2.1.4.4 Other Modes

A number of freight railroad lines cross the study area. These include lines operated by the Union Pacific Railroad (the current owner of what was the Chicago & NorthWestern Railroad), the Illinois Central Railroad (the current owner of what was the Chicago Central & Pacific Railroad), the EJ&E Railway and the Burlington Northern Santa Fe Railroad. These lines are more fully discussed as they relate to the individual regions and corridors.

A seaplane base is located on the Fox River between the South Elgin dam and the Northwest Tollway (I-90). The DuPage County airport is located east of St. Charles. These aviation facilities will have no influence on this project. There are no other aviation or other modes of transportation facilities known that are relevant to this project.

2.1.5 Cultural Resources

For this project to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470) and its implementing regulations, "Protection of Historic Properties" (36 CFR 800) and the Illinois State Agency Historic Resources Preservation Act (P.A. 86-707, as amended), Heritage Research, Ltd. was retained under subcontract to the Illinois Transportation Archaeology Program (ITARP) at the University of Illinois at Urbana-Champaign, to prepare a report identifying historic architectural resources within the corridor areas and to recommend those which might merit consideration for eligibility for listing on the National Register of Historic Places (NHRP). Likewise, in the Spring of 1995, ITARP and its subcontractor, Northern Illinois University Contract Archaeology Program, initiated a Phase I archaeological resource survey of the proposed roadway corridors. The Illinois Historic Preservation Agency cooperated in the preparation and review of the report findings. Summaries of those findings are described in each region discussion.

Kane County is rich in historical standing structures. Many of the rural historic structures were identified in *Built for Farming - A Guide to the Historic Rural Architecture of Kane County*. There are also numerous historic structures within the urban areas, often as a result of development associated with proximity to the Fox River.

Over one thousand properties, ranging from agricultural outbuildings to large factories, were inventoried for this project. Some 106 of these standing structures, or structure complexes, were photographically recorded and evaluated for their potential National Register eligibility.

Archaeological field crews conducted pedestrian surveys of nearly 90% of the areas contained within the five corridors under consideration. A total of 54 archaeological sites was recorded. Many of these locations had been disturbed by previous land modification (mainly farming and construction over the past 150 years). The prehistoric components represent a number of temporally distinct Native American habitation sites, dating from 9,000 to 500 years old, based

upon recovery during the survey of particular styles and types of artifacts. Indicative of the intensive historic Euro-American occupation of the Fox Valley, most of the archaeological sites found contained cultural materials dating from the 1840's to the mid-20th century. Much of this historic period cultural material is derived from agriculturally based settlements and farmsteads.

2.1.6 Geology

The geologic setting for the project area includes a thick sequence of Paleozoic bedrock on the order of 1,220 meters (4,000 feet) thick covered by a relatively thin mantle of glacial and alluvial sediments from 107 to less than 3 meters (350 to less than 10 feet) thick. The bedrock is exposed at several locations along the banks of the Fox River and in several quarries. Development of resources from these geologic materials include quarries in the dolomite, sand and gravel pits and peat in the unconsolidated deposits, and groundwater from both the bedrock and glacial materials (Gilkeson and Westerman, 1976). Local demand for these resources is met by supply.

2.1.6.1 Bedrock and Structural Geology

The top of the Precambrian basement rock is from 760 to 1,680 meters (2,500 to 5,500 feet) below the ground surface throughout the Chicago area (Willman, 1971). The crystalline Precambrian bedrock in Kane County consists of a red granite. Overlying the Precambrian are Paleozoic units that include Cambrian sandstone, dolomitic sandstone and dolomite; Ordovician sandstone, dolomite and shale; and Silurian dolomite. The bedrock surface is generally composed of Ordovician age Maquoketa shale toward the west and Silurian age Niagran dolomite to the east in Kane County (Curry and Seaber, 1990). These sedimentary rocks dip gently eastward in the project area from the Wisconsin Arch, located west-northwest of the project area.

The top of the bedrock in the study area is incised with the St. Charles Bedrock Valley, which trends southwestward near the current Fox River Valley. Bedrock units incised by the St. Charles Bedrock Valley include the Silurian age Kankakee and Elwood Formations, and Ordovician age Maquoketa and Galena Groups (Curry and Seaber, 1990). Exhibit 2.1-6 shows the stratigraphy along an east-west section in northern Kane County.

The bedrock is generally intact below the weathered surface zone, showing only minimal solution features and no large scale karst. The bedrock supports significant loads and provides a suitable base for most construction projects, including foundations for bridge or highway piers.

2.1.6.2 Surface Geology and Topography

The deposits overlying the bedrock in Kane County are Pleistocene glacial drifts ranging in thickness from over 107 meters (350 feet) to less than 3 meters (10 feet). The glacial drift includes: silty clay till deposits of Illinoian age Glasford Formation drift; stratified sand and gravel of the Pearl Formation; glacial drift and outwash sand and gravel deposits of the Wisconsinan age

Tiskilwa, Yorkville, and Haeger tills; and surface deposits of the Henry Formation sand and gravel. Isolated peat deposits (Grayslake Peat) are found above both the till and outward in some areas of southern Kane County. The till is a generally unstratified, heterogeneous mixture of clay, silt, sand, gravel and boulders deposited directly and indirectly by the glacial ice. The outwash is typically coarse sand and gravel deposits resulting from the glacial meltwater. The glacial morphology in Kane County consists of the prominent Marengo Moraine in the northwest part of the county, the Elburn Complex of kames, eskers, and hummucky drift plains covering much of the county, the St. Charles Moraine which is west of the Fox River, and the Minooka Moraine east of the river. The Gilberts, West Chicago, and Barlina Moraines are also present in the north part of the county.

The drift thickness (Exhibit 2.1.6b) reflects the moraine ridges and the infilled preglacial valleys that were eroded into the bedrock extending northeast to southwest beneath much of eastern and southern Kane County. The drift in the St. Charles Bedrock Valley is mostly stratified sand and gravel (Pearl Formation) and loam to clay loam diamicton (Glasford Formation).

Soils and Associated Ecotypes

Seven major ecotypes, plant communities, are typically developed on the soil types which were mapped in the study area (*Kane County Soil Survey*, 1973). The ecotypes, associated soil types, and parent materials on which these soils and ecotypes developed are:

Ecotype	Soil Type	Parent Material
Wet Savanna	Beecher Silt Loam	Clay till
	Herbert Silt Loam	loess over loam till
	Wauconda Silt Loam	Stratified loamy outwash
Mesic Savanna	Bowes Silt Loam	gravelly sand
	Dresden Silt Loam	loamy outwash
	Harvard Silt Loam	loess-cover outwash
	Markham Silt Loam	Silty clay loam till
	Octagon Silt Loam	loamy till
Mesic Prairie	Brenton Silt Loam	loam outwash
	Catlin Silt Loam	loam
	La Rose Silt Loam	loam till
	Lorenzo Loam	loamy outwash
	Proctor Silt Loam	loamy outwash
	Rodman Soils	gravelly sand in kamic moraines and eskers
	Saybrook Silt Loam	loess covered loam till
	Varna Silt Loam	clay loam till on uplands
	Wausaw Loam	loamy outwash and sand and gravel terraces
Mesic Forest	Camden Silt Loam	loess over loamy outwash

	Casco Loam	gravelly outwash
	Fox Silt Loam	outwash
	Kidder Silt Loam	loess over sandy loam till
	Miami Silt Loam	loam till
	Morley Silt Loam	silty clay loam till
	Rush Silt Loam	loamy sediments
Wet Prairie	Drummer Silty Clay Loam	loamy outwash
	Faxon-Ripon Complex	loamy alluvium
	Harpster Silty Clay Loam	glacial till and outwash
	Milford Silty Clay Loam	loamy sediments
	Millington Loam	stratified alluvium
	Mundelein Silt Loam	loamy outwash
	Otter Silt Loam	loamy alluvium
	Peotone Silt Loam	silty sediments
	Thorp Silt Loam	loess over loamy outwash
	Will Silty Clay Loam	loamy outwash over sand and gravel
Wet Mesic Prairie	Elliot Silt Loam	silty clay loam till
	Flanagan Silt Loam	loam till
Bog / Fen	Houghton Muck	herbaceous organic deposits
	Lena Muck	herbaceous organic deposits.

2.1.6.3 Mineral Resources

Kane County ranks as one of the leading producers of certain mineral products (sand, gravel and stone) in Illinois. Although records are no longer kept on a county-by-county basis, the last year (1984) for which records were available regarding sand and gravel mining by county, (Samson, 1988), Kane County ranked first in sand and gravel production with 4,291,000 tons. Records for 1997 (Masters, 1999) report 17 active sand and gravel pits in Kane County, two of which are within the study areas, including Fox River Stone and Meyer Material.

Records from 1985, show that Kane County produced 961,000 tons, apparently second only to Cook County. Three quarries were reportedly active in Kane County in 1997 (Masters, et al 1999). Two of the three are in eastern Kane County, within the project study area (Exhibit 2.1.6c), including Fox River Stone and Conco Western Stone Company.

2.1.6.4 Groundwater Resources

Groundwater development in Kane County and surrounding areas has been sufficient to lower

water levels in the deep Midwest and Basal Bedrock Aquigroups by more than 900 feet in recent years (Sasman et al., 1982; Curry and Seaber, 1990). Groundwater resources have been identified in three major aquifer groups in the study area, all of which lie beneath the Fox River Valley and immediate surrounding area of this study:

- Upper unconfined sand and gravel aquifers,
- Lower confined sand and gravel aquifers,
- Bedrock aquifers including the shallower Silurian and Ordovician dolomites and the deeper Cambrian and Ordovician sandstones.

An aquifer is described as a layer of earth material with sufficient groundwater and permeability to supply water to a well. The top of an unconfined aquifer is the local water table. A confined aquifer is a water-yielding layer which is under pressure and capped or covered by an overlying relatively impermeable strata. This overlying strata with low permeability is known as an aquitard and provides natural protection to the aquifer from surficial contamination.

According to the US Environmental Protection Agency website (as of February 1, 2001 there are no sole source aquifers, as defined by Section 1424(e) of the Safe Drinking Water Act, in Illinois. Water supplies are obtained from both public and private water supply wells and surface water within the corridor and study area. The Illinois State Water Survey Groundwater Quality Database, with records from 1911 to 1991, was utilized to obtain records for vicinity water wells. Well data were collected for wells within one mile of the corridors.

The upper unconfined sand and gravel aquifers include:

- Valparaiso Aquifer - 30 meters (100 feet) thick, most extensive in eastern and northern parts of the County.
- Elburn Aquiformation - includes aquitard and aquifer bodies; central and south central Kane County.
- Kaneville Aquifer - limited extent, somewhat discontinuous, part of Elburn Aquiformation.
- Bloomington Aquifer - poorly sorted gravelly sand usually less than 15 meters (50 feet) thick.
- Pingree Grove Aquifer - stratified sand, silt, peat, clay and marl; present beneath lakes, rivers and streams.
  (Curry and Seaber, 1990)

The Marengo aquitard typically separates the upper and lower sand and gravel aquifers. The principal unit comprising the lower, confined sand and gravel aquifer in the study area is the St. Charles aquifer which occupies the bedrock valley of the same name. The stratigraphic units comprising the St. Charles aquifer are the sand and gravel facies of the Wedron Group and Glasford Formation, which can range to more than 36 meters (120 feet) thick. This aquifer is commonly in hydrologic connection with the upper bedrock aquifer.

In Kane County, the upper bedrock aquifer consists of the fractured and weathered Silurian

dolomite of the Kankakee and Elwood Formations, and is often in direct hydrologic connection with the lower confined sand and gravel aquifer lying directly above. The other, deeper bedrock aquifers that supply significant yields, specifically in the southern part of the County where the Silurian is absent, are the Cambrian age St. Peter and Glenwood aquifers.

There were 14 public water supply wells within one mile of the proposed corridors listed in the ISWS Groundwater Quality Database. Seven of these wells are less than 152 meters (500 feet) deep, and as such, may be more prone to impacts from surface contamination than deeper wells. There are 635 private wells on record within approximately 1.6 kilometers (1 mile) of the five proposed corridors, with 96% of these less than 152 meters (500 feet) deep.

2.1.6.5 Groundwater Quality

The ISWS Groundwater Quality Database was utilized to evaluate groundwater quality for this proposed project; the database includes analyses of public and private water supply wells. Within the 1.6 kilometer (1 mile) wide corridor for which data were reviewed, the ISWS Groundwater Quality Database included water quality data on 45 shallow wells and 25 deep wells, with deep wells being those greater than 152 meters (500 ft). The dates of the analyses range from 1911 to 1991 and include a variety of physical and chemical parameters.

The data indicate some existing water quality measurements for the study area exceed the Class I Groundwater Standards, which are the potable water supply standards for Illinois. Most parameters in most wells are below the Class I standards. The exceedances appear to be naturally occurring compounds in the groundwater. Maximum values for nitrates, chlorides, total dissolved solids, barium, manganese and mercury in some deep wells, and nitrates, arsenic, boron, iron, manganese and mercury in some shallow wells exceed Class I standards. Higher values were reported from wells in the southern part of Kane County, particularly the C&NW/Dean Street and Route 56/Oak Street corridors.

One known source of groundwater contamination is the Tri-County Landfill north of the CC&P/Stearns Road corridor, a federal Superfund site. A second potential source is a LUST site at a Speedway service station within the Route 56/Oak Street corridor. Both facilities submit groundwater monitoring reports to IEPA. The most recent data from the Speedway station indicate wells within the proposed corridor were below detection levels for analyzed contaminants.

Groundwater samples for the D. R. Sperry and Company site along the Route 56/Oak Street corridor in North Aurora, east side of the Fox River, exhibited volatile organic contamination. The analysis was performed in a qualitative fashion, and since the site was avoided, no quantitative analysis was conducted.

2.1.7 Water Quality and Water Resources

The five proposed roadway corridors are all located within a portion of the Fox River basin of Kane County, Illinois. Each of the five proposed corridors crosses the Fox River with several

smaller streams traversed by the individual roadway corridors. These smaller streams are Brewster Creek, Brewster Creek Tributary, and North Arm of Brewster Creek, shown on Exhibit 2.3-8; State Street Creek and Seventh Avenue Creek Tributary, shown on Exhibit 2.3-9; and Indian Creek, shown on Exhibit 2.4-5. These smaller streams represent less than 1.2 percent of the total Fox River drainage area.

Four methodologies have been used to assess the physical, chemical, and biological characteristics of the streams in the corridors. Not all methodologies were available for use on each stream. The methodologies consist of 1) field surveys by the Illinois Natural History Survey (INHS), 2) the Illinois Environmental Protection Agency (IEPA) and Illinois Department of Natural Resources (IDNR) Biological Stream Characterization (BSC) data for area streams, 3) the IEPA designated use support assessments for rivers and streams, and 4) water quality sampling.

The INHS collected fish, mussel, aquatic macroinvertebrate, and water quality data from some of the streams in the project area during 1993 through 1997. The Illinois State Geological Survey (ISGS) also collected water quality samples for Brewster Creek and the North Arm of Brewster Creek. Aquatic and riparian habitats were also assessed. INHS qualitatively described macroinvertebrate species according to their tolerance of low oxygen conditions and abundance.

The IEPA maintains three water quality sampling stations on the Fox River segment within the study corridor. These data were supplemented by sampling of Brewster Creek, Brewster Creek tributaries, and Indian Creek.

The IEPA and IDNR Biological Stream Characterization (BSC) work groups developed a five-tiered classification system predicated largely on the type and condition of the fishery resource and water quality (Bertrand and Hite, 1996). The five categories range from Class A (highest quality) to Class E (lowest quality) and are defined as follows:

Class A - Unique Aquatic Resource
Class B - Highly Valued Aquatic Resource
Class C - Moderate Aquatic Resource
Class D - Limited Aquatic Resource
Class E - Restricted Aquatic Resource

The IEPA also assesses Illinois water bodies for the degree of overall and individual use supports (IEPA, 2000). These individual uses include fish consumption and aquatic life, which apply to all water bodies within the state, along with swimming, secondary contact, drinking and industrial water supplies whose uses apply to defined water body segments. The degree of designated use support is described in terms of full support of the use, partial support and nonsupport.

With regard to Illinois water quality standards, all streams in the project area fall under the General Use Water Quality Standards. The Public Water Supply Standards also apply to the segment of the Fox River where Elgin and Aurora have their water intakes. Aurora receives

approximately 50 percent of its potable water from the Fox River.

Tables 2.1-6 and 2.1-7 provide an overview of the biological and physical characteristics of the Fox River and its tributaries within the project corridors. Detailed descriptions of these resources appear in each corridor section.

TABLE 2.1-6
SUMMARY OF BIOLOGICAL INDICES FOR FOX RIVER

Designated Use	DT-06 (North Area)	DT-09 (Central Area)	DTZ-001 Brewster Creek (Central Area)	East Branch of Brewster Creek	DT-38 (South Area)
Overall Use[a]	Full Support	Partial Support[b]	Full Support[c]	Not assessed	Full Support[d]
Macroinvertebrate Biotic Index (IEPA)	7.6[e]	5.5[e]	4.5[h]	--	5.4[f]
IDNR (1998)	--	--	4.9[k], 5.5[l]	4.7[m]	--
H&H (2000)	--	--	4.9[k], 7.0[l]	5.8[m], 5.9[n]	--
Index of Biotic Integrity (IEPA)	42[e]	36[e]	--	--	43[g]
IDNR (1998)	--	--	38[k], 46[l]	32[m]	--
H&H (2000)	--	--	30[k], 42[l]	30[m], 30[n]	--
Habitat Assessment (IEPA)	60[h][i]	60[h][i]	--	--	60[h][i]
IDNR - SHAP (1998)[j]	--	--	124[k], 110[l]	163[m]	--
H&H (2000)	--	--	--	39.5[n]	--
Length above the crossing (kilometers/miles)	41.2/25.8	78.4/49	3.7/2.3	--	111.3/69.6
Drainage Area above the project (hectares/sq. mi)	363,658/1,404	403,315/1,552	1,720/6.6	--	448,934/1,733

Source: 2000 IEPA Illinois Water Quality Report

(a) Includes overall use, fish consumption, aquatic life and swimming.
(b) Full support of fish consumption.
(c) Use exists, no data available for overall use, fish consumption and swimming designated uses.
(d) Non-support of swimming designated use and fish consumption use not assessed.
(e) IEPA data from 1996.
(f) IEPA data from 1993.
(g) IEPA data from 1988.
(h) 1994-1995 IEPA Illinois Water Quality Report (IEPA, 1996).
(i) MBI ratings: Good (60-41) and Fair (40-31).
(j) SHAP (Stream Habitat Assessment Procedure) ratings: Excellent (≥142), Good (141-100), Fair (100-59), and Poor (≤58).
(k) Upstream of Illinois Route 25.
(l) Downstream of Illinois Route 25.
(m) Upstream of Dunham Road.
(n) Downstream of Dunham Road.

Table 2.1-7
Stream Physical and Biological Characteristics

Corridor/Stream	Total Drainage		Drainage Area Above the Project (hectares)	Flow Type (1)	Stream Substrate (2)	# of Fish Species (3) Collected	# Mussel Species (4) Collected	Watershed Characteristics
	Length (km/mi)	Area (hectares/sq. mi.)						
Bolz Road								
Fox River	184/114	448,585/1725	370,627/1424	P	varying combinations of cobble, gravel, sand & silt. Silt greater along banks and edges of islands, incr. near dams	24	8 Total 7 dead/weathered shells	residential undeveloped agricultural
CC&P/Stearns Road								
Fox River	184/114	448,585/1725	403,520/1552	P	gravel & cobble	23	7 Total 4 dead/weathered shells	industrial undeveloped
Brewster Creek	8.8/5.5	3,940/15.2	3,194/12.3	P	cobble gravel, silt & sand	4 (Site C: 4(3), 10(5) 3 (Site D: 3(3), 7(5)	7 dead/weathered shells	agricultural residential
~~Brewster Creek tributary~~ East Branch of Brewster Cr.	5.2/3.2	1,469/5.7	1,469/5.7	P	silt, gravel, sand, some cobble	Site A & 6 (A),6(5) Site B & 3 (B),6(5)	0	agricultural residential
N. Arm of Brewster Cr.	1.5/0.9	712/2.7	712/2.7	P	not accessible	not surveyed	not surveyed	residential/landfill
Red Gate Road								
Alternative A - Fox River (N)	184/114	448,585/1725	409,218/1574	P	primarily cobble overlaid w/0.08 to 0.13m of silt	13	11 Total 10 dead/weathered shells	residential agricultural
Alt. B - Fox River (middle)	184/114	448,585/1725	409,218/1574	P	same as Alt. A	13	11 Total 10 dead/weathered shells	residential agricultural
Alternative C - Fox River (S)	184/114	448,585/1725	409,218/1574	P	same as Alt. A	13	11 Total 10 dead/weathered shells	undeveloped residential
Alts. A & B - Brewster Creek	8.8/5.5	3,940/15.2	1,725/6.6	P	cobble, gravel, sand	4 (C) 3 (D)	7 dead/weathered shells	agricultural residential
C+NW/Dean Street								
Fox River	184/114	448,585/1725	409,218/1574	P	sand/silt, cobble, deep mud and silt (0.5m)	11	10 dead/weathered shells	residential commercial
State Street Creek	1.5/0.9	202/0.8	202/0.8	I	gravel, cobble, sand and enclosed	not surveyed	not surveyed	commercial residential
7th Avenue Creek tributary	0.5/0.3	171/0.7	171/0.7	I	gravel/cobble	not surveyed	not surveyed	residential
Route 56/Oak Street								
Fox River	184/114	448,585/1725	439,780/1691	P	silt, high amount of sedimentation	14	9 dead/weathered shells	residential undeveloped commercial
Indian Creek	11.5/7.1	1,088/4.2	759/2.9	P	clay and silt	6	1 dead/weathered shells	agricultural residential

(1) I = intermittent, P = perennial
(2) Stream substrate determined during field visit and INHS field data
(3) Data from Taylor, et. al. 1995 and Taylor, et. al. 1997
Fish Survey Points: (A) = Unnamed Tributary of Brewster Creek at Dunham Road; (B) = Unnamed Tributary of Brewster Creek South of IL Rte.. 25; (C) = Brewster Creek at IL Rte. 25; (D) = Brewster Creek 700 m downstream of IL Rte. 25
(4) Data from Taylor, et. al. 1995 and Taylor, et. al. 1997
(5) Data from Huff & Huff, Inc. 2000

Fox River Overview

The Fox River basin has been described as three zones - Northern, Central, and Southern. The Northern zone included many lakes (such as the Chain of Lakes), recreational areas, smaller communities, and agricultural lands. The Central zone, where the Kane County project area is located, contains industrial facilities, densely populated areas, agriculture, and timber. The Southern zone is a more scenic area with smaller populations (Page, et al., 1992).

The Fox River enters Illinois as an ill-defined main channel; however, below Algonquin the river flows in a valley with narrow floodplain and bluffs. The Fox River is approximately 120 meters (400 ft) wide in this segment and widens below Aurora. There are 15 dams located on the Fox River from Stratton (in McHenry County) to Dayton (in LaSalle County). Ten of these dams are located in Kane County and within the project study area. These dams reduce stream velocities and therefore increase sedimentation, create excess algal growth, and reduce waste assimilative capacity (Singh, 1995).

Uses of the Fox River in Kane County include recreation and public water supply as well as an aquatic resource. Recreation includes boating, fishing, and swimming activities. Both Elgin and Aurora utilize the Fox River as a water supply.

The Fox River between Elgin and the West Dundee Dam is on the list of rivers for inclusion in the Nationwide Rivers Inventory (NRI) (see Appendix A - Section 4(f) letter of March 21, 1995). The NRI includes rivers selected on the basis of the degree to which they are free-flowing, the degree to which the rivers and their corridors are undeveloped, and the outstanding natural and cultural characteristics of the rivers and their immediate environments. This reach of the Fox River was selected for its recreational value. There are no corridors being advanced in this Environmental Impact Statement in that reach of river.

The aquatic resource use designation is a function of habitat and water quality. Water quality on the Fox River is affected by point and non-point sources from the Chain of Lakes through its confluence with the Illinois River. Exhibit 2.1-7 shows the three IEPA monitoring stations within the study area 3.9 kilometers (2.4 miles) north of the Bolz Road Corridor, 1.8 kilometers (1.1 mile) north of the CC&P/Stearns Road Corridor and 9.8 kilometers (6.1 miles) south of the Illinois Route 56/Oak St. Corridor. The 1994 and 1995 IEPA water quality monitoring data showed compliance with the General Use Water Quality and Public Water Supply Standards, including dissolved oxygen, total dissolved solids, chlorides, and all heavy metals except cadmium for all three stations in the project study area. In 1995, mean chloride levels ranged from 86 to 97 mg/ℓ in the project study area and a maximum value of 122 mg/ℓ was reported.

The Illinois Environmental Protection Agency (IEPA) assessed the overall use support of the Fox River main stem as full support for aquatic life in the north (DT06) and south sections (DT38) of the river. The segment between Carpentersville and Batavia (DT09) is rated as partial support. This area is the most urbanized region of the Fox River Basin and includes the corridors for three of the five proposed bridge crossings. In this river segment, nutrients, organic enrichment,

siltation, metals, and habitat alterations have contributed to partial impairment. The municipal wastewater treatment plants (WWTP), urban runoff, flow regulation, and streambank modification have been identified as the sources of these pollutants (IEPA, 2000).

This segment (DT09) is also included in IEPA's list of water quality limited segments requiring total maximum daily loads to meet requirements of Section 303(d) of the Clean Water Act. The causes relate to fecal coliform and dissolved oxygen.

The Fox River segment in Kane County was rated a Class C stream (moderate aquatic resource in the Biological Stream Characterization report, IEPA, 1990). Features that contribute to the Fox River's aquatic biodiversity are historical records of 93 species of fish in 17 families. State endangered fishes include the pugnose shiner (*Notropis anogenus*), the weed shiner (*Notropis texanus*), and the greater redhorse (*Moxostoma valenciennesi*). Five state threatened species have been observed since 1990. The greater redhorse and river redhorse (*Moxostoma carinatum*) were recorded in a Kane County segment of the Fox River during 1993/1994 collection activities.

The Fox River in Kendall and LaSalle Counties is identified by the IDOT and IDNR Natural Resource Review process as a Class I stream based on its biological resource significance, including the presence of the greater redhorse, a state endangered fish species. The Kane County segment of the Fox River is currently being upgraded to Class I as a result of the recent collections of the greater redhorse.

During the field surveys, dead shells of one federally endangered mussel species, live individuals of one federal species of concern, one state threatened mussel species, and one state watch listed species were identified in the Fox River.

Fox River Tributaries Overview

There are six tributaries to the Fox River potentially crossed by the five roadway corridors. These tributaries are: Brewster Creek, North Arm of Brewster Creek, unnamed tributary (also referred to as the East Branch) of Brewster Creek, State Street Creek, Seventh Avenue Creek and Indian Creek (see Exhibits 2.2-5, 2.3-8, 2.3-9 and 2.4-5).

Bolz Road Corridor

There are no defined tributaries to the Fox River within the study area. All drainage occurs in swales and minor outlets directed to the Fox River. An unnamed tributary of the Fox River is south of the corridor, but is not crossed.

CC&P/Stearns Road Corridor

Brewster Creek is a perennial stream in a watershed with both agricultural and developed land uses. Two tributaries (North Arm Brewster Creek and East Branch of Brewster Creek) contribute to the 4,500 hectare (17.5 mi^2) drainage area. All three streams are within the CC&P/Stearns Road Corridor. The physical and biological characteristics of these resources are summarized in Table 2.1-7, while the use classifications are presented in Table 2.1-6. These three streams

exhibited good water quality. No live threatened or endangered fish or mussel species were collected, although one dead slippershell (*Alasmidonta viridis*) was recovered in Brewster Creek.

Red Gate Road Corridor

Alignments A and B cross Brewster Creek where they are not common to the CC&P/Stearns Road corridor. Where they are common, they also cross the East Branch of Brewster Creek. Alternate C does not include any streams in its project area, other than the Fox River Crossing. The physical and biological characteristics of these resources are summarized in Table 2.1-7, while the use classifications are presented in Table 2.1-6.

C&NW/Dean Street

State Street Creek is a channelized, degraded, partially enclosed waterway in an urbanized area of St. Charles. The Seventh Avenue Creek tributary is also within the study area of this corridor. Both are minor, intermittent drainage ways. The physical and biological characteristics of these resources are summarized in Table 2.1-7, while the use classifications are presented in Table2.1-6.

Illinois Route 56/Oak Street

Indian Creek is an intermittent stream within the study corridor. Ongoing construction in the watershed contributed to silty conditions. No threatened or endangered fish or mussel species were identified in the watershed.

2.1.8 Wetlands

The amount of wetlands in Kane County totals approximately 4,105 hectares (10,144 acres), which is 3.1 percent of the total land surface of the county (Suloway, et al., 1994). The five corridors are all located within the eastern third of Kane County, which is represented by the following quadrangles of the National Wetland Inventory Maps (NWI): Crystal Lake, Elgin, Geneva, and Aurora North.

Total wetland acreage located in the areas represented by these four quadrangle maps is 2,485 hectares (6,141 acres). These quadrangle maps include small areas within DuPage County, with much of the Crystal Lake Quadrangle falling in McHenry County.

All wetlands in the five corridor study areas fall within the Fox River watershed with the exception of Wetland 1 of the Bolz Road corridor, which is located in the Kishwaukee River/Rock River watershed.

Four of the five corridors (CC&P/Stearns Road, Red Gate Road, C&NW/Dean Street, and Illinois Route 56/Oak Street) are located in the Lower Fox River watershed. According to the National Wetland Inventory Maps, there are approximately 5,748 hectares (14,204 acres) of wetlands in this watershed (2.01 percent of land area).

The Bolz Road corridor is located within the Upper Fox River watershed. According to National

Wetland Inventory Maps, there are approximately 16,143 hectares (39,891 acres) of wetlands in this watershed (10.1 percent of land area). In both watersheds, a majority of wetlands are identified as palustrine (Suloway, et. al., 1994). Wetland No. 1 in the Bolz Road corridor is located in the Kishwaukee River watershed. According to the National Wetland Inventory Maps, there are approximately 8,040 hectares (19,868 acres) of wetlands in the Kishwaukee River watershed (2.6 percent of land area), and all but 26 hectares (65 acres) are identified as palustrine (Suloway, et. al., 1994).

All Wetlands were delineated following procedures outlined in the "Corps of Engineers Delineation Manual" (Technical Report Y-87-1). All wetlands and suspected wetlands within 100 meters (328 feet) of all five corridors were delineated and data sheets prepared. These areas were assessed for functional values and a jurisdictional determination was made for each site.

Wetland communities were rated according to their natural quality. The rating systems utilized was the Floristic Quality Index (FQI) (Wilhelm, et. al., 1994).

In the FQI, plant species are assigned values based on a scale of 0 to 10 for native vegetation. Introduced or exotic species are entirely excluded from the FQI analysis. The FQI is based on a mean rated conservation coefficient, "mean C". FQI values of 0 to 9.9 are considered severely degraded, 10 to 19.9 are considered to have some native character, and those with values greater than 20 are considered to have natural characteristics.

For each site, all plant species were identified, recorded, and assigned the numerical rating as described above and provided in Swink and Wilhelm (1994). The FQI value is calculated by multiplying the mean rated conservation coefficient (determined by dividing the sum of all of the native numerical ratings by the total number of native species) by the square root of the total number of native species recorded. The introduced species are excluded from the calculations.

The wetlands are discussed by region: North, Central, and South. Due to the presence of several high quality wetlands and fens along the CC&P/Stearns Road corridor, the corridor was the subject of a separate hydrogeologic and wetland studies. A separate ***Wetland Technical Report*** and the ***Environmental Roadway Corridor Technical Memorandum*** were prepared for the CC&P/Stearns Road corridor.

2.1.9 Biology

The Fox River is a biological corridor running the length of Kane County near the eastern edge. In places, the terrestrial corridor adjacent to the river has been interrupted by urban development. Portions of Algonquin, Carpentersville, Elgin, South Elgin, St. Charles, Batavia, Geneva, North Aurora, and Aurora are included in the project area. Reaches of the Fox River between these towns and villages are partially developed in a more rural setting. The Kane County Forest Preserve District has numerous holdings along the river that provide open space and wildlife habitat. This eastern portion of the County is identified in the Kane County 2020 Land Resource Management Plan as the Urban Corridor. It is mainly within this Urban Corridor that the

biological resources for the project were identified. The area west of the Urban Corridor is identified as the Critical Growth Area. Only small segments of the Critical Growth Area are included in this project study area.

2.1.9.1 Vegetation and Cover Types

The vegetation of Kane County historically belongs to the oak savanna ecosystem; however, conversion to farm land has modified this ecosystem. Agriculture represents the predominant land use in Kane County with approximately 80 percent of the total area.

A Kane County wildlife habitat survey concluded that cropland (agricultural row crops excluding hayfields) was the dominant (78 percent) habitat type. Hayfields and disturbed woodlands each accounted for approximately six percent of the total known wildlife habitat. Old fields comprised four percent of the total known wildlife habitat, while wetlands, riverine woodlands, undisturbed woodlands, and greenbelt areas were estimated as less than three percent (Byers, et al., 1982).

The five townships (Dundee, Elgin, St. Charles, Geneva/Batavia, and Aurora) of the Fox River Bridge Crossings include only 25 percent agricultural lands because of the residential/ commercial development of this area. This residential and commercial development of the Fox River Bridge Crossing corridors has reduced the size of biological communities in the project area. The total corridor area represents 1.2 percent of the township area. Table 2.1-8 presents the land uses and cover types within a 100 meter corridor for each bridge crossing. Detailed descriptions of each corridor habitat composition and vegetation cover types are provided in subsequent sections of Chapter 2.

TABLE 2.1-8
Summary of Cover Types, hectares

Cover Type	Bolz Road	CC&P/ Stearns Rd	Red Gate			C&NW/ Dean Street	IL Rte. 56/ Oak Street	Total for Five Crossings	Total Five Townships a/
			A	B	C				
Developed Lands	32	81	24	15	13	36	64	231	
Agricultural Lands b/	70	28	21	21	20	-	39	158	11,400 f/
Forested Lands									
Upland Forest	18	1.4	11	8.4	21	-	5.6	49.4	4,416 f/
Floodplain Forest	-	1.6	-	-	-	-	-	0.6	
Tree Plantation	-	-	-	-	-	-	3.2	3	
Shrublands c/	6	4.5	1.8	1.8	1.8	5.3	3.7	19.3	
Forbland/grassland d/	0.7	4.1	22	33	34	-	12.3	50.7	
Marsh Lands e/	0.9	9.6	0.2	0.2	0.04	-	0.64	11.3	
Open Water Communities									
Pond	0.6	0.1	0.3	0.3	0.3	0.4	-	1.4	
Lake	0.3	-	-	-	-	-	-	0.3	
Total Corridor Area	128	130	80	80	90	42	122	525	44,500 g/

a/ Dundee, Elgin, St. Charles, Geneva/Batavia, and Aurora.
b/ Agricultural lands include row crops, pastures, and hayfields.
c/ Shrublands include shrubland, shrubland/non-native grassland, and shrubland/forbland.
d/ Forbland/Grasslands include forbland and non-native grassland.
e/ Marsh lands include marsh, marsh/wet shrubland, wet shrubland, wet meadow, and sedge meadow/wet meadow/marsh.
f/ From Kane County 2020 Land Resource Management Plan.
g/ From Kane County Development Department Acreage Study 12/31/94.

The Bolz Road Corridor contains more agricultural areas and upland forests than any other corridor. Large agricultural tracts are located west of the Fox River, and upland forests occur near the Fox River and throughout the corridor. No plant communities of high natural quality are present in the Bolz Road Corridor.

The dominant cover types in the CC&P/Stearns Road Corridor, excluding agricultural and developed lands, are marshlands, forblands and shrublands. Five significant natural areas occur in close proximity to the CC&P/Stearns Road Corridor: South Elgin Sedge Meadow; Brewster Creek Fen/Sedge Meadow; McLean Boulevard Fen (formerly Day's Fen); a wetland area adjacent to the unnamed tributary (East Branch) to Brewster Creek; and an unnamed native prairie remnant. South Elgin Sedge Meadow is a designated Illinois Natural Area, and Brewster Creek

Fen has received Illinois Nature Preserve status because of threatened and endangered plant species. Aside from these five areas, the habitat quality of the Stearns Road Corridor is poor.

The Red Gate Road Corridor is dominated by forbland, developed and agricultural lands. Alignments A and B would include a portion of the CC&P/Stearns Road Corridor. The Illinois Natural Area known as DeSanto's/Brewster Creek is located at the intersection of Illinois Route 25 and Brewster Creek in Alignments A and B. This area was identified on the Illinois Natural Area Inventory (INAI) as a high quality natural area.

The C&NW/Dean Street Corridor consists of 86 percent developed lands associated with urban areas. Vegetation in this corridor is limited to shrubland/forbland, primarily along railroad areas, and one man-made pond. Habitat quality is considered poor. The LeRoy Oaks Nature Preserve (formerly known as the Murray Prairie) is 0.7 kilometers (1.1 miles) west of this corridor.

The Illinois Route 56/Oak Street Corridor is dominated by developed (suburban) and agricultural lands. No Illinois natural areas are known within the Oak Street corridor and habitat quality is limited.

2.1.9.2 Wildlife

Birds

A total of 73 bird species were counted by the INHS in the five-corridor study area (Amundsen and Enstrom, 1996). Most of the birds identified during these surveys are adapted to close proximity to humans and habitat edges. As a result, there is suitable habitat for these species within the corridors.

The fragmented condition of the wildlife habitat and vegetation cover types, due to development and agriculture, and the presence of brown-headed cowbirds may contribute to low numbers of songbirds. Brown-headed cowbirds practice nest parasitism which contributes to the low nesting success of native and neotropical migrants in the northern hemisphere. Brown-headed cowbirds seek out nests of other species and lay one or more eggs in each. Brown-headed cowbird young have evolved to grow quickly and overpower the young of the host species. Therefore, numbers of many native bird species, especially neotropical migrants, are declining. The neotropical migrants have been shown to be especially vulnerable to nest parasitism. Brown-headed cowbirds are common along forest edges, in fragmented forests, and in forests with open canopies. Other nest predators such as raccoons, skunks and blue jays also contribute to nest predation.

Based on census results, the habitat types within the Bolz Road corridor with the highest number of species identified were floodplains forests, shrublands, and upland woods. Within the Stearns Road corridor, the most important habitat for birds included grassland marshes, sedge/cattail marshes, and upland forests. Within the Red Gate corridor, the highest number of birds identified were in upland forests. Due to the urban nature of both the CNW-Dean Street and Illinois Route 56 corridor, little breeding habitat remains.

Much of the identified habitat areas for the corridor are fragmented by urban, agricultural, and industrial activities, which has increased edge effect. As a result there is minimal remaining habitat for neo-tropical migrants and species requiring large undisturbed tracts of land within the corridor. The remaining habitat areas are generally found in the undisturbed wetlands, floodplain forests and forest preserve/park sites. All these cover types have some form of regulatory protection, which has minimized or prohibited development.

Mammals

The suburban development within the study corridors has most likely had a profound effect on mammals. Much like bird species, mammals which have adapted to edges and proximity to humans have thrived, while other species have been extirpated. The presence of nearby parks and the large tracts of forest preserve land adjacent to some of the corridors, available food supplies, and lack of predators account for the presence of these common species.

Thirty-five mammal species have been recorded from Kane County. A total of 17 species were observed during the mammal census of which only 6 were trapped, and 11 others observed. As all species observed are urban tolerant, there is suitable habitat within the corridor to support them. Due to the urban nature of the CNW-Dean Street corridor, fewer species were identified and these were considered common to dense residential/commercial areas.

[Table 2.1-9 deleted]

Reptiles and Amphibians

The project area is mainly composed of urban/suburban areas and agricultural lands. Small wetlands, ponds, and lakes are scattered throughout the five corridors. Dispersed forest fragments account for a small portion of the habitat types within the project area. Most of the remaining natural vegetation is highly fragmented and is of limited value to most species of amphibians and reptiles (Phillips, 1995). The largest tracts of suitable habitat for amphibians are located in the eastern half of the CC&P/Stearns Road Corridor among the wetland complexes. These wetlands in the eastern half of the corridor are of special concern because they have a potential for high species richness (Phillips, 1995). Suitable habitat for the former Illinois State watch list species, Blanding's turtle (*Emydodea blandingii*) exists in the project area, and one Blanding's turtle was observed southeast of the CC&P/Stearns Road Corridor.

Fourteen species of amphibians and 20 species of reptiles were identified as potentially inhabiting the project area. Approximately half of the 20 species have been documented in the five project areas (Phillips, 1995).

Federal Listed Species

The U.S. Fish and Wildlife Service North Central Region "Red Book (March22, 2001)" lists the eastern prairie fringed orchid *(Platanthera leucophaea)*, leafy prairie clover *(Petalostemum foliosum)* and Indiana bat *(Myotis solalis)* as occurring in Kane County. In addition, a bald eagle *(Haliaeetus leucocephalus)* was observed during a biological survey of the project corridors.

Eastern prairie fringed orchid occurs in mesic to wet prairies. There are mesic to wet prairie remnants in some of the project corridors. However, this species was not observed during field surveys. The proposed projects will not impact this species.

Leafy prairie clover occurs in prairie remnants on this soil over limestone. There is no habitat for this species in the project corridors. In addition, none were observed during field surveys. The proposed projects will not impact this species.

The bald eagle breeds along large rivers, lakes and reservoirs. There are no breeding sites within the proposed project corridors. A single bald eagle was observed suring the fall avian census. The proposed projects will not impact the bald eagle.

The Indiana bat utilizes caves and mines, small stream corridors with well developed riparian woods, and upland forests. Critical habitat (Blackball Mine, LaSalle County) for the bat occurs approximately 50 to 80 miles southwest of the project corridors. The Indiana bat utilizes caves and mines for hibernation. There are no caves or mines within the proposed project corridors. Female Indiana bats form maternity colonies in trees that have loose bark. These trees can occur in continuous riparian woods and adjacent mud land woods. Because of the fragmented nature of the landscape, there is no suitable maternity habitat for the Indiana bat in the project area. Indiana bats forage over streams with canopy cover and ponds. The proposed project corridors will not impact foraging habitat of the bat. The proposed project corridors will not impact foraging habitat of the bat. The proposed project corridors will not have an impact on the Indiana bat.

State Listed Species

The Illinois Endangered Species Protection Board lists a number endangered and threatened species as occurring in Kane and adjacent counties. The Natural Heritage Database (August 1996) identified the bald eagle, brown creeper *(Certhia americana)*, pied-billed grebe *(Podilymbus podiceps)*, northern harrier *(Circus cyaneus)*, yellow-headed blackbird *(Xanthocephalus xanthocephalus)*, river redhorse *(Moxostoma carinatum)*, spotted coral-root orchid *(Corallorhiza maculata)*, false asphodel *(Tofieldia glutinosa)*, bog bedstraw *(Galium labradoricum)*, wooly milkweed *(Asclepias lanuginosa)*, slender bog arrow grass *(Triglochin palustris)* and American burreed *(Sparganium americanum)* as occurring within the proposed project area. During biological surveys of the project corridors the greater redhorse *(Moxostoma valenciennesi)* and yellow-lipped ladies tresses *(Spiranthes lucida)* were observed.

The brown creeper is a common migrant and winter resident in Illinois. Nesting occurs in trees having loose bark that occur in floodplain forests. Fall migrants have been observed in the project corridor (Bolz, Stearns and Mooseheart Roads). There is no suitable breeding habitat for this species in the project corridors. The proposed projects will not impact the brown creeper.

The pied-billed grebe is a common migrant and uncommon summer and winter resident in Illinois. Breeding habitat consists of shallow marsh and marshy areas. A spring migrant has been observed

in the project corridor (Stearns Road). There is no suitable breeding habitat for this species in the project corridors. The proposed projects will not impact the pied-billed grebe.

The northern harrier is a common migrant and a rare summer resident in Illinois. Harriers nest on the ground in and around grassland, prairie and march habitats. A single northern harrier was observed during the winter avian census (Stearns Road). This individual was a transient. There is no suitable breeding habitat for this species in the project corridors. The proposed project will not impact the northern harrier.

The yellow-headed blackbird is a locally uncommon migrant and summer resident in northern Illinois. The species breeds and forages in marshes containing cattails and rushes. No yellow-headed blackbirds were observed during the avian surveys within any of the project corridors. The proposed projects will not impact the yellow-headed blackbird.

The river redhorse inhabits deep, swift, gravelly riffles of small and medium size rivers in Illinois. The species was observed in the Fox River (Mooseheart Road) during aquatic surveys.

The greater redhorse inhabits sandy to rocky pools and runs of medium to large rivers and lakes. The species was observed in the Fox River (Mooseheart Road) during aquatic surveys.

The spotted coral-root orchid is a saprophytic rhizomatous herb that occurs in mesic forests. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The false asphodel is a rhizomatous perennial herb that occurs in wetlands. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The bog bedstraw is a perennial herb that is restricted to bogs, fens and sedge meadows. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The wooly milkweed is a perennial herb that occurs in dry gravel prairies. The species was observed in a gravel prairie adjacent the East Branch of Brewster Creek (Stearns Road). This prairie occurs 225 meters (728 feet) from the proposed roadway. The proposed projects will not impact the wooly milkweed.

The slender bog arrow grass is a perennial herb that occurs in fens. The species was observed in the McLean Boulevard Fen.

American burreed is a perennial aquatic herb that occurs in muddy and peaty shores and shallow water areas. This plant species is known to occur in Tri-County Park (Stearns Road). This proposed project will not impact the American burreed.

2.1.9.3 Threatened and Endangered Species

Federal Listed Species

The U.S. Fish and Wildlife Service North Central Region "Red Book (March22, 2001)" lists the eastern prairie fringed orchid *(Platanthera leucophaea)*, leafy prairie clover *(Petalostemum foliosum)* and Indiana bat *(Myotis solalis)* as occurring in Kane County. In addition, a bald eagle *(Haliaeetus leucocephalus)* was observed during a biological survey of the project corridors. Eastern prairie fringed orchid occurs in mesic to wet prairies. There are mesic to wet prairie remnants in some of the project corridors. However, this species was not observed during field surveys. The proposed projects will not impact this species.

Leafy prairie clover occurs in prairie remnants on soil over limestone. There is no habitat for this species in the project corridors. In addition, none were observed during field surveys. The proposed projects will not impact this species.

The bald eagle breeds along large rivers, lakes and reservoirs. There are no breeding sites within the proposed project corridors. A single bald eagle was observed suring the fall avian census. The proposed projects will not impact the bald eagle.

The Indiana bat utilizes caves and mines, small stream corridors with well developed riparian woods, and upland forests. Critical habitat (Blackball Mine, LaSalle County) for the bat occurs approximately 50 to 80 miles southwest of the project corridors. The Indiana bat utilizes caves and mines for hibernation. There are no caves or mines within the proposed project corridors. Female Indiana bats form maternity colonies in trees that have loose bark. These trees can occur in continuous riparian woods and adjacent mud land woods. Because of the fragmented nature of the landscape, there is no suitable maternity habitat for the Indiana bat in the project area. Indiana bats forage over streams with canopy cover and ponds. The proposed project corridors will not impact foraging habitat of the bat. The proposed project corridors will not have an impact on the Indiana bat.

State Listed Species

The Illinois Endangered Species Protection Board lists a number endangered and threatened species as occurring in Kane and adjacent counties. The Natural Heritage Database (August 1996) identified the bald eagle, brown creeper *(Certhia americana)*, pied-billed grebe *(Podilymbus podiceps)*, northern harrier *(Circus cyaneus)*, yellow-headed blackbird *(Xanthocephalus xanthocephalus)*, river redhorse *(Moxostoma carinatum)*, spotted coral-root orchid *(Corallorhiza maculata)*, false asphodel *(Tofieldia glutinosa)*, bog bedstraw *(Galium labradoricum)*, wooly milkweed *(Asclepias lanuginosa)*, slender bog arrow grass *(Triglochin palustris)* and American burreed *(Sparganium americanum)* as occurring within the proposed project area. During biological surveys of the project corridors the greater redhorse *(Moxostoma valenciennesi)* and yellow-lipped ladies tresses *(Spiranthes lucida)* were observed.

The brown creeper is a common migrant and winter resident in Illinois. Nesting occurs in trees having loose bark that occur in floodplain forests. Fall migrants have been observed in the project corridor (Bolz, Stearns and Mooseheart Roads). There is no suitable breeding habitat for this species in the project corridors. The proposed projects will not impact the brown creeper.

The pied-billed grebe is a common migrant and uncommon summer and winter resident in Illinois. Breeding habitat consists of shallow marsh and marshy areas. A spring migrant has been observed in the project corridor (Stearns Road). There is no suitable breeding habitat for this species in the project corridors. The proposed projects will not impact the pied-billed grebe.

The northern harrier is a common migrant and a rare summer resident in Illinois. Harriers nest on the ground in and around grassland, prairie and marsh habitats. A single northern harrier was observed during the winter avian census (Stearns Road). This individual was a transient. There is no suitable breeding habitat for this species in the project corridors. The proposed project will not impact the northern harrier.

The yellow-headed blackbird is a locally uncommon migrant and summer resident in northern Illinois. The species breeds and forages in marshes containing cattails and rushes. No yellow-headed blackbirds were observed during the avian surveys within any of the project corridors. The proposed projects will not impact the yellow-headed blackbird.

The river redhorse inhabits deep, swift, gravelly riffles of small and medium size rivers in Illinois. The species was observed in the Fox River (Mooseheart Road) during aquatic surveys.

The greater redhorse inhabits sandy to rocky pools and runs of medium to large rivers and lakes. The species was observed in the Fox River (Mooseheart Road) during aquatic surveys.

The spotted coral-root orchid is a saprophytic rhizomatous herb that occurs in mesic forests. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The false asphodel is a rhizomatous perennial herb that occurs in wetlands. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The bog bedstraw is a perennial herb that is restricted to bogs, fens and sedge meadows. This plant species occurs in the South Elgin Sedge Meadow Natural Area (Stearns Road).

The wooly milkweed is a perennial herb that occurs in dry gravel prairies. The species was observed in a gravel prairie adjacent the East Branch of Brewster Creek (Stearns Road). This prairie occurs 225 meters (728 feet) from the proposed roadway. The proposed projects will not impact the wooly milkweed.

The slender bog arrow grass is a perennial herb that occurs in fens. The species was observed in the McLean Boulevard Fen.

American burreed is a perennial aquatic herb that occurs in muddy and peaty shores and shallow water areas. This plant species is known to occur in Tri-County Park (Stearns Road). This proposed project will not impact the American burreed.

2.1.9.4 Illinois Natural Area and Nature Preserves

There are two designated Illinois Natural Areas within the study areas. The South Elgin Sedge Meadow (formerly known as South Elgin Fen) is located north of the CNIC Railroad tracks adjacent to the CC&P/Stearns Road corridor. The South Elgin Sedge Meadow is approximately 7.6 hectares (18.8 acres) in size and is privately owned. The site is classified as a Category I and II site.

The South Elgin Sedge Meadow is identified as a sedge meadow/wet meadow/marsh and a Grade A and B graminoid fen. The site is proposed for Illinois Nature Preserve status. The Nature Conservancy Volunteer Stewardship Network manages the site. The South Elgin Sedge Meadow provides suitable habitat for the least bittern (state endangered), and the yellow-headed black bird (state threatened). Bog bedstraw (state threatened), and spotted coral-root orchid (state threatened) have been observed from this site. The FQI for this site is 61.1, indicating an area of high natural quality.

DeSantos Brewster Creek site is a designated natural area. This site is located east of Illinois Route 25 at the Brewster Creek Crossing. The DeSantos Brewster Creek site is of undetermined size and is privately owned. The site currently receives minimal maintenance from the current owner. The yellow lipped ladies tresses orchid (state endangered) has been observed at the site. The plant community is a mix of floodplain forest, emergent wetland and mowed lawns. This is a category II site.

McLean Boulevard Fen (Days Fen) has been proposed for natural area designation and has been purchased by the Kane County Forest Preserve District. This 10.76 hectares (26.58 acres) site is located north of the CNIC railroad tracks, west of McLean Boulevard. This site is known to harbor slender bog arrow grass (state endangered).

Nature Preserves

One area has been designated as an Illinois Nature Preserve within the study area. The Brewster Creek Fen is located east of Illinois Route 25, west of Dunham Road and south of the CNIC railroad tracks. The preserve is approximately 3.0 hectares (7.4 acres) in size and is privately owned. The Brewster Creek Fen consists of sedge meadow, seep, and dry mesic forest communities. The site is classified as a grade C+ fen/marsh/sedge meadow. The site is managed by the Nature Conservancy Volunteer Stewardship Network. The weak-stemmed wood sedge (state threatened) has been observed at the site. The FQI for the site is 59.48, indicating an area of high natural quality.

Nature preserves and natural areas are shown on Exhibits 2.3-10 and 4.3-5.

TABLE 2.1-10
Summary of Threatened and Endangered Species

Federal Listed Species	Species	Bolz Road	CC&P / Stearns Road	Red Gate			C& NW / Dean Street	IL Rte. 56/ Oak Street
				A	B	C		
Bald eagle - T	*Haliaeetus leucocephalus*						O	
State Listed Species								
Bewick's wren - E	*Thryomanes bewickii*						P	
Short-eared owl - E	*Asio flammeus*		P					
Common barn owl - E	*Tyto alba*		P					
Little blue heron - E	*Egretta caerulea*		P					
Snowy egret - E	*Egretta thula*		P					
Least bittern - E	*Ixobrychus exilis*		P					
Yellow-headed blackbird - E	*Xanthocephalus xanthocephalus*		P					
Pied-billed grebe - T	*Podilymbus podiceps*		O	O	O			
Northern harrier - E	*Circus cyaneus*		O	O	O			
Brown creeper - T	*Certhia americana*	O	O	O	O			
River otter - E	*Lutra canadensis*		H					H
Bobcat - T	*Lynx rufus*	P	P	P	P	P		P
Slender bog arrowgrass - E	*Triglochin palustris*		O					
Woolly milkweed - E	*Asclepias lanuginosa*		O	O	O			
American burreed - E	*Sparganium americanum*		H	H	H			
Little green sedge - E	*Carex viridula*		P					
White lady's slipper - E	*Cypripedium candidum*		P					
Yellow-lipped ladies' tresses-E	*Spiranthes lucida*		O	O	O			
Bog bedstraw - T	*Galium labradoricum*		H,P					
False asphodel - T	*Tofieldia glutinosa*		H,P O					
Spotted coral root orchid - T	*Corallorhiza maculata*		H					
Marsh speedwell - T	*Veronica scutellata*		P					
Ear-leafed foxglove - T	*Tomanthera auriculata*		P					
Slippershell - E	*Alasmidonta viridis*		O	O/H	O			
Greater redhorse - E	*Moxostoma valenciennesi*		P	P	P	P	P	P
River redhorse - T	*Moxostoma carinatum*		P	P	P	P	P	P

O = Observed H = Historically present P = Potential to occur E = endangered T = threatened

Birds

The Illinois Endangered Species Protection Board lists 12 threatened and endangered bird species as potentially occurring in Kane County (Herkert, 1992). Four of these species were observed during field studies; the brown creeper (state threatened), pied-billed grebe (state threatened), northern harrier (state endangered), and sharp-shinned hawk (state endangered). Seven additional bird species have the potential to utilize the project corridors. These bird species are: the short-eared owl (state endangered); common barn owl (state endangered); little blue heron (state endangered); snowy egret (state endangered); least bittern (state endangered); yellow-headed blackbird (state endangered); and Bewick's wren (state endangered).

Marginal breeding habitat for the brown creeper is present in the floodplain forests adjacent to the Fox River in the Bolz Road Corridor. The brown creeper is known to forage in this area; however, breeding has not been observed. The sharp-shinned hawk has only been observed as a fly-by in the Bolz Road Corridor. A few additional species do forage and fly within the corridor study area. However, specific nesting habitat is not known to be present, and other suitable foraging areas are located along the Fox River (Amundsen, et al). The black crowned night heron was observed within the project corridor; however nesting habitat was not present (Amundsen, et al).

State threatened and endangered species observed foraging in the CC&P/Stearns Road Corridor include the brown creeper, northern harrier, and pied-billed grebe. The sharp-shinned hawk was a fly-by observation during fall and spring censuses. Suitable habitat for the yellow-headed blackbird and least bittern occur in the South Elgin Fen but there have been no recorded sightings. Several other species have potential to occur within the corridors as listed in Table 2.1-10.

The only special avian species of concern identified in the Red Gate Corridor were associated with the Brewster Creek Fen area of the CC&P/Stearns Road Corridor. The pied-billed grebe and northern harrier were observed foraging in the fen.

The C&NW/Dean Street Corridor contains marginal breeding habitat for Bewick's wren; however, there are no reported sightings. A bald eagle (federal threatened) was noted as a fly-by during the fall census; however, there is no suitable habitat for this species.

No species of special concern were noted in the Illinois Route 56/Oak Street Corridor during any of the avian census periods.

Mammals

The habitat requirements of two mammals, the river otter (*Lutra canadensis,* state endangered) and the bobcat (*Lynx rufus*, state threatened), were evaluated for the project area. The river otter requires riverine habitat that is: isolated from the main river channel; has extensive riparian forests; has persistent open water in winter of good water quality; and minimal human disturbance.

One river otter was observed in August, 1981 in the upper reaches of Mill Creek, 5 kilometers northwest of the Illinois Route 56/Oak Street Corridor. Possible river otter habitat exists on the west bank of the Fox River, but may not be sufficient in size to support otters other than transient visitors. No river otters have been observed in the project area.

During field surveys, the INHS found no suitable habitat within the project corridor for the federally and state endangered Indiana bat.

The bobcat utilizes large tracts of second-growth forest with dense underbrush interspersed with open areas and floodplain forests. Areas of greater than 260 hectares (1 square mile) with more than 50 percent forest cover are optimal habitat for breeding. No bobcats nor sign of bobcat have been observed in the project area. However, one bobcat was shot near Aurora in 1971. The project corridor contains too little forest cover and too much developed land to provide suitable habitat for bobcats. It is possible that a transient bobcat might appear in the western portion of four corridors where natural habitats are less fragmented.

Plants

The Illinois Endangered Species Protection Board lists 45 threatened and endangered plant species as potentially occurring in Kane County (Herkert, 1991). During field studies, five of these species were observed in the project area. The four species were: slender bog arrow grass (*Triglochin palustris* state threatened), woolly milkweed (*Asclepias lanuginosa* state endangered), Crawe's sedge (*Carex crawei* state threatened), yellow-lipped ladies tresses (*Spiranthes lucida* state endangered), and glade mallow (*Napaea dioica* may be considered a state species of special concern). The slender bog arrowgrass and Crawe's sedge were observed in the McLean Boulevard Fen in the CC&P/Stearns Road Corridor. The woolly milkweed appeared in a gravel prairie remnant near an unnamed tributary to Brewster Creek associated with the CC&P/Stearns Road Corridor and in the Red Gate Corridor. Glade mallow was observed on the banks of Brewster Creek within the CC&P/Stearns Road Corridor. The yellow-lipped ladies tresses were observed in DeSanto's Brewster Creek site in the Red Gate Corridor. No state listed plant species were observed in the Bolz Road, Oak Street, or Dean Street Corridors.

Historical observations of several plant species were recorded in the South Elgin Fen in close proximity to the CC&P/Stearns Road Corridor. These plants include: bog bedstraw (*Galium labradoricum* state endangered), American burreed (*Sparganium americanum* state endangered), false asphodel (*Tofieldia glutinosa* state threatened), and spotted coral root orchid (*Corallorhiza maculata* state threatened). The American burreed was also historically reported at Tri-County Park, which is in close proximity to the CC&P/Stearns Road and the Red Gate Corridor.

Potential habitat for four additional plant species is evident in the CC&P/Stearns Road Corridor. These plants include the ear-leafed foxglove (state threatened), the white lady's slipper (*Cypripedium candidum* state threatened), the marsh speedwell (*Veronica scutellata* state threatened), and the little green sedge (*Carex viridula* state threatened) The potential habitat for

these four species is located in the Brewster Creek Fen and in the CC&P/Stearns Road Corridor (Wilm, 1993). No historical or current observations have been recorded that confirm the presence of the plants in the Brewster Creek Fen.

Mussels

Dead shells of the mussel, spike/ladyfinger (*Elliptio dilatata* state threatened), were recovered in the Fox River at four of the five bridge crossing locations. Weathered dead shells of the ellipse (*Venostaconcha ellipsiformis* state watch listed special concern species) were found in the Fox River near Stearns Road and in Brewster Creek (Taylor, et al., 1995 and Taylor, et al., 1997). Habitat in the Fox River is often unsuitable for mussels resulting from a thick layer of silt that covers the river bottom (Taylor, et al., 1995). The Fox River was too silted in to support a thriving mussel population within the project corridors (INHS, 1/9/96). The only live mussel specimen, the slippershell (*Alasmidonta viridis* state threatened), was recovered in Brewster Creek where habitat was suitable for a population.

Fish

The river redhorse (*Moxostoma carinatum* state threatened) and the greater redhorse (*Moxostoma valenciennesi* state endangered) are species found in medium-sized rivers and prefer clear water. Both species were collected from the Fox River in the Mooseheart Road area. The greater redhorse was collected in 1993 and the river redhorse was collected in 1994 (Taylor, et al., 1997 and INHS, 1/9/96). Although habitat is less than ideal in the crossing areas, it is possible that these species may use sections of the Fox River.

2.1.10 Air Quality

2.1.10.1 Summary of Air Quality

The project is located within the Chicago Metropolitan area. This area is in violation of the National Ambient Air Quality Standard (NAAQS) for the pollutant ozone. This area is classified as "Severe" ozone non-atttainment area and it includes the Counties of Cook, DuPage, Kane, Lake, McHenry, Will and Aux Sable, and Goose Lake Townships in Grundy County, and Oswego Townships in Kendall County. Due to the non-attainment status of the area, the State of Illinois has developed a State Implementation Plan (SIP) identifying programs intended to reduce ozone precursor emissions. A "Severe" classification means that the region must implement specific programs to attain air quality standards by the year 2007.

The United States Environmental Protection Agency (USEPA) is responsible for adopting National Ambient Air Quality Standards (NAAQS) for certain pollutants. The NAAQS establish maximum pollutant concentration limits for six criteria pollutants. The pollutants and the respective standards are shown in Table 2.1-11. The primary standards are established at levels which are intended to protect the public health. Secondary standards are intended to protect public welfare

and are based on a pollutant's effect on vegetation and other materials.

In addition to the SIP requirements, metropolitan planning organizations (MPO) are required to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. Section 176 (c)(4) of the Clean Air Act Amendments of 1990 requires that transportation plans, programs, and projects which are funded or approved under Title 23 U.S.C. must be determined to conform with State or Federal air implementation plans. Conformity to an implementation plan is defined in the Clean Air Act as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of standards. The implementing regulations for determining conformity of transportation projects are found in 40 C.F.R. Part 93, "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs and Projects funded or Approved under Title 23 U.S.C. or the Federal Transit Act." Highway or transit projects which are funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) must also be included in a conforming plan before they are approved or funded by DOT or an MPO.

Ambient air quality is monitored at locations throughout the state. The entire State of Illinois is considered as in attainment of the NAAQS for the pollutants carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Chicago and Metro-East St. Louis are classified as non-attainment for the 1-hour ozone standard. Specifically, Cook, DuPage, Kane, Lake, McHenry, and Will Counties and Aux Sable and Goose Lake Townships in Grundy County and Oswego Township in Kendall County have been classified as a severe ozone non-attainment area. Lake Calumet and McCook in Cook County have been designated as non-attainment for the particulate matter (PM_{10}) standard. The sources of particulate matter that prompted the non-attainment classification are unrelated to transportation. All other areas of Illinois currently are in attainment for ozone and PM_{10} standards.

While new stations were added and some discontinued, ambient air quality was monitored at 45 locations in the Metropolitan Chicago Region during the year 2000. Instrumentation used at each site varies. However, all six criteria pollutants are monitored at one or more locations. Five monitoring locations are found in close proximity to the project area. The results of the monitoring are summarized and published annually by the Illinois Environmental Protection Agency (IEPA).

TABLE 2.1-11
SUMMARY OF NATIONAL AND ILLINOIS AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	Primary	Secondary
Particulate Material			
10 micrometers (PM_{10})	Annual Arithmetic Mean 24-hour	50 $\mu g/M^3$ 150 $\mu g/M^3$	Same as Primary
($PM_{2.5}$)**	Annual Arithmetic Mean 24-hour	15 $\mu g/M^3$ 65 $\mu g/M^3$	Same as Primary
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean 24-hour 3-hour	0.03 ppm (80 $\mu g/M^3$) 0.14 ppm (365 $\mu g/M^3$) None	None None 0.5 ppm (1300 $\mu g/M^3$)
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm (10 mg/M^3) 35 ppm (40 mg/M^3)	Same as Primary Same as Primary
Ozone (O_3)	1-hour/day* 8 hour/day**	0.12 ppm (235 $\mu g/M^3$) 0.08 ppm	Same as Primary Same as Primary
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 $\mu g/M^3$)	Same
Lead (Pb)	Quarterly Arithmetic Mean	1.5 $\mu g/M^3$	Same

Note: All standards with averaging times of 24 hours or less are not to have more than one actual or expected exceedance per year.

* The 1-hour ozone standard pertains only to Cook, DuPage, Kane, Lake, McHenry, Will Counties, and Aux Sable, and Goose Lake Townships in Grundy County, and Oswego Townships in Kendall County in the Chicago area; and to Madison, Monroe and St. Clair Counties in the Metro-East St. Louis area.

** The ozone 8-hour standard and the PM2.5 standards are included for information only. These standards were proposed by USEPA in 1997 and have been the subject of litigation. The U.S. Supreme Court issued a ruling upholding the standards on February 27, 2001. However, that ruling found USEPA's implementation policy unlawful and remanded the case to USEPA to "develop a reasonable interpretation of the nonattainment implementation provisions insofar as they apply to revised ozone NAAQS.

The nearest monitoring stations to the project area are in Lisle (reporting on SO_2 and O_3), Naperville (reporting on $PM_{2.5}$), two in Elgin (reporting on O_3 and $PM_{2.5}$), and the one in Geneva (had monitored M_{10}) was discontinued. In the year 2000, no site exceeded the NAAQS for O_3. Geneva did not exceed the PM_{10}. Standard. Lisle reported no days exceeding the NAAQS for SO_2.

2.1.10.2 Air Quality Index

The Air Quality Index (AQI) is the national standard method for reporting air pollution levels to the general public in 2000. This index replaced the previously used Pollutant Standards Index. Major changes include the addition of a new category "Unhealthy for Sensitive Groups" and using 8-hour ozone and $PM_{2.5}$ in the index. An index such as the AQI is necessary because there are several air pollutants, each with different typical ambient concentrations and each with different levels of harm, and to report actual concentrations for all of them would be confusing. The AQI uses a single number and a short descriptor to define the air quality in an easy-to remember and easy-to-understand way, taking all the pollutants into account.

The AQI is based on the short-term Federal National Ambient Air Quality Standards (NAAQS), the Federal episode criteria, and the Federal Significant Harm levels for six of the "criteria pollutants", namely:

- Ozone (O_3)
- Sulfur dioxide (SO_2)
- Carbon monoxide (CO)
- Particulate matter (PM_{10})
- Particulate matter ($PM_{2.5}$)
- Nitrogen dioxide (NO_2)

In each case (except $PM_{2.5}$ which uses a lower value), the short-term primary NAAQS corresponds to a AQI of 100 and a descriptor of Unhealthy for Sensitive Groups, the Significant Harm level corresponds to a AQI of 500 and a descriptor of Hazardous, and the episode criteria correspond to intermediate hundreds. NO_2 does not have short-term NAAQSs; PSI begins at 201 for it.

Unhealthy air quality is uncommon in Illinois, and Very Unhealthful air quality is rare. There has never been an occurrence of Hazardous air quality in Illinois.

The eastern portion of Kane County is reported as the Aurora-Elgin Sector. Parts of DuPage County are reported in the West and South Suburbs Sector. In the year 2000 Annual Air Quality Report, the Air Quality Index by sector are reported graphically, without exact numbers for what percentage of the time each category occurs. However, it does state that for these sectors over 80% of the days were in the "Good" category. In these sectors there were no occurrences of "Unhealthy for Sensitive Groups."

2.1.11 Noise

Noise analysis for a roadway project consists of comparisons of the existing traffic noise to the future Build and No-Build options. The analysis is defined in Section 4.1.11 and the results are found in the various regional discussions (see Sections 4.2.11, 4.3.11, and 4.4.11).

2.1.12 Special Waste

Environmental Site Assessments for man-made hazards in each of the five corridor areas were conducted in accordance with "A Manual for Conducting Preliminary Environmental Site Assessments for Illinois Department of Transportation (IDOT) Highway Projects" except that no subsurface investigation was authorized. Most of the land proposed for acquisition is currently agricultural or existing public right-of-way. The sites of concern are discussed in the individual corridor Special Waste sections and shown on the accompanying figures. Special wastes include both hazardous and non-hazardous waste. Known hazardous sites are identified in the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). (July, 2001)

Hazardous Waste - The USEPA listing of potential, suspected and known hazardous waste or hazardous substances sites in Kane County Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) list) has been reviewed as of July, 2001 to ascertain whether the proposed project will involve any listed sites. As a result of this review, it has been determined that the proposed roadways will require a right-of-way or easement from the Moline Foundry which is a listed CERCLIS site (Central Region; C&NW/Dean Street corridor). The list of RCRA (Resource Conservation and Recovery Act) generators revealed no violations in or adjacent to the project corridors. A review of latest land use plans along all the preferred alignments indicates that there are not any land use changes that would have an impact on hazardous wastes issues, this was also verified During a field review of all corridors on June 26, 2001

Non-Hazardous Waste - Only two registered leaking underground storage tanks (LUSTs) sites were identified within 300 meters (1,000 feet) of the center of the proposed corridors. They are the Meyer Material Yard #4 (North Region; Bolz Road corridor), where the tanks have been removed, and the Speedway gasoline station (South Region; Route 56/Oak Street corridor), where remediation is on-going. No registered solid waste/landfill sites were identified within the proposed corridors although several were found to be adjacent. An inactive landfill is located within the proposed CC&P/Stearns Road corridor. Since closure documentation was not in the IEPA files, a Preliminary Site Investigation (PSI) will be needed as part of the design report to determine its risk status.

2.1.13 Visual Resources

One visual theme that extends throughout the study area is the Fox River. A view from the river or from the banks, however, varies with the location. In segments, the river will appear undisturbed by human influence and surrounded by floodplain forests; many of these areas include land protected as forest preserves and some appears undisturbed because development has not encroached nearby, often because of topography. In other locations the river takes on the flavor of the adjoining urbanized area, i.e., existing highway and railroad bridges of varying style, urban development, and transmission lines. The segment of the Fox River between the City of Elgin and the West Dundee Dam is listed on the Nationwide Rivers Inventory (NRI) partially because of the degree to which it is free-flowing and the area is undeveloped. The visual flavor of the remaining areas varies considerably with the local development, including farmland, and the local topography.

2.1.14 Utilities

Utilities within the project area range from electric lines and oil and gas transmission/distribution lines to water supplies and wastewater lines. The major utilities such as transmission lines and water supplies and treatment have been included for analysis in this document. Local electric, telephone, cable and gas distribution lines and service lines will not be considered in this document as they are typically smaller in size, within the public right-of-way, and are commonly relocated for roadway projects. The location of and impact to major utilities will be discussed by region.

2.2 North Region

2.2.1 Socioeconomics

2.2.1.1 Land Use

General
The North Region includes the Villages of Algonquin, Barrington Hills, Sleepy Hollow, Carpentersville, East Dundee and West Dundee. As discussed in Section 1.1, the proposal in this region is the Bolz Road corridor. This corridor begins at Huntley Road near Boyer Road, proceeds easterly across the Fox River to parallel Bolz Road and then continues east to a connection with Illinois Route 62 (Algonquin Road). The corridor is located within Dundee Township.

The potential for land use and socioeconomic impacts from a corridor in this region is primarily confined to the Villages of Algonquin and Carpentersville. The only other community within the influence area of the proposed corridor is a small portion of Barrington Hills. Existing land uses and socioeconomic factors for the North Region are represented on Exhibits 2.2-1 and 2.2-2 and discussed below.

Residential
Residential development near the Bolz Road Corridor is predominantly single-family detached. East of the Fox River, in Carpentersville, the residential units are on small lots, generally less than 10,000 square feet. West of the River, residential development in Carpentersville and unincorporated Kane County occurs on larger lot sizes. There is also a concentration of multi-family housing south of Bolz Road, along Oxford Drive in Carpentersville, known as the Fox View Apartments. The apartment community's 373 units are subsidized through the federal governments's Section 8 program, which provides rent assistance based on income and family size.

Housing
Housing tenure and vacancy rates for Algonquin, Carpentersville, and Kane county are shown in Table 2.2-1. The 1990 Census shows that most of the dwellings in the municipalities adjacent to the corridor are owner occupied (87.2 percent in Algonquin and 69.4 percent in Carpentersville). Census tracts along the Bolz Road Corridor have a higher percentage of owner-occupied housing than either municipality as a whole (see Exhibit 2.2-3 for census tract boundaries in the Bolz Road Corridor).

Owner-occupied housing units in Algonquin and Carpentersville have a median value of $133,300 and $78,900 respectively, according to the 1990 Census (see Table 2.2-2). The Kane County median home value falls in the middle of this range at $102,500. Census tracts within the corridor have median values that range from $72,900 to $131,500.
There is some fluctuation in rents within the study corridor (see Table 2.2-3). Rents in census

tract #8503.01 (see Exhibit 2.2-3) are particularly low and those in tract #8502.01 are particularly high in comparison to the overall figures for Algonquin and Carpentersville. Overall, rent levels in these communities are consistent with the County median of $439 per month.

Table 2.2-1
Housing Tenure (1990), Bolz Road Corridor

Census Tract/ Area	Total Housing Units	Occupied		Vacant		
		Owner	Renter	For Sale	For Rent	Other*
# 8501.00	1,683	1,417	199	37	3	27
% of Total	100.0%	84.2%	11.8%	2.2%	0.2%	1.6%
# 8502.01	1,635	1,401	203	20	3	8
% of Total	100.0%	85.7%	12.4%	1.2%	0.2%	0.5%
# 8503.01	2,094	1,531	501	24	24	14
% of Total	100.0%	73.1%	23.9%	1.1%	1.1%	0.7%
Algonquin	3,975	3,465	410	36	14	50
% of Total	100.0%	87.2%	10.3%	0.9%	0.4%	1.3%
Carpentersville	7,171	4,975	1,929	93	120	54
% of Total	100.0%	69.4%	26.9%	1.3%	1.7%	0.8%
Kane County	111,496	74,514	32,662	943	1,781	1,596
% of Total	100.0%	66.8%	29.3%	0.8%	1.6%	1.4%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

*Includes: units rented or sold, not occupied; units for seasonal, recreational, or occasional use; units for migrant workers; and other vacant units.

Table 2.2-2 Housing Value (1990), Bolz Road Corridor					
Census Tract/Area	**Housing Value (000's)– Specified Owner Occupied Housing Units***				
	Total Units	**<$100**	**$100 to $199.9**	**>= $200**	**Median Value**
# 8501.00	1,306	408	586	312	$131.5
% of Total	100.0%	31.2%	44.9%	23.9%	
# 8502.01	1,334	1,317	17	0	$72.9
% of Total	100.0%	98.7%	1.3%	0.0%	
# 8503.01	1,456	1,347	109	0	$80.8
% of Total	100.0%	92.5%	7.5%	0.0%	
Algonquin	3,268	491	2,524	253	$133.3
% of Total	100.0%	15.0%	77.2%	7.7%	
Carpenters-ville	4,698	4,265	413	20	$78.9
% of Total	100.0%	90.8%	8.8%	0.4%	
Kane County	65,250	31,658	26,346	7,246	$102.5
% of Total	100.0%	48.5%	40.4%	11.1%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

**Excludes mobile homes, houses with a business or medical office, houses in 10 or more acres, and housing units in multi-unit buildings.*

Table 2.2-3 Contract Rent (1990), Bolz Road Corridor					
Census Tract/ Area	Contract Rent* – Renter Occupied Housing Units				
	Total Units	<$500	$500 to $999	>= $1,000	Median Rent
# 8501.00	155	83	69	3	$479
% of Total	90.0%	53.5%	44.5%	1.9%	
# 8502.01	194	27	167	0	$641
% of Total	100.0%	13.9%	86.1%	0.0%	
# 8503.01	489	362	127	0	$163
% of Total	100.0%	74.0%	26.0%	0.0%	
Algonquin	389	224	155	10	$472
% of Total	100.0%	57.6%	39.8%	2.6%	
Carpentersville	1,894	1,004	889	1	$487
% of Total	100.0%	53.0%	46.9%	0.1%	
Kane County	31,155	20,813	10,093	249	$439
% of Total	100.0%	66.8%	32.4%	0.8%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

**Contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included. Table does not include non-cash rents.*

Commercial/Industrial

Exhibit 2.2-1 shows the locations of proposed or committed commercial/industrial development in the North Region. In addition, existing land uses along the corridor are shown on Exhibit 2.2-2. The existing segment of Bolz Road provides direct access to several commercial/industrial properties, including: Meyer Material Quarry, the Fox Valley Gun Club, and a warehouse facility.

Meyer Material, a former sand quarry, is located just north of the Bolz Road and west of Illinois Route 25. Meyer Material has an approved reclamation plan which includes some filling. The property has been annexed into the Village of Carpentersville and their preliminary land use plans call for a mixed use development of the property.

A trucking and livestock export business is located just south of the Lathrop Lane/Illinois Route 31 intersection.

Commercial development near the corridor includes scattered highway oriented uses on Illinois Routes 25 and 62, north of Bolz Road. However, the focus of retail activity near the corridor is the Spring Hill Mall, near Main Street (Illinois Route 72) and Route 31 in Carpentersville (see Exhibit 2.2-1). Other concentrations of retail activity include the downtown areas of Algonquin and Carpentersville, and strip commercial centers on Illinois Routes 25 and 62.

Local/Regional Land Use Plans

Roadway improvements associated with the Bolz Road corridor lie predominantly between the incorporated areas of the Villages of Algonquin and Carpentersville. Annexations are closing the gap of unincorporated, undeveloped land between these municipalities, and extending their western limits. Primary areas intended/anticipated to be developed in each municipality are shown on Exhibit 2.2-1. Official planning designations for vacant and agricultural land are shown on Exhibit 2.2-2.

The Village of Algonquin views the area centered on Randall Road as the core of their future economic development potential. The area surrounding Randall Road is planned for future commercial and business park uses. Development is already occurring along this roadway in the Village, including a Jewel Food Store/Eagle Center south of Illinois Route 62 and a medical facility associated with Sherman Hospital (Elgin), south of Huntington Drive North. Algonquin is planning for residential development along a future Bolz Road improvement. Exhibit 2.2-2 shows the locations of these projects.

Current development in Carpentersville is primarily focused west of the Fox River. Annexations west of Illinois Route 31 within the last two years have resulted in the extension of sewer and water services and added to the growth potential in this area of the Village. Single and multi-family projects are currently being planned and developed in this area, including Glen Eagle Farms and Donroven Lakes (see Exhibit 2.2-1). These two projects will offer a combined total of approximately 900 single-family and 500 multi-family units. Future industrial and office/research is envisioned along Illinois Route 31 in Carpentersville.

2.2.1.2 Population

Population

The current and projected populations of municipalities in the North Region are shown in Chapter One, Table 1.2-1. The Villages of Algonquin and Carpentersville are anticipated to grow in population by 228 percent and 60 percent, respectively, by the year 2020. In comparison, Kane County is expected to increase by 74 percent during this period. Township population projections are shown in Table 2.1-1.

2.2.1.3 Community Cohesion

Neighborhoods

Neighborhoods and subdivisions near the Bolz Road Corridor include: Fox View Apartments, the single-family residential areas adjacent to Woodland School and Perry Elementary/Dundee Crown High School, and the small subdivisions along Crescent Drive and Lathrop Lane (see Exhibit 2.2-2).

Institutional/Governmental

Schools

The North Region is predominantly served by Community Unit School District #300 (see Exhibit 2.1-2) which is split by the Fox River. A small portion of the region, near the eastern terminus of Illinois Route 62 (Algonquin Road), is within the corporate boundaries of the Village of Barrington Hills. Community Unit School District #220 serves this area. There are no crossing guards currently used within the Bolz Road Corridor. Students either take the bus or live close enough to their neighborhood school to walk without crossing Bolz Road.

There is currently one bus stop along Bolz Road, serving a single residence. The primary routes traveled by school buses in the corridor include Bolz Road (District #220) and Illinois Routes 25, 31, 62, and 72, and Main Street in Carpentersville (District #330).

Emergency Services

The Villages of Algonquin and Carpentersville each have a municipal police department. Unincorporated portions of Kane County receive police protection from the Kane County Sheriff's Department. Fire protection is provided by the Algonquin and Carpentersville Fire Protection Districts (see Exhibit 2.1-3). Ambulance service is provided from each of the two fire stations located in both Algonquin and Carpentersville (see Exhibit 2.2-1 for facility locations). Emergency service boundaries include areas east and west of the Fox River.

Health Care

No local or regional health care facilities are located within the Bolz Road Corridor. The North Region is served by several medical facilities, including: Sherman and St. Joseph's Hospital's in the City of Elgin, EHS Good Shepherd Hospital north of Barrington, the Lake in the Hills Medical Center, and the Hoffman Estates Medical Center.

Parks and Recreation

The Northern Region offers a number of parks and recreational facilities. The region is served primarily by the Dundee Township Park District. The District's service boundary includes areas east and west of the Fox River (see Exhibit 2.1.-4). The Kane County Forest Preserve District also owns and maintains other facilities in the area (see Section 2.2.3 for additional discussion).

Table 2.2-4 Population Age (1990), Bolz Road Corridor												
	Age Groups											
Census Tract/ Area	< 5	5 to 17	18 to 20	21 to 24	25 to 44	45 to 54	55 to 59	60 to 64	65 to 74	75 to 84	>= 85	Median Age
# 8501.00	526	1,163	177	209	2,010	553	114	116	180	53	19	30.7
# 8502.01	555	1,361	233	330	1,941	470	220	219	267	40	8	28.2
# 8503.01	714	1,805	359	364	2,226	563	285	283	263	54	16	27.0
Algonquin	1,262	2,482	317	430	4,861	1,129	327	254	394	168	39	30.9
Carpenters-ville	2,309	5,563	1,185	1,394	7,801	1,908	870	832	922	211	54	27.4
Kane County	27,799	66,726	13,913	17,495	108,083	31,629	11,698	10,567	16,741	9,414	3,406	30.9

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

2.2.1.4 Regional Economics

The median household incomes of residents in Algonquin and Carpentersville are given in Table 2.2-6. The median income of Carpentersville residents is slightly lower than the median of all Kane County residents. In addition, approximately 10 percent of Carpentersville residents are below the established poverty level. The median income in Algonquin is 34 percent higher that the County figure.

The 1990 civilian labor force unemployment rates in Algonquin and Carpentersville were 2.3% and 7.0%, respectively. These compare to respective figures of 4.7% and 6.6% for Kane County and the State of Illinois. Of the 11,122 employed Carpentersville residents, 34.4% worked within the manufacturing industry. Industries employing the next highest number of residents are service (includes: Business/repair services, personal services, entertainment, health, education, and other professional services) and retail. The same three industries are the top employers of Algonquin residents. However, the highest percentage of Algonquin residents are employed in the service industries (26.9%).

Major employers in Algonquin and Carpentersville are listed in Table 2.2-7. These numbers demonstrate the importance of manufacturing to the regional economy.

Per Table 2.1-5, employment in Dundee Township is projected to grow at a faster rate (90.2%) than Kane County (43.2%).

In 1994, Dundee Township had 52 separate taxing districts. Dundee School District #20 collected the largest amount of property tax in the Township. Overall, school districts collected the highest

percentage of property taxes levied in Dundee Township (61.2 percent). This is followed by the municipalities at 13.6%, and then various other government bodies im lesser amounts. Table 2.2-8 provides more complete information.

Table 2.2-5
Population by Race/Hispanic Origin (1990)
Bolz Road Corridor

Census Tract/Area	Total Persons	White	Black	Amer. Indian/ Eskimo	Asian or Pacific Islander	Other Race	HispaniOrigin (any race)
# 8501.00	5,150	4,922	34	7	66	121	307
% of Total	100.0%	95.6%	0.7%	0.1%	1.3%	2.3%	6.0%
# 8502.01	5,644	4,945	101	25	52	521	901
% of Total	100.0%	87.6%	1.8%	0.5%	0.9%	9.2%	16.0%
# 8503.01	6,932	5,586	624	17	83	622	1,162
% of Total	100.0%	80.6%	9.0%	0.2%	1.2%	9.0%	16.8%
Algonquin	11,663	11,434	20	21	150	38	202
% of Total	100.0%	98.0%	0.2%	0.2%	1.3%	0.3%	1.7%
Carpentersville	23,049	19,612	1,009	63	294	2,071	3,840
% of Total	100.0%	85.1%	4.3%	0.3%	1.3%	9.0%	16.7%
Kane County	317,471	269,675	19,006	620	4,474	23,696	43,535
% of Total	100.0%	84.9%	6.0%	0.2%	1.4%	7.5%	13.7%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

Table 2.2-6 Income (1989), Bolz Road Corridor			
Census Tract/Area	**Median Household Income**	**Mean Household Income**	**% Persons Below Poverty Level***
# 8501.00	$53,681	$65,190	0.7%
# 8502.01	$37,422	$41,052	4.2%
# 8503.01	$36,104	$36,597	7.4%
Algonquin	$53,665	$57,721	1.6%
Carpentersville	$36,410	$39,387	10.6%
Kane County	$40,080	$46,835	6.8%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-3 Data)

** Does not include institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.*
Poverty statistics are based on a definition originated by the Social Security Administration in 1965 and subsequently modified by Federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget in Directive 14 as the standard to be used by Federal agencies for statistical purposes. Poverty thresholds are based on family size and composition and are revised annually to allow for changes in the cost of living.

2.2.1.5 Environmental Justice

The alignment for Bolz Road is predominately located in census tract #8501.00, and it is adjacent to tracts #8503.01 and #8502.01 (See Exhibit 2.2-3a)

Based on conversations with local officials, the analysis of census data and field reviews, there does not appear to be any known concentrations of low-income or minority populations within the project corridor (census tract #8501.00). Further south, the adjacent census tracts, #8502.01 and #8503.01(See Exhibit 2.2-3), show a higher percentage of minority and low-income populations than Kane County as a whole. However, the minority population percentages and poverty percentages in Carpentersville as a whole are higher than in either census tracts # 8502.01 or # 8503.01.

The Bolz Road alignment is predominately located within census tract #8501.00 (See Exhibit 2.2-3a), which has a higher median household income and lower percent of persons below poverty level than either of the adjacent census tracts, #8502.01 or #8503.01(See Exhibit 2.2-3), or than Kane County as a whole (See Table 2.2-6).

A rental apartment community (Fox View) in census tract #8503.01 south of existing Bolz Road is subsidized with Section 8 federal funding (See Exhibit 2.2-2). This program provides rent

assistance based on income and family size.

Age statistics for residents in the North Region are shown in Table 2.2-4. This table also includes statistics for census tracts adjacent to the Bolz Road Corridor. The median age of residents in census tracts adjacent to the corridor is slightly lower than the median age of all County residents.

The Bolz Road alignment is predominately located within census tract #8501.00 (See Exhibit 2.2-3a); which has a lower percentage of minority population level than adjacent census tracts either #8502.01 or #8503.01(See Exhibit 2.2-3), and than Kane County as a whole (See Table 2.2-5).

Race statistics for residents in the North Region are shown in Table 2.2-5. This table also includes statistics for census tracts adjacent to the Bolz Road Corridor. The racial character is predominantly white within Kane County and the Villages of Algonquin and Carpentersville. In addition, Hispanics represent 16.7% of Carpentersville's population. In comparison, 13.7% of Kane County's residents are of Hispanic origin.

Table 2.2-7
Major Employers, Algonquin and Carpentersville

Company	Estimated Employment
Revcor, Inc. (Carpentersville)	300
M. Grayhill, Inc. (Carpentersville)	250
Bulk lift (Carpentersville)	180
Otto Engineering (Carpentersville)	160
Schiffmayer Plastics (Algonquin)	140
Crystal Die & Mold (Algonquin)	105
Wauconda Tool & Die (Algonquin)	100
Cargill, Inc. (Carpentersville)	98
McWhorter, Inc. (Carpentersville)	90
Kenmode Tool & Die (Algonquin)	80

Source: Community Profile: Algonquin, McHenry Co. Illinois Department of Commerce and Community Affairs. July 5, 1994

Community Profile: Carpentersville, Kane Co. Illinois Department of Commerce and Community Affairs. October 11, 1994

Table 2.2-8 Property Taxes by Collecting Source for Dundee Township	
Jurisdiction	**Per Cent of Property Tax Dollars**
School Districts	61.2
Cities and Villages	13.6
Park Districts	7.9
Kane County	7.4
Townships and Road Districts	2.8
Library Districts	2.7
Fire Districts	2.3
Kane County Forest Preserve	1.8
Miscellaneous Districts	0.4

Source: 1994 Kane County Abstract of Taxes. Kane County Clerk. April 1995

2.2.2 Agriculture

Agricultural parcels within the potentially affected area of the Bolz Road corridor are shown on Exhibit 2.2-2. For additional general background on agriculture, see Section 2.1.2.

The Lathrop Livestock Transportation - Chicago-O'Hare USDA Export Center is located along the Bolz Road corridor just west of Illinois Route 31. This operation collects animals from throughout the country to ship to overseas markets via O'Hare airport in Chicago.

2.2.3 Special Lands (Forest Preserves, Parks, etc.)

The special lands for the north region are illustrated on Exhibit 2.2-4. The Fox River Trail, because it crosses several regions, is discussed in Section 2.1.3. The other properties of particular interest in this region include the Kane County Forest Preserves of Algonquin Shores and Fox River Shores and the Dundee Township Park District Hickory Hills site. The Kane County Forest Preserve is also discussed in Section 2.1.3.

The Dundee Township Park District is the major provider of special lands in the north region. Including the Hickory Hills site, they own approximately 220 hectares (550 acres), including open

space, playgrounds, golf courses, recreation center and a water park.

Algonquin Shores Forest Preserve - Kane County Forest Preserve
The Algonquin Shores Forest Preserve is north of Bolz Road between the Fox River on the west and Williams Street on the east and consists of approximately 10 hectares (24 acres). The area is a mix of meadow and woodland with pockets of wetlands, occupying the eastern side of the Fox River banks. The only improvement to the site is the Fox River Trail, which passes through the property.

Fox River Glen is a 6.2 hectare (15.36 acre) portion of the Algonquin Shores Forest Preserve, that was acquired with assistance from the Land and Water Conservation Fund (Project # 17-00826).

Fox River Shores Forest Preserve - Kane County Forest Preserve
The Fox River Shores Forest Preserve is south of Bolz Road stretching for 0.8 kilometer (0.5 mile) along both banks of the Fox River to approximately Lake Marian Road. The site consists of 45 hectares (112 acres). The hillsides within the preserve are lined with springs and seeps which have formed rich vegetative fens. Amenities at this preserve include nature preserve areas, a boat/canoe launch, a parking lot, picnic shelters, fishing areas and the Fox River Trail.

On the east bank of the river, the Fox River Shores Forest Preserve is contiguous with the Algonquin Shores Preserve with the dividing line being approximately defined as Bolz Road extended. This dividing line also occurs at the narrowest point (100 meters or 320 feet) of the two forest preserves where the park land is constrained on the east by the Fox River and on the west by Bolz Road development. Both the Algonquin Shores Forest Preserve and the Fox River Shores Forest Preserve are located between the Villages of Algonquin and Carpentersville in unincorporated Kane County.

Hickory Hills Site - Dundee Township Park District
The Hickory Hills site is located north of Bolz Road between Illinois Route 62 (Algonquin Road) and Illinois Route 25 in unincorporated Kane County (see Exhibit 2.1-5). The approximate size of the parcel is 8.3 hectares (20.6 acres). The site is owned and maintained by the Dundee Township Park District and was purchased with monies from the Land and Water Conservation Fund (Project 17-00066)) in 1970.

The site is mostly unimproved with the exception of a baseball diamond and playground equipment. These amenities are used by the students of Woodland School, located immediately south of the Park District property. Due to surrounding development, there is no roadway access to the park. Access is from walking through the Woodland School play field or through the back of a Barrington Hills development along Autumn Trail.

2.2.4 Transportation

2.2.4.1 Roadway

Between the McHenry County line and the Northwest Tollway (approximately 10 kilometers - 6 miles) there are only two crossings of the Fox River (Illinois Route 72 and Main Street in Carpentersville - exhibit 1.2-1). As discussed in Chapter 1, these crossings are over capacity and the capacity deficiency is expected to grow. While the Northwest Tollway is operating at an acceptable level-of-service, and after an expected add lane between Randall Road and Illinois Route 25 would continue to do so, it does not effectively serve trips oriented to the communities of Carpentersville and Algonquin, unless they are long and oriented in the direction of the Tollway. Also, as was noted in Section 1.2.4.2, the Main Street crossing in Carpentersville terminates shortly east of the Fox River, limiting its ability to handle non-local traffic. The existing crossings in the north region are shown in Table 2.2-9.

Table 2.2-9
Existing River Crossings
North Region

River Crossing	Jurisdiction	No. of Lanes
Illinois 62/Algonquin Road (in McHenry County)	IDOT	4
Main Street, Carpentersville	Village of Carpentersville	2
Illinois 72/Higgins Road	IDOT	4
Interstate 90/NW Tollway	ISTHA	4

2.2.4.2 Transit

Pace suburban bus service runs a number of bus routes within the City of Elgin connecting to the downtown commuter station. Within the North Region, Pace operates a single bus route (Route 552) between Algonquin and the Metra commuter train station in downtown Elgin. The route picks up riders along Illinois Route 31 and passes locations such as the Springhill Mall.

Metra operates the commuter rail stations in downtown Elgin and the Big Timber station in Elgin. To the north, the Chicago & NorthWestern's (Union Pacific) Northwest Line (Metra) includes a depot in Crystal Lake (approximately 20 kilometers - 12 miles north). To the south is the Geneva station on the Chicago & NorthWestern's (Union Pacific) West Line.

2.2.4.3 Non-Motorized Transportation

The Fox River Trail along the east bank of the Fox River is the most prominent path in the North

Region. The Fox River Trail is used primarily for recreation. Any use for commuter travel would be incidental.

2.2.4.4 Other Modes

There are no other transportation facilities in the North Region relevant to this project.

2.2.5 Cultural Resources

2.2.5.1 Standing Structures

The two-story brick Greek Revival residence at 19N 045 Illinois Route 31 (see Exhibit 2.2-4a for location), known as the Perry-Lathrop House, was listed on the Kane County Register of Historic Places in 1995. In cooperation with the Illinois Historic Preservation Agency (the SHPO), this site was determined to be eligible for inclusion on the National Register of Historic Places (NHRP) as a rural example of the Greek Revival style of architecture.

2.2.5.2 Archaeology

Fieldwork in the Bolz Road corridor resulted in one isolated find and the definition of eight new archaeological sites. One previously recorded site was revisited. Of the ten sites, four sites were recommended for Phase II testing if the project was to impact them.

2.2.6 Geology

2.2.6.1 Bedrock and Structural Geology

The bedrock consists of the Silurian age dolomite of the Kankakee and Elwood Formations. The bedrock is not exposed in the vicinity of the Bolz Road corridor except in the former Meyer Material Quarry. The depth to the bedrock ranges from approximately zero where bedrock is exposed in the former Meyer Material Quarry to approximately 67 meters (220 feet) under the thicker moraine deposits.

2.2.6.2 Surface Geology

The Bolz Road corridor is located in an area of coarse sand and boulder outwash deposits (Henry Formation), which overlie the West Chicago Moraine (Yorkville Formation) on the east side of the Fox River and the Borlina Moraine (Yorkville Formation) on the west side of the Fox River. Relief along the corridor totals 55 meters (180 feet) and elevations range from highs of approximately 280 meters (920 feet) along the tops of the moraines on each side of the river to 225 meters (740 feet) MSL at the Fox River. The sand and gravel deposits (Batavia Member of the Henry Formation) are extensively mined at Meyer Materials pits north of the corridor on the east side of the river.

The Bolz Road corridor includes soils typically associated with supporting the following ecotypes: Wet Savanna, Mesic Savanna, Mesic Prairie, Mesic Forest, Wet Prairie and Bog / Fen. Current plant communities are shown on Exhibit 2.2-6.

2.2.6.3 Mineral Resources

High quality coarse sand and gravel sheet deposits of the Henry Formation are developed in pits

operated by Meyer Material east of the Fox River, immediately north of the proposed right-of-way. The deposits at this location may be on the order of 15 meters (60 feet) thick. Meyer plans to extend their mining to the south toward the proposed corridor. This extension includes the removal of buildings and other structures. Section 6(h) of the Illinois Surface Mined Land Conservation and Reclamation Act requires a setback of mining activities from property lines, rights-of-way of public roads or highways. Meyer currently has a 61 meter (200 foot) shelf between its operations, Illinois Route 25 and Algonquin Road.

Meyer has an approved reclamation plan which calls for some filling. No other operations were indicated as active in or adjacent to the corridors in the 1997 Mineral Producers Directory (Masters, 1999), the most recent publication, and none were identified from field observations.

2.2.6.4 Groundwater Resources

Groundwater Aquifers and Usage

The upper (unconfined) sand and gravel aquifer is a public water supply aquifer within this corridor. In the east half of the corridor area, the shallow sand and gravel aquifer is known as the Valparaiso Aquifer. Two of the public supply wells in the City of Carpentersville, just south of the proposed corridor, pump from the Valparaiso Aquifer at a depth of approximately 55 meters (180 feet). The aquifer consists of extensive sheet-like deposits of very coarse grained sand and gravel deposits greater than 20 meters (60 feet) thick. These surficial or near surficial sand and gravel deposits are overlain only by windblown silt and belong to the Henry Formation.

Most of the private wells on both sides of the Fox River extract water from the Valparaiso aquifer. On the west side of the river, the aquifer is covered by another 20 meter (60 foot) surficial sand and gravel aquifer and an aquitard. There is no cover of sand and gravel or aquitard east of the river. The public wells reported in the vicinity of the corridor are 600 to 900 meters (2,000 to 3,000 feet) from the corridor. These wells are in the confined Valparaiso aquifer. Eleven private wells were identified within 150 meters (500 feet) of the corridor. Since not all wells are on the State's list, there may be others in proximity to the corridor which are not reported.

Another sand and gravel aquifer exists both east and west of the Fox River, within 1.6 km (1 mile) of the river. This aquifer is identified as the Kaneville aquifer member of the Elburn Aquiformation (Curry and Seaber, 1990). The thickness of this aquifer seldom exceeds 10 meters (30 feet), and is generally 15 to 30 meters (50 to 100 feet) below the surface. The aquifer is underlain by the Tiskilwa Till and confined above by the Yorkville Till member of the Wedron Formation.

A shallow bedrock aquifer of the Maquoketa group lies below the corridor west of the Fox River. The Maquoketa group is composed of shale, argillaceous dolomite, limestone and interbedded shale. The dolomite may be up to 60 meters (200 feet) thick. The depths of vicinity bedrock wells range from 61 meters (200 feet) to over 150 meters (500 feet).

Groundwater Quality

There are at present no known sources of groundwater contamination in the Bolz Road corridor. Groundwater quality information from the Illinois State Water Survey database was reviewed for eight wells within 1.6 kilometers (one mile) of the corridor. These wells pump from aquifers located less than 152 meters (500 feet) below ground surface. The data indicate that, except for what are apparently naturally occurring total iron concentrations which slightly exceed the potable water quality standards (Illinois Class I Groundwater Standard), all constituents are more than a factor of 10 below the maximum concentrations allowed for groundwater. The standards are those set by the State of Illinois for potable groundwater and are not to be exceeded except due to natural causes (35 IL Admin Code 260.210). The Illinois standards are equal to or more stringent than the federal standards.

2.2.7 Water Quality and Water Resources

The North Region is associated with the Bolz Road corridor that crosses the Fox River at river mile 79.2 (see Exhibit 2.2-5). There are no other identified stream crossings in this corridor. The land use in this region consists of developed land, agricultural land, and undeveloped land.

Fox River

The Fox River has an identified floodway width of 210 meters (700 feet) at the crossing location, with a river channel approximately 105 meters (340 feet) wide. The stream depth in the upper reaches of the Fox River near Bolz Road is 1 to 2 meters (3 to 6 feet) and in the lower reaches is 2 to 3 meters (6 to 10 feet) (Taylor, et. al., 1995). The river is fairly swift in the area of the crossing and the substrate consists of varying combinations of cobble, gravel, sand, and silt. Stream banks are undeveloped and include a floodplain forest on the western bank.

Three municipalities within the North Region have wastewater treatment plant (WWTP) discharges to the Fox River: Algonquin (river mile 80.7), Carpentersville (river mile 76.5), and East Dundee (river mile 75.0). The only dam in the region is located at river mile 77.2, approximately 3.2 kilometers (2 miles) downstream of the proposed crossing. The nearest known water intake structure is for the City of Elgin, located at river mile 73.0, approximately 10 kilometers (6 miles) downstream.

Ambient Water Quality Monitoring Network (AWQMN) station DT06 is located approximately 3.9 kilometers (2.4 miles) north of the Bolz Road crossing (see Exhibit 2.1-7). In general, water quality at DT06 was noted to contain lower concentrations of several parameters, such as phosphate and nitrogen-containing compounds, than were noted at the AWQMN stations farther downstream in the Central and South Regions. Mean chloride levels have been less than 60 mg/ℓ, which is below the Illinois General Use Water Quality Standard of 500 mg/ℓ. All metals achieved the water quality standards with the exception of cadmium.

The Index of Biotic Integrity (IBI) determined from the fish studies at station DT06 is 34, and the Macroinvertebrate Biotic Index (MBI) determined from the aquatic macroinvertebrate survey is 7.5 (IEPA, 1996). Both these index values characterize the Fox River as a moderate aquatic

resource. The Potential Index of Biotic Integrity (PIBI) is 60 indicating a unique aquatic resource (IEPA, 1996). The station was rated as full support for both overall use, aquatic life use, fish consumption, and swimming, and was classified as a moderate aquatic resource by IEPA in 1995 (IEPA, 1996).

Twenty-four species of fish were identified during collection activities. The minnow and carp (Cyprinidae) and sunfish (Centrarchidae) families represented the largest number of species (Taylor, 1995).

Substrate in the crossing area is too silted to provide a thriving mussel population. Only one live mussel was recovered and dead shells of seven mussel species, including the spike (*Elliptio dilatata*) and the elktoe (*Alasmidonta marginata*, federal species of concern) were collected (INHS, 1996).

Aquatic macroinvertebrates were largely represented by species able to live in poorly oxygenated or hypoxic waters. A survey of the area produced 284 individuals in 24 taxa. No federal or state listed endangered or threatened species of aquatic macroinvertebrates, or species under consideration for such listing, were collected from the Fox River in the vicinity of any of the proposed bridge corridors in Kane County during the present surveys, nor are any known or thought likely to occur at these sites (Taylor, et al., 1995).

2.2.8 Wetlands

The locations of the sites inventoried for wetland determinations in the Bolz Road Corridor are shown on Exhibit 2.2-6. Table 2.2-10 summarizes the wetlands delineated in this corridor. General land use and vegetative cover of areas adjacent to identified wetlands are also illustrated in Exhibit 2.2-6.

Wetland No. 1
Wetland No. 1 is a marsh located approximately 32 to 95 meters (105 to 312 feet) south of Huntley Road, approximately 171 meters (561 feet) west of Boyer Road. As the site extends beyond the corridor, its entire area was not inventoried; however, 0.09 hectares (0.22 acres) occur within the project limits. The site retains precipitation and surface runoff, and provides good wildlife habitat. The dominant plant species are spikerush (*Eleocharis smallii*), river bulrush (*Scirpus fluviatilis*), great bulrush (*Scirpus validus creber*) and cattail (*Typha latifolia*). The Floristic Quality Index (FQI) for the site is 10.3 with a mean C of 2.4, indicating moderate to poor natural quality. The marsh is identified in the National Wetlands Inventory (NWI) as a seasonally flooded, emergent, palustrine wetland (PEMC). This wetland is located in the watershed of the Kishwaukee River, a tributary of the Rock River. This is the only wetland in all five corridors that is located outside the Fox River watershed.

Wetland No. 2
Wetland No. 2 is a 0.27 hectare (0.67 acre) marsh located approximately 837 meters (2,745 feet) east of the intersection of Huntley Road and Boyer Road. The site collects and holds water from

rainfall and provides wildlife habitat of moderate quality. The dominant plant species are reed canary grass (*Phalaris arundinacea*) and cattail. The FQI for the site is 9.5 with a mean C of 3.0, indicating moderate to poor natural quality. The site was not identified in the NWI.

Wetland No. 3

Wetland No. 3 is a 0.13 hectare (0.32 acre) pond located approximately 44 meters (144 feet) west of Randall Road, and approximately 1,646 meters (5,400 feet) north of the intersection of Huntley Road and Randall Road. The pond collects precipitation and provides a water source and low-quality habitat for wildlife. The dominant plant species is reed canary grass. The FQI for the site is 6.4 with a mean C of 4.5, indicating poor natural quality. The site is identified on the NWI as a semipermanently flooded, emergent, palustrine wetland (PEMF).

Wetland No. 4

Wetland No. 4 is a 1.08 hectare (2.67 acre) marsh bisected by Randall Road, approximately 1,829 meters (6,032 feet) north of the intersection of Huntley Road and Randall Road. The marsh collects precipitation and surface runoff, while providing wildlife habitat of good quality. The dominant plant species are reed canary grass, water smartweed (*Polygonum amphibium*), river bulrush, and cattail. The FQI for the site is 6.3 with a mean C of 2.8, indicating poor natural quality. The site is identified on the NWI as a farmed, seasonally flooded, emergent, palustrine wetland (PEMCf).

Wetland No. 5

Wetland No. 5 is a 0.90 hectare (2.22 acre) pond located approximately 25 meters (82 feet) west of Sleepy Hollow Road and 1,432 meters (4,700 feet) south of North County Line Road. The dominant plant species are spikerush, water milfoil (*Myriophyllum spp.*), reed canary grass, and water smartweed. The FQI for the site is 8.5 with mean C of 4.3, indicating poor natural quality. The NWI classifies the site as an excavated, permanently flooded, open water, palustrine wetland (POWHx). Subsequent field reviews in 2001 found the wetland has been regraded and revegetated to the form of a maintained suburban wetland. It no longer is considered a wetland.

Wetland No. 6

Wetland No. 6 is a borrow pit lake located east of the Fox River, approximately 13 meters (43 feet) south of Bolz Road and 215 meters (705 feet) east of Williams Street, immediately north of the Fox View Apartments. This site is not a wetland. It is an unvegetated deep water lake, probably excavated for borrow material used in the construction of the adjacent road. The lake functions as a detention pond and is probably inundated throughout the year. The NWI identified the site as a diked or impounded, permanently flooded, open water, palustrine wetland (POWHh).

TABLE 2.2-10
SUMMARY OF WETLAND CHARACTERISTICS IN THE BOLZ ROAD CORRIDOR

Map No.	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI [1]	Function	Wetland Size, hectares (acres)
1	PEMC	W	spikerush cattails	Peotone	Depression surrounded by cropland and roads	10.3	Runoff retention Wildlife habitat	undetermined [3]
2	NM [2]	NM [2]	reed canary grass cattails	Drummer	Depression surrounded by cropland and roads	9.5	Runoff retention Wildlife habitat	0.27 (0.67)
3	PEMF	W	reed canary grass	Undetermined Hydric	Pond, surrounded by cropland and roads	6.4	Runoff retention Wildlife habitat	0.13 (0.32)
4	PEMCf	W west PC east	reed canary grass water smartweed cattails	Peotone	Bisected depression surrounded by cropland and roads	6.3	Runoff retention Wildlife habitat	1.08 (2.66)
5*	POWHx	W	spikerush milfoil reed canary grass	Undetermined Hydric	Pond, surrounded by croplands and roads	8.5	Runoff retention Wildlife habitat	0.9 (2.23)
6	POWHh	NM [2]	deep water unvegetated	Undetermined Hydric	Pond (detention) Excavated, residential and roads	N/A	Flood storage	undetermined [3]

[1] FQI - Floristic Quality Index (Swink & Wilhelm, 1994 Methodology)
[2] NM = Not Mapped
[3] Extends for long distance outside corridor.

NWI - National Wetland Inventory
NRCS - Natural Resource Conservation Service

NWI
P- Palustrine
EM - emergent
OW- open water
UB- unconsolidated bottom
A- temporarily flooded
C- seasonally flooded
F- semi-permanently flooded
G- intermittently exposed
H- permanently flooded
f- farmed
h- diked/impounded
x- excavated

NRCS
PC - prior converted
W - wetland

*This site has since been converted to a detention pond and no longer supports natural vegetation.

2.2.9 Biology

2.2.9.1 Vegetation and Cover Types

The Bolz Road Corridor consists of large agricultural tracts west of the Fox River and developed areas, park land, and upland forest east of the Fox River. Approximately 50 per cent of the land within the corridor is agricultural. These fields lack natural quality and do not provide habitat for any species of state or federal concern (Wilm, et al., 1995). Development east of the Fox River has reduced vegetative cover types to seven communities (Wilm, et al., 1995).

No plant communities of high natural quality exist within the corridor. Most communities are degraded remnants and early to mid-successional vegetation types. Due to the amount of human disturbance in the area, the overall quality of the vegetation within this corridor is poor (Wilm, et al., 1995). As shown in Table 2.2-11, the dominant cover types for this corridor were agricultural lands, upland forests, and shrublands. The Illinois Natural History Survey (INHS) identified the different cover types within the corridor and assigned letters to the different communities, which are referred to (in parentheses) in the text. These areas are shown in Exhibit 2.2-6.

TABLE 2.2-11
Cover Type in Bolz Road Corridor
(within a 100-meter corridor)

Cover Type	Hectares
Developed	32
Agricultural	69
Upland Forest	18
Shrubland	6
Non-native Grassland	0.7
Shrubland/Forbland	0.4
Marsh	0.9
Pond	0.6
Lake	0.3
Total	**128**

Three upland forest (B) communities were identified within the corridor (Wilm, et al., 1995). These upland forest areas within the 100-meter project corridor range in size from 0.2 to 6.1 hectares (0.5 to 15 acres). These communities consist of two large tracts of upland forest (B2 & B3) and small remnant upland forests dispersed along the corridor that are collectively considered one upland forest community (B1). The two large upland forests are located adjacent to the western shore of the Fox River and west of Illinois Route 31.

The 4.2-hectare (10-acre) upland forest tract located west of Illinois Route 31 (B3) has been

classified as a degraded wet-mesic upland forest (Site 1 in Hill, 1994) with little understory development (Hill, 1994). Dominant trees in this area are large bur oaks (*Quercus macrocarpa*) and black walnuts (*Juglans nigra*). The understory species and the presence of old fences indicated that this area is currently grazed and has been grazed historically (Wilm, et al., 1995 and Hill, 1994). There is no roadway currently in this area.

The upland forest located on the west side of the Fox River (B2) is dominated by mature bur oaks that are at least 100 years in age. Approximately 1.1 hectares (2.8 acres) of this forest, mixed with wetlands, was characterized within the 100-meter corridor; however, the forest extends north and south of the corridor. The west bank upland forest has been further classified as a heavily degraded mesic floodplain forest and pasture land (Site 2 in Hill, 1994). Dominant plants in this 15+-hectare (38-acre) forest include bur oak, box elder, green ash, and slippery elm (*Ulmus rubra*). The understory is dominated by chokecherry (*Prunus virginiana*), American elm (*Ulmus americana*), box elder (*Acer negundo*), and common buckthorn (*Rhamnus cathartica*). This forest shows signs of fire suppression, disturbance, and past grazing (Wilm, et al., 1995).

In addition to the two large forest tracts, small remnant upland forests (B1) are located in a variety of locations along the corridor. The upland forest communities dispersed throughout the corridor are characterized by scattered large trees that are in excess of 80 years of age (Wilm, et al., 1995). The majority of these older trees consist of white oak (*Quercus alba)* and bur oak. However, most of the overstory consists of young and mature second growth, generally 20 to 60 years old. These forests are highly disturbed due to grazing and timber cutting. Other dominant tree and sapling species include American elm, chokecherry, green ash (*Fraxinus pennsylvanica*), and box elder.

Understory shrubs in all upland forests are predominantly exotic honeysuckle (*Lonicera maackii*) and buckthorn with the forbs including garlic mustard (*Alliaria petiolata*), Virginia creeper (*Parthenocissus quinquefolia*), ground ivy (*Glechoma hederacea*), enchanter's nightshade (*Circaea lutetiana canadensis*), white avens (*Geum canadense*), smooth brome (*Bromus inermis*), Kentucky blue grass (*Poa pratensis*), fescue (*Festuca pratensis*), and orchard grass (*Dactylis glomerata*) (Wilm, et al., 1995). The presence of aggressive species, such as buckthorn, honeysuckle, and garlic mustard, and the absence of young seedlings and saplings of oaks in the understory, indicates that the area has been disturbed and regeneration of the oak forest is unlikely. The FQI for the upland forest areas ranged from 8.1 to 13.7 with the Mean Coefficient of Conservatism ranging from 2.3 to 2.6, which indicated that the forest areas were considered to be of low floristic quality.

Some of the remnant upland forests (B1) were further classified as floodplain forest, oak savannah, and pine plantation. The remnant upland forest just east of the Fox River was further classified as a degraded wet floodplain forest (B1/Site 3 in Hill, 1994). This 7.8-hectare (20-acre) area was dominated by eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), and Japanese honeysuckle (*Lonicera japonica*) (Hill, 1994).

The ~~two~~ largest areas of remnant upland forests (B1) identified is the degraded mesic bur oak

savannah (B1/Site 4 in Hill, 1994) at the junction of Illinois Route 25 and Bolz Road .The 11-hectare (28-acre) remnant mesic savannah was dominated by bur oak.

Another notable remnant upland forest (B1) is located approximately 200 meters (656 feet) east of the Fox River. This forest is adjacent to the high school and is located on both the north and south sides of Bolz Road. Only 2.5 hectares (6.2 acres) of this approximately 16-hectare (40-acre) remnant upland forest is located within the project corridor.

Two shrubland areas (C), 5.7 and 0.4 hectares (14 and 1.0 acres) in size have been identified in the corridor. One shrubland area, located between Illinois Route 25 and Illinois Route 62 (C1) is under active development. The second shrubland area, located between the Fox River and Williams Street (C2), is an old field that has been abandoned for at least ten years (Wilm, et al., 1995). The dominant shrubs and saplings are green ash, white mulberry (*Morus alba*), and American elm. Young trees are common at both sites, but shrubs and saplings dominate.

Non-native grassland areas (E) typically are communities altered by man for agricultural or development purposes. The two areas in the corridor are dominated by smooth brome, Kentucky blue grass, and Canada goldenrod (*Solidago canadensis*) (Wilm, et al., 1995).

One shrubland/forbland community (D) was identified south of the corridor and east of Randall Road. This site is adjacent to a marsh and is approximately two hectares (five acres) in size. Young woody vegetation, dominated by box elder, is common in this old field. The field was probably abandoned 10 to 12 years ago. A combination of forbs and grasses dominate the herb layer and non-native species are common (Wilm, et al., 1995).

Wetland areas in the project corridor include three marshes that are described in detail in Section 2.2-8. These marshes (F) consist of low drainage areas that hold water during storm events. The marsh areas range in size from 0.1 to 0.7 hectares (0.2 to 1.8 acres).

Three open water areas in the project corridor include two ponds (G) and one lake (H). The ponds appear to hold water year-round and contain both emergent and aquatic vegetation. The ponds are located approximately 32 meters (105 feet) west of both Randall Road and Sleepy Hollow Road and are 0.1 and 0.5 hectares (0.2 and 1.2 acres) in size. The lake is located approximately 215 meters (705 feet) east of Williams Street and is 0.3 hectares (0.8 acres) in size. The lake was historically a borrow pit and currently functions as a detention pond (Wilm, et al., 1995). The lake is un-vegetated, but the periphery is lined by trees.

2.2.9.2 Wildlife

Wildlife habitat in the Bolz Road Corridor consists of grassland, upland forest, agricultural land, and suburban land. Suburban development and gravel mining operations have limited the amount and quality of wildlife habitat in the project corridor. Overall habitat quality in the corridor is poor due to human disturbance and development (INHS, 1996). The suburban and industrial development areas within the corridor provide marginal wildlife habitat. The species normally present in this type of setting are species adapted to edges and those that can exist in close

proximity to human activity.

The only large (greater than 8 hectares (20 acres)) areas of contiguous upland forest within the corridor are located along the Fox River (B2). The 11-hectare (28-acre) upland forest savannah at the intersection of Bolz Road and Illinois Route 25 (B1) has been previously bisected by the construction of Illinois Route 25. This left two parcels of 5.7 and 4.7 hectares (14 and 11 acres), north of Bolz Road. These parcels are considered too small to support interior forest birds and wildlife, instead supporting wildlife adapted to edges and smaller forest remnants. In addition, this forest has been isolated from other forest communities by gravel pit operations and suburban development within Carpentersville. The only corridor open to wildlife is to the northeast, towards the open shrublands into Barrington Hills. Only small remnant pieces of upland forest remain east of these woods.

The upland forests along the Fox River (B2) and east of William Street (B1) are linked by corridors to larger tracts of undeveloped forests. These forests are located mainly south of the corridor along the Fox River, which is the main corridor through the area. This corridor here allows for freer movement of wildlife in the vicinity.

Birds

A total of 53 bird species were counted by the INHS in the Bolz Road Corridor (Amundsen & Enstrom, 1996). The majority of the species consisted of songbirds and ducks as well as small numbers of herons, woodpeckers, hawks, gulls, and doves. The birds counted by the INHS include great blue heron (*Ardea herodias*), Canada goose, wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), ring-billed gull (*Larus delawarensis*), mourning dove, red-tailed hawk (*Buteo jamaicensis*), red-bellied woodpecker, red-headed woodpecker (*Melanerpes erythrocephalus*), blue jay, crow, house wren (*Troglodytes aedon*), kinglets, wood thrush (*Hylocichla mustelina*), robin, starling, cedar waxwing, varieties of sparrows, finches, and blackbirds. As many of these species are adapted to close proximity to humans and habitat edges, there is suitable habitat for these species within the corridor.

The Illinois list of species of special concern which were identified within the corridor include the golden-crowned kinglet, blue gray gnatcatcher (*Polioptila caerulea*), wood thrush, gray catbird, cedar waxwing, yellow-throated vireo (*Vireo flavifrons*), eastern towhee (*Pipilo* sp.), song sparrow (*Melospiza melodia*), eastern meadowlark (*Sturnella magna*), Baltimore oriole (*Icterus galbula*), eastern wood pewee (*Contopus virens*), and the great crested flycatcher (*Myiarchus crinitus*).

Marginal breeding habitat for sharp-shinned hawk (*Accipiter striatus,* state endangered), the recently state de-listed Cooper's hawk (*Accipiter cooperii*), and brown creeper (*Certhia americana*, state threatened) is present in the corridor (INHS, 11/20/96). However, only the brown creeper has been confirmed to forage in the project corridor (Wilm, et al., 1995). The brown creeper frequents coniferous and mixed woods as well as grassland/shrubland in the winter and upland woods in the fall. One sharp-shinned hawk was observed as a fly-by in the spring (INHS, 1/9/96), but none are known to frequent the corridor. One great egret (*Casmerodius albus*, state endangered) was observed foraging just south of the corridor along the Fox River.

However, no confirmed sightings of the great egret are known within the project corridor (Wilm, et al., 1995). A few additional species do forage and fly within the corridor study area. However, specific nesting habitat is not known to be present, and other suitable foraging areas are located along the Fox River (Amundsen and Enstrom, 1996). The black crowned night heron was observed within the project corridor; however nesting habitat was not present (Amundsen and Enstrom, 1996).

Mammals

The natural communities, agricultural land, and developed areas found in the corridor offer habitat to a variety of small and large mammals. Many mammals are habitat generalists that use a variety of habitat types and occur in disturbed areas and close to humans (Hofmann, 1996). A total of 17 common mammal species were trapped or observed in representative natural communities, such as upland forests and shrubland; however, 28 species are known or are likely to occur in the corridor. The most frequently captured was the white-footed mouse, which is an ubiquitous species (Hofmann, 1996).

Although several types of communities, including agricultural land and small tracts of upland forest, provide suitable habitat for a variety of mammals, no significant findings on mammal distribution and species were reported (INHS, 11/20/96). Potential river otter (state endangered) habitat exists on the west bank of the Fox River, but is not sufficient to support otters other than transient visitors (INHS, 11/20/96). River otter have been observed below the South Elgin dam (16 kilometers (10 miles) south) in the 1980's.

Possible transient bobcat (state threatened) habitat exists in less-developed areas west of the Fox River. None have been sighted within the project corridor (Hofmann, 1996).

Reptiles and Amphibians

Segmented and small areas of upland forest, pasture land, and marsh provide limited habitat for reptiles and amphibians within the project corridor. The natural vegetation is highly fragmented and provides limited habitat for amphibians and reptiles (Phillips, 1995). No reptiles or amphibians were observed during field surveys (INHS, 1/9/96); however, the western chorus frog (*Pseudacris triseriata*) was heard calling from the wetlands (Phillips, 1996).

2.2.9.3 Threatened and Endangered Species (see Exhibit 2.2-7)

Federal Listed Species

No federally listed species were observed in the project corridor during the biological surveys.

State Listed Species

The brown creeper was observed in the project area during the fall (2 individuals), winter (4 individuals) and spring (1 individual) avian surveys. The observations occurred within a pine plantation, upland woods on mine soils, and mixed woodlands. The proposed project will not impact the brown creeper.

2.2.10 Air Quality

The existing air quality for the study area, including available data that may apply to the North Region, is discussed in Section 2.1.10.

2.2.11 Noise

Noise analysis for a roadway project consists of comparisons of the existing traffic noise to the future Build and No-Build options. The analysis is defined in Section 4.1.11 and the results for the North Region are found in Section 4.2.11.

2.2.12 Special Waste

Land uses in the only proposed alignment in the Bolz Road Corridor have been predominantly farmland, woodland, and residential, which usually do not generate special wastes. The only commercial facilities near the proposed right-of-way (ROW) are the Lathrop Livestock Transportation-Chicago-O'Hare USDA Export Center, Fox Valley Gun Club and Meyer Material Company (see Figure 2.2-8.).

Hazardous Wastes
Review of the listing of potential suspected and known hazardous waste or hazardous substance sites in Illinois has determined that the proposed roadway will not require any right-of-way or easement from any site included on the CERCLIS listing as of J.

Undetermined Waste Status
The only RCRA generator in the vicinity is the Meyer Material Company, Yard #25, west of Illinois Route 25 and 85 meters (260 feet) north of the corridor centerline. This RCRA generator has no violations on file and the area groundwater gradient is parallel to the proposed corridor area.

Just west of the Meyer Material property and north of Bolz Road is the Fox Valley Gun Club with a small arms shooting range within the proposed corridor. There is potential for lead contamination at this location.

Non-Hazardous Wastes
Just north of Bolz Road and west of Illinois Route 25, approximately 60 meters (200 feet) from the corridor centerline, is a Meyer Material Company sand and gravel pit. Seven underground storage tank (UST) sites and two leaking underground storage tank (LUST) incidents are registered for this site. A gasoline pump island was noted at Meyer's Yard #4 property, approximately 49 meters (150 feet) north of the centerline of the proposed corridor. Several above-ground fuel storage tanks, drums and heavy construction equipment were stored within the corridor. All structures (buildings, above-ground storage tanks (ASTs) and USTs) have been removed. IEPA

files indicate that closure letters were issued for the two incidents.
Farms may have unregistered heating oil USTs. One farmstead is located just east of the Illinois Route 31, within the proposed corridor.

A LUST incident has been reported at Little Jack Night Shift Transmission (currently Discount Brake and Muffler Shop), located at the southeast corner of Bolz Road and Illinois Route 25, 39 meters (120 feet) south of the corridor centerline. A closure letter was issued for this site in 1994 and no new incidents have been reported through February 2001. The groundwater gradient at this location is toward the west and parallels the proposed corridor.

2.2.13 Visual Resources

The study area can be broken into areas east and west of the Fox River. East of the river the corridor is mainly urbanized. There are businesses and homes within 300 meters (1000 feet) of the east bank. Some homes are 25 meters (75 feet) from river's edge.

To the west of the river the property becomes more rural and scenic. The gently rolling hills along with the large, stately oaks and maples create a peaceful setting. The nearest house to the west edge of the river is along Illinois Route 31, approximately 1 kilometer away. The homes that exist west of the river are large in size and widely spread on 0.8 to 2 hectare (2-5 acre) estate type lots. Most of the land west of the river not used as residential is now cropland or pasture. As development is proceeding rapidly in the area, this visual environment is changing.

2.2.14 Utilities

There is no known potential for major utility conflicts within the Bolz Road Corridor.

2.3 Central Region

Two of the three corridors (CC&P/Stearns Road and C&NW/Dean Street) in the Central Region involve active railroads. Since the initiation of this project, both railroads have changed ownership. The Chicago Central & Pacific (CC&P) Railroad was sold to the Illinois Central Railroad and subsequently to the Canadian National and the Chicago & NorthWestern Railroad is now owned by the Union Pacific Railroad. In the interest of consistency with previous reports, the corridor names will remain CC&P/Stearns Road and C&NW/Dean Street. Any discussion of the railroad within the text, however, will refer to the current owner.

Since the release of the *Draft Environmental Impact Statement and Section 4(f) Evaluation* the Red Gate Corridor and the C&NW/Dean Street Corridor have been dropped from further consideration. Since the discussion of those corridors is remaining in the following for historical purposes and to provide understanding of those decisions, only very limited updates of those corridors were provided.

2.3.1 Socioeconomics

2.3.1.1 Land Use

General

The Central Region includes the Villages of Bartlett, South Elgin and Wayne, and the City of St. Charles. Three bridge crossing corridors are under consideration in this region: CC&P/Stearns Road, Red Gate, and C&NW/Dean Street Corridors. These corridors are located predominantly within St. Charles Township. The CC&P/Stearns Road Corridor is also partially located in Elgin Township.

From the land use and socioeconomic perspective, the potential for impact is in the Villages of South Elgin (CC&P/Stearns Road Corridor) and Wayne (Red Gate Corridor), and in the City of St. Charles (Red Gate and C&NW/Dean Street Corridors). A small portion of Bartlett, within the influence area of the CC&P/Stearns Road Corridor, is occupied by the Tri-County State Park. Existing land uses and socioeconomic factors for the Central Region are discussed below and represented on Exhibit 2.3-1 and the individual corridor maps: Exhibits 2.3-2 (CC&P/Stearns Road), 2.3-3 (Red Gate), and 2.3-4 (C&NW/Dean Street).

Residential

CC&P/Stearns Road Corridor

Residential development in proximity to the CC&P/Stearns Road Corridor is single-family detached. West of the Fox River, in South Elgin, the trend of development has been for small lot subdivisions (lots generally less than 10,000 square feet). Recent developments include the Sugar Ridge subdivision (shown on Exhibit 2.3-2). This residential community was formerly incorporated as a Village, but was officially dissolved in 1980.

Housing

Table 2.3-1 shows the tenure and vacancy rates for census tracts within the CC&P/Stearns Road Corridor (see Exhibit 2.3-5 for tract boundaries), adjacent municipalities, and Kane County. According to the 1990 Census, most of the housing units in proximity to the corridor are owner occupied. Both affected census tracts have owner occupancy rates greater than South Elgin (77.8 percent) or Kane County (66.8%).

Table 2.3-1
Housing Tenure (1990), Central Region

Census Tract/ Area	Total Housing Units	Occupied		Vacant		
		Owner	Renter	For Sale	For Rent	Other*
# 8520.01[1,2,3]	3,004	2,424	421	59	21	79
% of Total	100.0%	80.7%	14.0%	2.0%	0.7%	2.6%
# 8521.00[1,2,3]	1,987	1,840	84	33	4	26
% of Total	100.0%	92.6%	4.2%	1.7%	0.2%	1.3%
# 8522.02[3]	1,919	831	956	9	108	15
% of Total	100.0%	43.3%	49.8%	0.5%	5.6%	0.8%
# 8523.00[3]	963	317	600	9	24	13
% of Total	100.0%	32.9%	62.3%	0.9%	2.5%	1.4%
South Elgin[1]	2,503	1,947	506	7	15	28
% of Total	100.0%	77.8%	20.2%	0.3%	0.6%	1.1%
St. Charles[2,3]	8,505	5,682	2,451	88	200	84
% of Total	100.0%	66.8%	28.8%	1.0%	2.4%	1.0%
Wayne[2]	551	503	22	9	3	14
% of Total	58.3%	52.2%	2.3%	0.9%	0.3%	2.5%
Kane County[1,2,3]	111,496	74,514	32,662	943	1,781	1,596
% of Total	100.0%	66.8%	29.3%	0.8%	1.6%	1.4%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

* Includes: units rested or sold, not occupied; units for seasonal, recreational, or occasional use; units for migrant workers; and other vacant units.

[1] Relevant to the CC&P/Stearns Road Corridor

[2] Relevant to the Red Gate Road Corridor

[3] Relevant to the C&NW/Dean Street Corridor

According to the 1990 Census, the median value of owner-occupied housing units in South Elgin is lower than, but comparable to, that in Kane County, $94,700 and $102,500, respectively (see Table 2.3-2). Median home values in census tracts along the CC&P/Stearns Road Corridor are generally higher. The median rent levels are also generally higher in the affected census tracts than in all of South Elgin or Kane County (see Table 2.3-3).

Table 2.3-2
Housing Value (1990),Central Region

Census Tract/Area	Housing Value (000's)– Owner Occupied Housing Units				
	Total Units	<$100	$100 to $199.9	>= $200	Median Value
# 8520.01[1,2,3]	2,201	619	648	934	$176.2
% of Total	100.0%	28.1%	29.4%	42.4%	
# 8521.00[1,2,3]	1,670	97	651	922	$211.1
% of Total	100.0%	5.8%	39.0%	55.2%	
# 8522.02[3]	754	205	493	56	$118.8
% of Total	100.0%	27.2%	65.4%	7.4%	
# 8523.00[3]	260	108	148	4	$106.4
% of Total	100.0%	41.5%	56.9%	1.5%	
South Elgin[1]	1,749	1,027	716	6	$94.7
% of Total	100.0%	58.7%	40.9%	0.3%	
St. Charles[2,3]	5,226	868	3,433	925	$137.4
% of Total	100.0%	16.6%	65.7%	17.7%	
Wayne[2]	450	9	87	354	$300.8
% of Total	100.0%	2.0%	19.3%	78.7%	
Kane County[1,2,3]	65,250	31,658	26,346	7,246	$102.5
% of Total	100.0%	48.5%	40.4%	11.1%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

1 Relevant to the CC&P/Stearns Road Corridor
2 Relevant to the Red Gate Road Corridor
3 Relevant to the C&NW/Dean Street Corridor

Table 2.3-3 Contract Rent (1990),Central Region					
Census Tract/Area	**Contract Rent* - Renter Occupied Housing Units**				
	Total Units	**<$500**	**$500 to $999**	**>= $1,000**	**Median Rent**
# 8520.01[1,2,3]	382	181	186	15	$515
% of Total	100.0%	47.4%	48.7%	3.9%	
# 8521.00[1,2,3]	62	17	35	10	$736
% of Total	100.0%	27.4%	56.5%	16.1%	
# 8522.02[3]	947	315	629	3	$545
% of Total	100.0%	33.3%	66.4%	0.3%	
# 8523.00[3]	592	310	276	6	$490
% of Total	100.0%	52.4%	46.6%	1.0%	
South Elgin[1]	489	235	254	0	$504
% of Total	100.0%	48.1%	51.9%	0.0%	
St. Charles[2,3]	2,394	858	1,494	42	$543
% of Total	100.0%	35.8%	62.4%	1.8%	
Wayne[2]	12	7	4	1	$483
% of Total	100.0%	58.3%	33.3%	8.3%	
Kane County[1,2,3]	31,155	20,813	10,093	249	$439
% of Total	100.0%	66.8%	32.4%	0.8%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

**Contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included. Table does not include non-cash rents.*

1 Relevant to the CC&P/Stearns Road Corridor
2 Relevant to the Red Gate Road Corridor
3 Relevant to the C&NW/Dean Street Corridor

Red Gate Corridor

Residential development in proximity to the Red Gate Corridor is primarily single-family detached residential. Along Red Gate and Army Trail Roads, the residential development occurs primarily on large lots and has a rural character defined by dense vegetation along the roadway and interior to the lots, and large building setbacks. Wayne's downtown area is more compact and includes buildings set closer to the right-of-way. Many of these buildings are included in the Wayne Village Historic District. The Valley View community is contiguous to Illinois Route 25 and includes residential development typical of small-lot, single-family subdivisions.

Residential projects that are proposed or committed to development are shown on Exhibit 2.3-3. The Village of Wayne has recently approved a development of approximately 390 single-family detached homes south of Army Trail Road, between Honey Hill Drive and the Union Pacific tracks. As shown on Exhibit 2.3-3, a number of residential developments are planned near Red Gate Road and Randall Road.

Housing

Housing tenure rates are provided in Table 2.3-1 for census tracts within the Red Gate Corridor, adjacent municipalities, and Kane County. These statistics and field reviews suggest that the corridor passes through areas that consist primarily of owner-occupied housing.

Median home values and rental prices in proximity to the Red Gate Corridor, and in adjacent communities, are high compared with all of Kane County. These statistics are presented in Tables 2.3-2 and 2.3-3, respectively.

C&NW/Dean Street Corridor

The C&NW/Dean Street Corridor forms the northern boundary of downtown St. Charles (see Exhibit 2.3-4). Residential development immediately south of the corridor generally consists of pre-1950 structures and includes a mixture of single- and multi-family units, both owner and renter occupied. Subdivisions of single-family residences have been more recently developed north of the corridor, west of the Fox River. Many residential structures in the area are locally recognized historic features.

Housing

Housing tenure and vacancy rates from the 1990 census are shown in Table 2.3-1 (see Exhibit 2.3-5 for census tract boundaries). These figures show that there is a high percentage of rental housing in the older portion of St. Charles, south of the Illinois Central railway (Tracts #8522.02 and #8523.00). In both census tracts, the percentage of rental housing (occupied and vacant) exceeds that of owner-occupied housing and vacant, for-sale housing. In addition, both census

tracts have a higher percentage of rental housing than the City of St. Charles as a whole and Kane County.

The median value of owner-occupied housing along the C&NW/Dean Street Corridor is listed in Table 2.3-2. The values associated with St. Charles' downtown area are generally lower than the City as a whole. Rent levels in the census tracts adjacent to the corridor are consistent with or higher than those of the entire City and Kane County (see Table 2.3-3).

Commercial/Industrial

CC&P/Stearns Road

Several commercial and industrial operations are located adjacent to the CC&P/Stearns Road Corridor, including: Fox River Stone Quarry, Midwest Groundcovers, Woodland Landfill, Arc Disposal, and Elmhurst Chicago Stone (see Exhibit 2.3-2). Allied Asphalt and Bluff City Materials are east of the corridor along Stearns Road.

Scattered highway-oriented retail establishments occur along Illinois Route 25, south of the Illinois Central railway, and at the intersection of Spring Street and McLean Boulevard, near South Elgin's Village Hall (see Exhibit 2.3-1). The City of Elgin is directly north of the Village of South Elgin and includes traditional downtown service and retailing uses.

Red Gate Corridor

Exhibit 2.3-3 shows there are no concentrations of commercial or industrial businesses in proximity to the Red Gate Corridor. The downtown area of the Village of Wayne is predominantly residential and institutional. There is a small cluster of highway-oriented retail uses on Illinois Route 25, north of Army Trail Road. Arthur Andersen & Company has a professional development center on Illinois Route 25, south of Army Trail Road. The City of St. Charles, directly south of the Red Gate Corridor, has an extensive commercial and industrial base, including retailing in its downtown area and along Illinois Route 64.

C&NW/Dean Street Corridor

Exhibit 2.3-4 shows existing land uses along the corridor. The C&NW/Dean Street Corridor is adjacent to a mixture of industrial, office and utility properties, west of the Fox River. New office, research, and industrial development is occurring in business parks on the east side of St. Charles, south of Illinois Route 64. Retail activity in the corridor is focused in St. Charles' downtown area, which has a concentration of retail, service and office uses, and along Illinois Route 64 and Randall Road.

Local/Regional Land Use Plans

Most municipalities in the Central Region are physically divided by the Fox River. These communities are looking to unincorporated areas for future residential growth and economic development. Primary areas intended/anticipated to be developed in each municipality are shown in Exhibit 2.3-1. Official planning designations for undeveloped land are shown on Exhibits 2.3-2 (CC&P/Stearns Road Corridor), 2.3-3 (Red Gate Corridor), and 2.3-4 (C&NW/Dean Street Corridor).

The Village of South Elgin projects their long-term growth as occurring along the CC&P/Stearns Road Alignment. The transportation element of their Comprehensive Plan includes a future bridge connection and major arterial roadway along this route. Water and sewer services are currently available out to McLean Boulevard, but areas further west are being planned for office, research and a limited amount of residential development. To a lesser extent, the Village also views the corridor along Illinois Route 25 as a primary growth area.

Similarly, the City of St. Charles views Illinois Route 64 as the transportation link between growth potential on the far east and west ends of the City. Industrial and office development is already occurring on the east side, near Kirk Road. The City wants the west side to develop more retail and service uses and views Randall Road as the approximate western limit to this development. Residential development is planned west of Randall Road and north of the C&NW/Dean Street Corridor.

The Village of Wayne considers Illinois Route 25 to be their western limit of future growth. Their Comprehensive Plan encourages all new development to be residential and low density.

2.3.1.2 Population

The current and projected populations of municipalities in the Central Region are listed in Chapter 1, Table 1.3-1. The affected municipalities in this region are projected to increase in population between 1990 and 2020 at a greater rate than Kane County's population. Township population projections are shown in Table 2.1-1.

Population age statistics in the Central Region and along the study corridors are provided in Table 2.3-4. The median age of residents in the Central Region communities, and census tracts along the study corridors, is slightly higher than the County median of 30.9. Population race statistics for the Central Region are shown in Table 2.3-5. The racial character throughout the Central Region is predominantly white. In each community and census tract along the corridors, the percentage of the population that is white exceeds the County figure of 84.9%.

Table 2.3-4
Population Age (1990), Central Region

Census Tract/ Area	Age Groups											
	< 5	5 to 17	18 to 20	21 to 24	25 to 44	45 to 54	55 to 59	60 to 64	65 to 74	75 to 84	> = 85	Median Age
# 8520.01[1,2,3]	588	2,062	364	333	2,794	1,177	390	329	419	214	87	34.2
# 8521.00[1,2,3]	382	1,487	246	197	2,004	935	290	229	267	86	22	36.2
# 8522.02[3]	298	941	261	356	1,501	478	174	171	268	144	22	29.5
# 8523.00[3]	147	265	61	118	776	149	61	61	148	160	58	33.4
South Elgin[1]	584	1,499	333	350	2,696	768	298	242	341	228	135	31.5
St. Charles[3]	1,701	4,683	855	984	8,033	2,479	844	802	1,178	724	218	33.4
Wayne[2]	119	272	66	58	487	246	82	79	86	38	8	37.4
Kane County[1,2,3]	27,799	66,726	13,913	17,495	108,083	31,629	11,698	10,567	16,741	9,414	3,406	30.9

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

1 Relevant to the CC&P/Stearns Road Corridor
2 Relevant to the Red Gate Road Corridor
3 Relevant to the C&NW/Dean Street Corridor

Table 2.3-5
Population by Race/Hispanic Origin (1990)
Central Region

Census Tract/Area	Total Persons	White	Black	Amer. Indian/ Eskimo	Asian or Pacific Islander	Other Race	Hispanic Origin (any race)
# 8520.01[1,2,3]	8,757	8,373	168	24	122	70	255
% of Total	100.0%	95.6%	1.9%	0.3%	1.4%	0.8%	2.9%
# 8521.00[1,2,3]	6,145	6,066	14	1	51	13	56
% of Total	100.0%	98.7%	0.2%	0.0%	0.8%	0.2%	0.9%
# 8522.02[3]	4,614	4,313	198	9	43	51	176
% of Total	100.0%	93.5%	4.3%	0.2%	0.9%	1.1%	3.8%
# 8523.00[3]	2,004	1,957	7	4	22	14	92
% of Total	100.0%	97.7%	0.3%	0.2%	1.1%	0.7%	4.6%
South Elgin[1]	7,474	6,881	178	19	204	192	428
% of Total	100.0%	92.1%	2.4%	0.3%	2.7%	2.6%	5.7%
St. Charles[2,3]	22,501	21,989	87	33	261	131	576
% of Total	100.0%	97.7%	0.4%	0.1%	1.2%	0.6%	2.6%
DuPage County[1,2]	781,666	714,905	15,462	962	39,634	10,703	34,567
% of Total	100.0%	91.5%	2.0%	0.1%	5.1%	1.4%	4.4%
Kane County[1,2,3]	317,471	269,675	19,006	620	4,474	23,696	43,535
% of Total	100.0%	84.9%	6.0%	0.2%	1.4%	7.5%	13.7%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

1 Relevant to the CC&P/Stearns Road Corridor
2 Relevant to the Red Gate Road Corridor
3 Relevant to the C&NW/Dean Street Corridor

2.3.1.3 Cohesion

Neighborhoods

CC&P/Stearns Road
Neighborhoods and subdivisions near the CC&P/Stearns Road Corridor are shown on Exhibit 2.3-2 and include: Sugar Ridge, Valley View, and Silver Glen Estates. These areas do not cross the CC&P/Stearns Road corridor.

Red Gate Road Corridor
The Village of Wayne is located on the eastern side of the Fox River along the Red Gate Corridor. Wayne has grown along both sides of Army Trail Road, a historic transportation route through this part of the region. The Village exhibits characteristics of cohesion in two primary ways. First, there are two districts listed on the National Register of Historic Places (see Exhibit 2.3-3). Army Trail Road connects these two districts. Secondly, the Village is racially and economically homogenous with a strong sense of identity associated with both the historic "Village" and the rural character of the landscape. The Village is also known as a horse community and has an extensive network of riding trails on both public and private land. Horse clubs and hunts reinforce this aspect of community identity and cohesion.

Neighborhoods and subdivisions near the Red Gate Corridor are shown on Exhibit 2.3-3. The homes along the corridor are diverse in terms of their age and style, but are predominantly detached single-family and owner occupied. According to real estate professionals active in this area, these neighborhoods are stable.

Between Randall Road and Illinois Route 31, there are older farmhouses, a horse farm estate, and detached single-family subdivisions dating from the 1960's to the present, including the Red Gate subdivision of Long View Estates. Several of the older homes were noted to have horses. This two-lane roadway is lined with mature trees and has a rural character, up to the location of Wredling School (see Exhibit 2.3-3).

The Novak Park and Fox River Estates subdivisions are both along the banks of the Fox River. These subdivisions include smaller frame and brick homes dating from approximately the 1960's and 1970's. Larger homes have also been constructed on vacant and redeveloped lots in these subdivisions. The remainder of homes along the alternative alignments within the corridor are predominantly located on large lots. East of the project terminus at Dunham Road, Army Trail Road passes through Wayne's downtown area.

C&NW/Dean Street Corridor
The downtown area of St. Charles, physically divided by the Fox River (see Exhibit 2.3-4), is the "hub of the community." Downtown is the historic economic and civic center of St. Charles. It is where people shop, conduct business, participate in civic functions, and gather along the banks of the Fox River for social and recreational enjoyment. Civic functions include the activities of

City Hall and the police department. Specialty retail stores in the downtown area give St. Charles a unique market potential. These uses occur on both sides of Illinois Route 64, which carries traffic over the Fox River. These stores rely on pedestrian activity for economic success. Structures with historic merit in downtown St. Charles provide a legacy of past influences that have shaped the City. The scale and pedestrian orientation of the downtown area encourage face to face interaction. This is fostered by the sidewalks along the faces of commercial structures with shallow set backs and the Riverwalk, which provides a pedestrian linkage between Pottawatomie Park and the downtown area. Each of these features help to create an area that is uniquely identified as the City of St. Charles.

Neighborhoods and subdivisions near the C&NW/Dean Street Corridor include The Timbers and the older residential areas in and adjacent to the downtown area of St. Charles (see Exhibit 2.3-4).

Institutional/Governmental

Schools

The Central Region is served by School District U-46 and Community School District #303. Both of these districts serve areas east and west of the Fox River (see Exhibit 2.1-2). There are also private schools and colleges within the Central Region (see Exhibit 2.3-1). The CC&P/Stearns Road Corridor does not pass adjacent to any school facilities. The Red Gate Corridor passes adjacent to the newly constructed Wredling Middle School at Illinois Route 31, and approximately 300 meters (1,000 feet) north of the Little Woods School. Wayne Elementary School is north of Army Trail Road in downtown Wayne, east of the project terminus. Many schools are located in St. Charles' established residential areas, though none are adjacent to the C&NW/Dean Street Corridor. North Central College has a branch facility at Illinois Route 31 and Dean Street.

There is currently one school crossing guard in the Central Region, at 5th Avenue and Illinois Route 64 in St. Charles, to help students walking to Lincoln Elementary School. All students are currently bused to Wredling Middle School from both sides of the river. Future plans include the conversion of this school to a high school with a larger service area. No students currently walking to Little Woods Elementary School cross the Red Gate Corridor.

The major routes followed by buses serving the U-46 District include Illinois Routes 25 and 59, Dunham Road, and Army Trail Road. There are currently no bus stop locations along Illinois Route 25 or Army Trail Road. Buses serving Community School District #303 primarily use the following routes: Illinois Routes 25, 31, 38, and 64, Burlington Road, Dunham Road, Kirk Road, and Randall Road. District #303 makes one stop on Army Trail Road and several along Illinois Route 25 to pick up and drop off children.

Emergency services

The Villages of South Elgin and Wayne, and the City of St. Charles all maintain municipal police departments. Unincorporated portions of the Central Region are serviced by the Kane County Sheriff's Department. All departments provide backup assistance when needed.

All fire protection districts in the Central Region are divided by the Fox River (see Exhibit 2.1-3). The CC&P/Stearns Road Corridor is serviced by the South Elgin Fire Protection District. Two facilities currently provide fire and ambulance service to the district (see Exhibit 2.3-1). The District is planning a third station on the west side of South Elgin, near McLean Boulevard and Spring Street. Another station is being considered on the east side of the Village, west of Illinois Route 25 near Middle Street.

The Red Gate and C&NW/Dean Street Corridors are served by the St. Charles Fire Protection District (see Exhibit 2.1-3). Three stations currently serve the District and a site for a future station has been identified at the corner of Illinois Route 31 and Red Gate Road. Ambulance service is provided from the First Avenue and Campton Drive stations, and from the Geneva and Batavia Fire Protection Districts, when necessary.

Health care

There are many options for health care services in and near the Central Region. Hospitals and surgery centers include: Delnor-Community Hospital in Geneva, St. Joseph and Sherman Hospitals in Elgin, and Valley Ambulatory Surgery Center in St. Charles.

Parks and recreation

The Central Region is primarily served by the St. Charles Township Park District. The district's service boundary includes areas east and west of the Fox River (see Exhibit 2.1-4). However, other public facilities are owned and maintained by the Kane County Forest Preserve District and the Village of Wayne (see Section 2.3-3). The Central Region offers a diverse array of park and recreation resources, both public and private (see Exhibit 2.3-1). An extensive trail easement network allows horseback riding on private property throughout the Village of Wayne (see Exhibit 2.3-3).

2.3.1.4 Regional Economics

The median household incomes of communities and census tracts along the three corridors in the Central Region are presented in Table 2.3-6. Residents of South Elgin and St. Charles, including those near the proposed corridors, generally have incomes slightly higher but consistent with all of Kane County. The median household income in the Village of Wayne ($81,679) is substantially higher than both Kane County and DuPage County, $40,080 and $48,876, respectively. The percentage of persons below poverty level is low in all three communities and below the County figure of 6.8 percent.

Civilian labor force unemployment rates were the following in Central Region communities in 1990: South Elgin, 3.4%; Wayne, 1.8%; and St. Charles, 2.6%. These rates of unemployment are lower than the respective County and State figures of 4.7% and 6.6 %. DuPage County had an unemployment rate of 3.1%. More residents in South Elgin, Wayne and St. Charles work within the service industries than any other industry. This percentage ranges from a low of 28.0%

in South Elgin to 32.2% in St. Charles. The manufacturing industry employed the second largest total of residents in each community.

Table 2.3-6
Income (1989), Central Region

Census Tract/Area	Median Household Income	Mean Household Income	% Persons Below Poverty Level*
# 8520.01[1,2,3]	$59,814	$85,808	3.1%
# 8521.00[1,2,3]	$74,296	$96,096	1.4%
# 8522.02[3]	$34,028	$38,128	4.1%
# 8523.00[3]	$31,545	$39,421	4.7%
South Elgin[1]	$41,869	$43,240	3.0%
St. Charles[2,3]	$46,655	$57,272	2.5%
Wayne[2]	$81,679	$123,689	1.7%
Kane County[1,2,3]	$40,080	$46,835	6.8%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

*Does not include institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.
Poverty statistics are based on a definition originated by the Social Security Administration in 1965 and subsequently modified by Federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget in Directive 14 as the standard to be used by Federal agencies for statistical purposes. Poverty thresholds are based on family size and composition and are revised annually to allow for changes in the cost of living.

[1] Relevant to the CC&P/Stearns Road Corridor
[2] Relevant to the Red Gate Road Corridor
[3] Relevant to the C&NW/Dean Street Corridor

Major employers in South Elgin and St. Charles are listed in Table 2.3-7. There are no large business establishments in the Village of Wayne.

Table 2.3-7 Major Employers, South Elgin and St. Charles	
Company	**Estimated Employment**
Arthur Andersen & Co. (St. Charles)	1,100
Dukane Corporation (St. Charles)	800
Hoffer Plastics Corporation (South Elgin)	550
Swift & Company (St. Charles)	425
System Sensor (St. Charles)	410
St. Charles Manufacturing (St. Charles)	375
Midwest Groundcovers (Unincorporated Kane County)	160
Armin Tool & Manufacturing Co. (South Elgin)	155
York Spring Company (South Elgin)	130
Armco Composites (St. Charles)	120
Omron Corporation (St. Charles)	93
Accuforms, Inc. (South Elgin)	55
W. Kost, Inc. (South Elgin)	51

Source: Community Profile: South Elgin, Kane Co. Illinois Department of Commerce and Community Affairs. November 8, 1993; Community Profile: St. Charles, Kane Co. Illinois Department of Commerce and Community Affairs. February 7, 1994.

Table 2.1-5 illustrates how employment is projected to increase in Kane County Townships. Employment in Dundee Township, which includes the growth areas identified by the Villages of East Dundee, West Dundee, and Carpentersville, is projected to grow at a faster rate during the 30 years between 1990 and 2020 than the County as a whole.

Elgin Township has 22 separate tax districts and St. Charles Township has 39. The tax district collecting the most revenues in each township was a school district (Elgin School District #46 in Elgin Township and St. Charles School District #303 in St. Charles township). Overall, schools collected most of the property taxes levied in each township (66.4 percent of Elgin Township total and 70.7 percent of St. Charles Township total). Table 2.3-8 illustrates the distribution of tax revenues by collecting source.

Table 2.3-8 Property Taxes by Collecting Source		
Jurisdiction	**Per Cent of Property Tax Dollars for Elgin Township**	**Per Cent of Property Tax Dollars for St. Charles Township**
School Districts	66.4	70.7
Cities and Villages	19.1	5.6
Park Districts	--	5.4
Kane County	5.9	7.5
Townships and Road Districts	2.1	2.6
Library Districts	3.3	4.6
Fire Districts	0.8	1.0
Kane County Forest Preserve	1.4	1.8
Miscellaneous Districts	0.9	0.8

Source: 1994 Kane County Abstract of Taxes. Kane County Clerk. April 1995

2.3.1.5 ENVIRONMENTAL JUSTICE

The alignment for CC&P/Stearns Road Corridor is located in census tracts #8520.01 and #8521.00 (See Exhibit 2.3-5a), which have a higher median household income and lower percent persons below poverty level than Kane County as a whole (See Table 2.3-6).

A major employer in this corridor, Midwest Groundcovers (a Container Nursery), is located along Illinois Route 25 and south of the CNIC RR tracks in unincorporated Kane County. The land that is under ownership of Midwest Groundcovers is approximately 160 Acres. This company has approximately 200 employees; of which approximately 140 employees are seasonal, employed from spring to fall. Per discussions with the owner of Midwest Groundcovers, approximately 80% of business' employees are of Hispanic or Latino descent. Most of the employees live in the Greater Elgin Area and travel to work by automobile. Many tend to car pool.

On August 6, 2001, Midwest Groundcovers, petitioned Kane County for land rezoning from agricultural land, to agricultural related sales and services, processing, research, warehouse, marketing and rural residential to establish a nursery, sale display yard and a single family residence on a 252 Acre site located along the Southeast corner of Route 64 and Fabris Road in Virgil Township. This new site is approximately 19 miles west of their current location along Illinois Route 25. It is Midwest Groundcovers intention to relocate to this site in the future. On September 11, 2001, Kane County Board approved this zoning change.

Based upon conversations with local officials, interviews with affected business owners, an analysis of census data (see Tables 2.3-5 and 2.3-6), and field reviews, there does not appear to be any other known concentrations of low-income or minority populations within this corridor.

The poverty rates for census tracts #8520.01 and # 8521.00 are 3.1% and 1.4%, respectively, compared to 6.8% for Kane County. The employees of Midwest Groundcover are skilled technicians and their income on the average is above the "2001 HHS Poverty Guidelines $17,650" for a family unit of four. The other affected businesses in this corridor, when contacted, have indicated the level of their employee's income is significantly above the HHS Poverty Income Guidelines.

Age statistics for residents in the central region are shown in Table 2.3-4. The median age of residents in census tracts #8520.01 and #8521.00 is higher than the median age of all County residents.

Race statistics for residents in the central region are shown in Table 2.3-5. The racial character is predominately white within Kane County and the Villages of South Elgin and Wayne.

As mentioned earlier, one employer in this corridor, Midwest Groundcovers, has indicated that their labor pool is made up of approximately 80% Hispanic or Latino employees. Other businesses in this corridor, when contacted, have indicated that they do not have disproportionately high percentages of minority employees.

2.3.2 Agriculture

Agricultural properties within the potentially affected area in for the corridors in the central region are shown by corridor in Exhibits 2.3-2 (CC&P/Stearns Road), 2.3-3 (Red Gate), and 2.3-4 (C&NW/Dean Street). For additional general background on agriculture, see Section 2.1.2.

2.3.3 Special Lands (Forest Preserves, Parks, etc.)

The special lands for the central region are illustrated on Exhibit 2.3-6. The Fox River Trail, because it crosses several regions, is discussed in Section 2.1.3. The other properties of particular interest in this region include the Tri-County State Park and the Kane County Forest Preserves of Blackhawk, Fox River Bluff West, and Fox River Bluff East. Other properties include the Fox River Trail, the Illinois Prairie Path, the DuPage County Forest Preserve of Pratt's Wayne Woods, Pottawatomie Park in the City of St. Charles and Misty Meadows in the Village of Wayne. The Kane County Forest Preserve is discussed in Section 2.1.3

The St. Charles Park District is a major provider of special lands in the central region. They own approximately 525 hectares (1,300 acres) of parkland scattered among 50 sites throughout St. Charles Township. The facilities include open space, playgrounds, golf course, recreation centers and a water park.

The Village of Wayne designates seven to eight properties as parks. These sites are basically unimproved, except for signs designating the property, and are not promoted for usage.

Tri-County State Park - Illinois Department of Natural Resources
Tri-County State Park is located at the juncture of Kane, DuPage and Cook Counties. This Illinois Department of Natural Resources property was initiated in 1990 through a partnership with the Forest Preserve District of DuPage County to facilitate the District's Northwest Territories initiative. Tri-County State Park occupies 213 hectares (527 acres). The park is contiguous to Pratt's Wayne Woods, a DuPage County Forest Preserve. In fact, DuPage County Forest Preserve District is responsible for most of the day to day operations of the Tri-County State Park under an agreement with the Illinois Department of Natural Resources. Additionally, there is no clearly delineated boundary between the two properties. Site restoration and planning for a visitor/interpretive center are underway. The proposed center and entrance are east of the eastern terminus for this project.

Blackhawk Forest Preserve - Kane County Forest Preserve
The Blackhawk Forest Preserve is located on the west bank of the Fox River south of the Village of South Elgin at a bend in the river. In 1995, Blackhawk Forest Preserve was expanded by approximately 1.3 hectares (3 acres) with the acquisition of the residential property adjoining the river, just south of the Illinois Central tracks, bringing the total holding to 115 hectares (284 acres). This forest preserve includes boat/canoe facilities, picnic shelters, and bicycle and horseback riding trails along the Fox River Trail. The Fox River Trail crosses the Fox River at this point on a pedestrian/bicycle bridge which links the Blackhawk Forest Preserve with the Tekawitha Forest Preserve on the east bank of the river. The preserve is currently non-contiguous with a number of private holdings fragmenting it. West of the main part of the Blackhawk Forest Preserve and downstream is the addition also sometimes referred to as the Riverbend Forest Preserve.

Fox River Bluff West Forest Preserve (a.k.a. Red Gate Forest Preserve) - Kane County Forest Preserve
The 26 hectare (65 acre) Fox River Bluff West Forest Preserve is located between Illinois Route 31 and the west bank of the Fox River, with Novak Park Subdivision and Farmington Subdivision as its north and south borders, respectively. Fox River Bluff West was acquired by the Forest Preserve District in 1985.

Fox River Bluff West Forest Preserve was formerly farmland. The original farmhouse, separate utility buildings and an inoperable silo are located near the intersection of Red Gate Road and Illinois Route 31 on the forest preserve property. The District is planning to have these structures removed. Improvements to the site include parking facilities and trails.

Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve) - Kane County Forest Preserve
The 14 hectare (34 acre) Fox River Bluff East Forest Preserve is located between the Fox River

and Illinois Route 25, with Fox River Estates Subdivision and Pearson Lane as its approximate north and south borders, respectively. Fox River Bluff was purchased in 1991. Parking is available and amenities at this forest preserve include trimmed footpaths, a site manager, and a farmhouse and utility buildings, which are accessible to the public. Fishing is allowed, and this forest preserve has bicycle access to the Fox River Trail along Weber Road.

Pratt's Wayne Woods Forest Preserve - DuPage County Forest Preserve
With over 1,050 hectares (2,600 acres) Pratt's Wayne Woods is one of DuPage County's largest forest preserves. The preserve was established in 1965 with a donation of 68.74 hectares (169.79 acres) from the State of Illinois after the State abandoned its plans to make the property a state park. Those plans were later revived culminating in 1990 with the creation of Tri-County State Park, which adjoins Pratt's Wayne Woods Forest Preserve.

The preserve is located in the extreme northwest corner of DuPage County on the outwash plain of the West Chicago Moraine. The large area is made up of diverse terrain including wetlands and savanna. There are four lakes which provide habitat for waterfowl including Canada geese, wood ducks, and great blue heron.

Pratt's Wayne Woods Forest Preserve offers a wide variety of activities including picnicking (100 picnic tables), horseback riding, bicycling and fishing. There are also special use areas in the preserve for snowmobiling, model airplane flying, dog training, and youth group camping. The Illinois Prairie Path passes through the preserve's western edge.

Monies from the Land and Water Conservation Fund (Project 17-00386) were used to acquire the Pratt's Wayne Woods Addition, an approximate 36 hectare (88 acre) addition.

Misty Meadows Park - Village of Wayne
This 0.09 ha (0.23 acre) park located in the northeast quadrant of the Dunham Road/Army Trail Road intersection. In 1992, the property was donated to the village through Wayne's Historic and Rural Preservation Program (HARP) for use as a park. The property is as yet unimproved with the exception of a sign giving the name of the park.

Pottawatomie Park - St. Charles Park District
Pottawatomie Park is a 19 hectare (47 acre) site owned by the St. Charles Park District. The park is roughly bounded by the Union Pacific Railroad (formerly the Chicago & NorthWestern) on the south, the Fox River on the west, Second Avenue on the east and the Pottawatomie Golf Course (which is also owned and maintained by the St. Charles Park District) on the north. In addition to the Pottawatomie Community Center, amenities at Pottawatomie Park include two pavilions, picnic grounds, two tennis courts, two outdoor swimming pools, three playgrounds, ice skating, softball field, 18 hole miniature golf course, amphitheatre, two concession stands, Park District maintenance facility and two paddle wheel boats owned and operated by Anderson Enterprise. The River Walk, a pedestrian path on the east bank of the Fox River, passes through Pottawatomie Park.

Bike Trail Link - Mount St. Mary's Park to the Great Western Trail - St. Charles Park District

Land and Water Conservation Funds (Project 17-00777) were used to develop bicycle trails in St. Charles linking Mount St. Mary's Park to the Great Western Trail on the west side of St. Charles. A link is also provided to the Fox River Trail. Within the project limits, these funds were used to place interpretive signs along existing city streets without the acquisition of additional right-of-way.

2.3.4 Transportation

2.3.4.1 Roadway

There are no river crossings within the 9 kilometers (5.5 miles) from the City of St. Charles to the Village of South Elgin (see Exhibit 1.3-1). Currently, there are three roadway bridges crossing the Fox River within the City of St. Charles and one roadway bridge crossing in the Village of South Elgin. Two (Illinois Street and Prairie Avenue) of the three bridges within St. Charles primarily service local traffic due to limited continuity. The Illinois Route 64/Main Street Bridge serves both local and regional traffic. The State Street Bridge in South Elgin is a two lane bridge that serves primarily local traffic since it is offset from the through road on the west and ends 300 meters east of the Fox River. The nearest continuous crossing is U.S. Route 20, another 3 kilometers (2 miles) further north.

Stearns Road and Army Trail Road are the two major east-west roadways within the corridor. Both are two-lane roads and neither crosses the Fox River. Red Gate Road is a two-lane collector road west of the Fox River from Crane Road to Illinois Route 31. Army Trail Road is under the jurisdiction of the Village of Wayne from Illinois Route 25 to Dunham Road. East of Dunham Road, it is under the jurisdiction of Kane County until the County line where it falls under the jurisdiction of Wayne to Illinois Route 59.

DuPage County is planning widening of Stearns Road from two lanes to four lanes to the DuPage/Kane County. Construction is planned for 1998.

The intersection of Illinois Route 25 with Dunham Road is a three-legged intersection, forming a "Y" (one leg south, one leg southwest, and one leg to the north) that suffers from restricted sight distance, tight curves, and approach grade problems. While it was signalized in 1996, it is a recognized safety hazard by both the Illinois Department of Transportation and Kane County Division of Transportation. The intersection of Stearns Road with Dunham Road is also a three-legged signalized intersection (one leg north, one leg south and one leg east). Because the immediate Dunham Road south leg crosses over a railroad, sight distance is restricted to the south. The County plans to realign these two intersections into one to improve traffic flow, access, and, especially, safety.

2.3.4.2 Transit

The nearest commuter rail stations operated by Metra are in Elgin and Geneva. This service

operates primarily for commuters bound for downtown Chicago.
Pace, the suburban bus system for the Regional Transportation Authority, operates one bus line (Route 801) in the South Region. The bus route follows Illinois Routes 31 and 25 from the City of Elgin through South Elgin to the City of St. Charles, continuing south to Geneva.

2.3.4.3 Non-motorized Transportation

The non-motorized paths in this region are primarily recreational oriented. The Fox River Trail and the Illinois Prairie path cross the Central Region. More information on these trails is contained in Section 2.1.3.

In the Village of Wayne an extensive trail easement network allows horseback riding on private property (see Exhibit 2.3-3). Along the south right-of-way of Army Trail Road, a 3 meter (10 foot) horse path parallels the roadway from the east property line of the Dunham Woods Riding Club to Dunham Road, then heads south along the east right-of-way of Dunham Road. This path ends at the south property line of the Dunham Woods Riding Club.

2.3.4.4 Other Modes

CC&P/Stearns Road Corridor

There are three sets of railroad tracks within the CC&P/Stearns Road Corridor: the Illinois Central (IC) Railroad (formerly the Chicago Central & Pacific -currently the Canadian National Illinois Central - CNIC), the Union Pacific (UP) Railroad (formerly the Chicago & NorthWestern) tracks, and the Fox River Trolley Museum tracks.

The CNIC operates a single track line in the CC&P/Stearns Road Corridor. There are currently 8-10 trains per day, although the railroad hopes to expand this schedule to 20-24 trains per day. The current operating speed is 50 mph, with potential plans to upgrade to 60 mph. The railroad line within the corridor is grade-separated from all crossroads, with the exception of the crossing at Illinois Route 25.

The UP operates a single track line that crosses the CC&P/Stearns Road Corridor at Gilbert Street, east of the Fox River. At Illinois Route 25, the railroad is grade-separated above the roadway. Immediately north, however, there are a number of at-grade crossings which lead into the residential area bordered by the river and the railroad line. This line operates approximately 5 times per week.

The Fox River Trolley Museum is located in the Village of South Elgin. The museum's trolley tracks run from approximately 3 kilometers (2 miles) north of the CNIC tracks to 1.5 kilometers (1 mile) south. The museum maintains an interchange spur between their tracks and the CC&P for receiving supplies and equipment (while this spur has been removed, the Museum maintains this was an error and it will be restored). The museum stops their trolleys south of the CNIC tracks at an historic station site for a northward view of the river.

Red Gate Road Corridor
There are no other relevant modes operating within the Red Gate corridor.

C&NW/Dean Street Corridor
The Union Pacific Railroad operates a single track line that terminates 0.8 kilometer (0.5 mile) west of Randall Road, serving a limited number of industrial clients. The railroad has plans neither for expanding operation service nor for abandonment of this line. Currently, the vertical clearance for railroad service is restricted to 6.58 meters (21'7") at 2nd Avenue and 3rd Avenue. Minor street crossings of the rail line are generally at-grade.

2.3.5 Cultural Resources

2.3.5.1 Standing Structures
For location maps of the standing structures for the CC&P/Stearns Road Corridor, the Red Gate Road Corridor, and the C&NW/Dean Street Corridor, see Exhibits 2.3-7a, 2.3-7b and 2.3-7c, respectively.

CC&P/Stearns Road Corridor
A two-story American Foursquare house and its associated outbuildings at 37W 103 McDonald Road, Elgin Township, are an example of a farmstead complex. This site does not meet the criteria established by the Illinois Historic Preservation Agency (the SHPO) for inclusion on the National Register of Historic Places (NHRP).

Red Gate Road Corridor
A two-story brick Greek Revival house located at 36W 927 Red Gate Road, St. Charles Township, is historically known as "Gallagher's Crabtree Country House". This property is eligible for inclusion on the NHRP.

The two story gabled "ell" house located at 36W 788 Red Gate Road, St. Charles Township, was reportedly built circa 1860. Many of the associated outbuildings were constructed about 1920. Located on a prominent site along the north side of Red Gate Road, this estate is further distinguished by extensive wooden fencing. The extent of the estate and its development over time may suggest the property's association with significant historical events or individuals. This property is eligible for inclusion on the NHRP.

The two story brick property located at 36W 612 Red Gate Road, St. Charles Township, is a side gable residence with Neo-Classical Revival characteristics. This residence is an example of the 1920s-1930s Neo-Classical Revival style of architecture. This property is eligible for inclusion on the NHRP.

Listed on the Kane County Register of Historic Places in 1989, the farmstead located at 36W 368 Red Gate Road is known as Red Gate Farm. Reportedly functioning as a crop farm as early as 1860, the property gained its primary significance in 1929 after Col. Edward J. Baker purchased

and converted the site into a farm for world champion horses. This property is eligible for inclusion on the NHRP.

The two story brick house located at 5N 754 Illinois Route 31, St. Charles Township, known as Silver Fox Farm, is an example of a Prairie Foursquare in a rural setting. This property is eligible for inclusion on the NHRP.

The properties located at 5N 375-368 and 35W 405-423 Pinelands along the east bank of the Fox River were once known as Pinelands Summer Camp. Today the area includes twenty structures built about 1920, most of which are one and one-and-one half story cottages; however, the camp's original dining hall and boathouse also remain. Although most of the buildings have been converted for year-round residential use, the majority retain some of their historic character. In consultation with the SHPO, however, it was agreed that sufficient integrity has not been retained and the properties are not eligible for inclusion on the NHRP.

The Oak Lawn Farm Historic District located at Dunham and Army Trail Road was listed on the National Register of Historic Places in 1979. The showpiece of this district, known as Dunham Castle, is prominently located at 5N 648 Dunham Road on a large corner lot. Designed and built for Mark Dunham, Esq. (a prominent, late nineteenth-century farmer/horse breeder) Dunham Castle is the westernmost structure included within the Oak Lawn Farm Historic District. The district also includes those structures located at 5N 497 Dunham Road and 33W 169-373 Army Trail Road. The NHRP listing for these properties specifically mentions the surrounding open space as contributing to the District's character.

C&NW/Dean Street Corridor

The large industrial complex historically known as the Moline Corporation is located north of the railroad tracks between DeBruyne and Seventeenth Streets. The Moline Corporation was considered an important influence in the early development of St. Charles and a major employer. The complex, long closed, consists of a number of brick buildings. The factory's most notable structure, which appears to have been the main office, is characteristic of the Italian Renaissance style. Although the integrity of this Italian Renaissance structure is questionable, the buildings of the Moline Corporation are eligible for inclusion on the NHRP.

West of the Moline Corporation at Seventeenth Street and north of the railroad tracks is the Janes & Kirtland Plant. This facility, dating from approximately the turn of the twentieth century, appears to have been only an incidental area employer. The original frame building was replaced in 1923 and numerous modifications have been made to the site. Major manufacturing on-site was abandoned in the 1950s. The modifications to the site include vinyl siding on one side of the building, infilling of some windows and the reduction of others and interior modifications. As a result, the SHPO has determined that the site is not eligible for inclusion on the NHRP.

The two-story structure located at 416 2nd Avenue, St. Charles, formerly functioned as a hospital. With the exception of a Neo-Classical front porch, the building's character is largely Italianate.

A plaque on the entrance facade denotes the structure's significance as a locally designated landmark within the City of St. Charles. The impressive features and fine integrity of this structure contribute to its NHRP eligibility.

The Andrew Weisel House is located at 312 2nd Avenue, St. Charles. The two-story, front gable, brick house displays a strong Greek Revival influence. This structure was listed on the NHRP in 1982.

2.3.5.2 Archaeology

CC&P/Stearns Road Corridor
Fieldwork located one isolated find and the definition of four new sites. Three previously recorded sites were revisited. One previously recorded site, a 20th century farmstead, was found to have been razed, and the area is heavily disturbed. One of the sites is common to the Red Gate Road Corridor. Three sites were recommended for Phase II testing or protection from disturbance.

Red Gate Road Corridor
Fieldwork located four isolated finds and the definition of 15 new sites. Three previously recorded sites were revisited. Two previously recorded sites were relocated during the survey. One site is common to the CC&P/Stearns Road Corridor. Eight sites were recommended for Phase II testing or protection from disturbance.

C&NW/Dean Street Corridor
No sites were identified in this corridor.

2.3.6 Geology

The central region of the project study area is characterized by several north-south trending moraines and the Elburn Complex, an area of irregular rolling topography between the more elevated and distinct moraines, the Marengo Moraine on the west side and the St. Charles and Minooka Moraines on the east side of the Elburn Complex in this area. The topography ranges from higher than 314 meters (1,030 feet MSL) along the Marengo Moraine to 210 meters (690 feet MSL) along the Fox River Valley.

The area lies at the southern end of thick sand and gravel deposits on the east side of the river. Bedrock is exposed in quarries on the west side of the river and along portions of the river banks. The area is underlain by the St. Charles Bedrock Valley, a major groundwater resource for the area. Mineral resources include sand and gravel pits and stone quarries in the bedrock.

2.3.6.1Bedrock and Structural Geology
CC&P/Stearns Road Corridor
The upper bedrock beneath this corridor is the Silurian age Kankakee and Elwood Formations, with the Ordovician age Maquoketa shale as the bedrock surface in the incised St. Charles Bedrock

Valley. The depth to the bedrock ranges from approximately 12 to 30 meters (40 to 100 feet). Bedrock, Silurian dolomite, is exposed in a quarry (Fox River Stone) on the west side of the river within the proposed corridor, and along the banks of the river just south of the proposed crossing.

Red Gate Road Corridor

The depth to the bedrock beneath the Red Gate Road corridor is somewhat greater than the CC&P/Stearns Road corridor - 21 to 46 meters (70 to 150 feet). The uppermost bedrock is compromised of Silurian age Kankakee and Elwood Formation underlain by Ordovician Maquoketa group. The Maquoketa lithology at the Red Gate corridor, however, is dolomite rather than shale which is higher in the stratigraphic section. As at the CC&P/Stearns Road corridor, bedrock elevations are higher west of the river in the study area, nearly 223 meters (750 feet MSL) west of the river and less than 200 meters (650 feet MSL) on the east.

C&NW/Dean Street Corridor

Here the bedrock surface consists of the Silurian Kankakee and Elwood Formations with both the Ordovician Maquoketa shale and dolomite occurring in the St. Charles Bedrock Valley. They are more uniform in elevation on either side of the river. The depth to the bedrock ranges from 15 to 30 meters (50 to 100 feet). No bedrock exposures are evident in the C&NW/Dean Street corridor.

2.3.6.2 Surface Geology and Topography

CC&P/Stearns Road Corridor

The CC&P/Stearns Road corridor is near the south end of a thick deposit of sand and gravel of the Henry Formation, which has been and is currently mined. The Yorkville and Malden Tills underlie the alignment on the western side of the river.

Relief along the CC&P/Stearns Road corridor totals 33.5 meters (110 feet) with elevation ranges from a maximum of 247 meters (810 feet MSL) to as low as 210 meters (688 feet MSL) along the Fox River. Slopes are not steep except for isolated bluffs adjacent to the Fox River Valley and in quarries. Brewster Creek is the principal tributary drainage to the Fox River on the east side of the river. There is no identified drainage which is tributary from the west at this corridor.

The CC&P/Stearns Road corridor includes soils typically associated with supporting the following ecotypes: Mesic Savanna, Mesic Prairie, Mesic Forest, Wet Prairie and Bog / Fen. Current plant communities are shown on Exhibit 2.3-10.

Red Gate Road Corridor

The Red Gate Road corridor has several options including a connection with CC&P/Stearns Road to the north on the east side of the river, or continuing directly east. The Red Gate corridor options are underlain primarily by silty clay loam of the Yorkville Till member of the Wedron Formation with abundant sand and gravel lenses, which forms the St. Charles and Minooka Moraines. The west end of the corridor is underlain by the Henry Formation (outwash stream laid sand and gravels) and the Yorkville Till member of the Wedron Formation (diamicton loamy silts

and clay tills). The relief along the corridor totals 41 meters (135 feet) with elevation ranges from highs of 250 meters (820 feet MSL) along the crest of the St. Charles Moraine, to a low of 209 meters (685 feet MSL) at the Fox River. Maximum slopes in the corridor are along the banks of the Fox River.

The Red Gate Road Alignments A and B include soils typically associated with supporting the following ecotypes: Wet Savanna, Mesic Savanna, Mesic Prairie, Mesic Forest, Wet Prairie and Wet Mesic Prairie. Alignment C includes soils typically associated with supporting the following ecotypes: Wet Savanna, Mesic Savanna, Mesic Prairie, Mesic Forest, Wet Prairie and Wet Mesic Prairie. Current plant communities are shown on Exhibit 2.3-11.

C&NW/Dean Street Corridor

The C&NW/Dean Street corridor is underlain almost entirely by the Yorkville Till member of the Wedron Formation, a silty clay loam with sand and gravel lenses; this is the case, except for narrow deposits of the Henry Formation and Cahokia Alluvium, sands and gravels along the Fox River.

Topography is relatively flat as the corridor runs east-west through the city of St. Charles, along the railroad alignment. Relief totals 21 meters (70 feet), with elevations along the corridor ranging from a high of 228 meters (750 feet MSL) to a low of 207 meters (680 feet MSL).

The C&NW/Dean Street corridor includes soils typically associated with supporting the following ecotypes: Mesic Savanna, Mesic Prairie, Mesic Forest and Wet Prairie. Current plant communities are shown on Exhibit 2.3-12.

2.3.6.3Mineral Resources

CC&P/Stearns Road Corridor

Sand and gravel pits are present adjacent to and within the CC&P/Stearns Road corridor both east and west of the Fox River. The pits on the east side of the river are no longer active. West of the river, Van Acker Sand and Gravel (north of the corridor-recently purchased by Fox River Stone and no longer active) and Fox River Stone (south of the corridor) mine sand and gravel. Fox River Stone mines stone from the Silurian dolomite bedrock (Masters, 1999). Approximately 2.4 km (1.5 miles) west of the river and 0.8 km (0.5 mile) east of the river, are deposits which the ISGS (Gilkeson and Westerman, 1976) describe as good prospective commercial deposits of sand and gravel, probably over 6 meters (20 feet) thick and with less than 3 meters (10 feet) of cover. East of the river, the Henry Formation deposits may be greater than 18 meters (60 feet) thick.

Additional mine development is planned for several properties adjacent to the proposed corridor. The area south of McDonald Road and east of Randall Road, extending to the intersection with the CNIC (formerly CC&P) rail, is proposed for future mining by Fox River Stone (personnel communication, Mark Walsh, 1996). Fox River Stone is also reported to be planning mining expansion in parcels northwest and southeast of the intersection of McLean Boulevard and the existing railroad right-of-way.

The 1997 Illinois Minerals Notes (Masters, et al, 1999) identified five other sand and gravel pits within 5 miles of the proposed corridor. No other stone quarries, besides Fox River Stone were noted in the report within 10 miles of the corridor. Thick glacial overburden at other areas may make commercial development of a bedrock quarry impractical.

Red Gate Road Corridor
Valley train deposits of silt, sand and gravel, perhaps in excess of 6 meters (20 feet) are mapped along the Fox River at the Red Gate corridor crossing (Masters, 1978). Thin, 3 to 6 meters (10 to 20 feet) thick bouldery outwash is also mapped at the far east end of the corridor. No active sand and gravel pits or stone quarries are present within one mile of the Red Gate corridor, except that alternative which extends north to connect with CC&P/Stearns Road.

An estimated eight active sand and gravel operations were identified within 10 miles of the Red Gate corridor in 1992 (Samson and Masters, 1992). Active stone quarrying operations are limited to the two along the CC&P/Stearns Road corridor, Fox River Stone and Van Acker, and Conco Western Stone in the south region near the Oak Street corridor. Thick glacial cover likely limits the practical development of commercial stone quarries in this area.

C&NW/Dean Street Corridor
Surficial fine-grained deposits of silt, sand and gravel, greater than 6 meters (20 feet) thick are located in valley train deposits in the immediate vicinity where the proposed C&NW/Dean Street roadway would cross the Fox River. No active mines are present adjacent to the C&NW/Dean Street corridor. The valley train sand and gravel deposits generally have less than 1.5 meters (10 feet) of overburden.

Public well data (Woller and Sanderson, 1979) from the east bank of the Fox River indicate the presence of 1.5 meters (5 feet) of clay below the ground surface underlain by Silurian dolomite. The Silurian dolomite is approximately 20 meters (65 feet) thick and is underlain by the Maquoketa Group shale and dolomite to 73 meters (240 feet) in depth. No active stone quarries are located adjacent to the corridor.

One possible source of commercial dolomite is an area approximately 0.5 mile long, mapped east of the Fox River with Silurian dolomite 25 to 50 feet thick. The thickness of the dolomite increases farther to the east from 25 feet to a greater than 50 feet at the east terminus of the corridor. Silurian dolomite is not present at commercial depths west of the river within this corridor.

2.3.6.4Groundwater Resources

CC&P/Stearns Road Corridor
Groundwater Aquifiers and Usage
The majority of the proposed corridor is comprised of an unconfined portion of the Henry outwash aquifer. This sand and gravel deposit is generally exposed, or at shallow depth overlain by soils

of clay till with low permeability. Available soil borings east of the Fox River in the vicinity of the proposed corridor indicate that the water table in this corridor generally occurs within 6 meters (20 feet) of the ground surface. Many wells indicated a depth to water of less than 1.5 meters (5 feet).
The unconfined aquifer on the east side of the Fox River occupies a buried valley generally within an existing valley oriented perpendicular to the Fox River, and is bounded on the north and south by uplands underlain by diamicton glacial till. West of the Fox River, extending to approximately McLean Road, the surface sediments are comprised of elongate, relatively thin, fine grained deposits 20 to 30 feet in thickness. Farther west, the remainder of the corridor is covered by surficial sheet-like deposits of very coarse grained sand and gravel generally less than 6 meters (20 feet) thick. The Henry Formation outwash deposits are not regionally continuous across the entire corridor.

The lower (confined) sand and gravel aquifer near the Fox River in this corridor is comprised of sand and gravel deposits from 15 to more than 30 meters (50 to more than 100 feet) thick. This confined sand and gravel aquifer corresponds to the St. Charles aquifer. East of the Fox River for a distance of approximately 1.6 kilometers (1 mile), the thickness of the St. Charles aquifer is from 4.5 meters (15 feet) to 15 meters (50 feet). From Route 25 east to the terminus of the corridor, the thickness of the St. Charles aquifer is generally less than 4.5 meters (15 feet).

The confining unit for the lower confined sand and gravel aquifer is the Tiskilwa Till Member of the Wedron Formation which comprises the Marengo aquitard. The Tiskilwa Member is often overlain by the Yorkville and Malden till members which also function as aquitards.

The shallow bedrock aquifer consists of Silurian dolomite. The dolomite is reported to be hydraulically connected to the overlying St. Charles aquifer. The dolomite tends to thin towards the west where the Maquoketa Shale Group is the uppermost bedrock.

Review of the State well records indicate that most private water supply wells on both sides of the river extract water from the confined St. Charles aquifer. Some of these wells also extend into the Silurian dolomite aquifer which is immediately below and connected with the St. Charles aquifer. The Illinois State Water Survey database indicates that there are approximately 24 wells within 300 meters (1,000 feet) of the corridor. There are no public water supply wells recorded within 300 meters (1,000 feet) of the corridor.

Groundwater Quality
Water quality data for the wells monitoring the Tri-County Landfill, located east of Illinois Route 25 and north of the proposed alignment, indicate groundwater contamination. The USEPA indicated that the remedial investigation/feasibility study for the landfill is completed. Low levels of volatile organic compounds including benzene, pentachlorophenol, and trichloroethylene have been detected in groundwater monitoring wells on and adjacent to the vicinity of the Tri-County Landfill. Groundwater clean-up is included in the remediation design plan.

Groundwater quality information was reviewed from the Illinois State Water Survey records. Water quality data was available for two ISWS database wells and from several wells installed for an Illinois State Geological Survey (ISGS) study of the corridor. Those water quality data indicate all dissolved constituents have concentrations that are a factor of 8 below the maximum concentrations allowed for a Class I potable groundwater standards for the two ISWS database wells. Several of the ISGS wells showed results for chloride and manganese over the Class I standards. Some of these exceedances may be due to proximity to the landfill.

Red Gate Corridor

Groundwater Aquifers and Usage

An unconfined sand and gravel aquifer is located only west of the Fox River. This aquifer extends from the river west to Route 31. This 1,100 meter (0.7 mile) long area is underlain by relatively thin, fine grained deposits of silt, sand, and some gravel of variable thickness, but is commonly 6 to 9 meters (20 to 30 feet) thick (Gilkeson & Westerman, 1976). This unconfined aquifer is underlain by the confined St. Charles sand and gravel aquifer which is reported to be from 4.5 to 30 meters (15 to 100 feet) thick.

Public water supply well logs in the vicinity of the corridor east of the Fox River indicate that approximately 12 meters (40 feet) of silty and sandy clay exist over the confined sand and gravel aquifer. Well data indicate a sand and gravel aquifer thickness of approximately 27 meters (90 feet). This layer corresponds to the St. Charles aquifer. The aquifer thins to the east from 12 meters (40 feet) to less than 4.5 meters (15 feet) at the east terminus of the corridor.

The upper bedrock aquifer is comprised of Silurian dolomite east of the Fox River with an aquifer thickness of approximately 15 meters (50 feet). Based on the Illinois State Water Survey database reviewed, all of the public and most of the private water supply wells on both sides of the river are located within the confined St. Charles aquifer. The ISWS database indicates there are approximately 50 private wells within 300 meters (1,000 feet) of each of the three Red Gate corridor alternatives.

There are three public water supply wells within 1,600 meters (1 mile) of this corridor. One well is located within 300 meters (1,000 feet) of alternative corridors A and B, and two wells are located greater than 900 meters (3,000 feet) south of the alternative C corridor. All three wells are completed in the confined St. Charles aquifer below the Marengo aquitard.

Groundwater Quality

There are at present no known sources of groundwater contamination in the Red Gate Road corridor. Groundwater data available for the west side of the Fox River was considered common to all three alternatives. Due to the proximity of Alternatives A and B on the east side of the Fox River, groundwater data for these areas was considered together. Alternative C was considered separately east of the Fox River.

Groundwater quality data are available for two wells, consisting of 15 separate data sets, located

on the west side of the Fox River, 14 wells including 24 separate data sets near Alternative A and B, and 3 wells including three data sets for Alternative C. Following is a summary of the analytical results.

One exceedance of Class I groundwater standards is indicated. For the wells near the Alternative C corridor, a total iron maximum concentration of 10 milligrams per liter (mg/ℓ) exceeded the 5 mg/ℓ standard and is attributable to natural causes. All other results were within Class I groundwater standards.

C&NW/Dean Street Corridor

Groundwater Aquifers and Usage

A small area of surficial fine grained deposits of silt, sand and some gravel is located in the immediate vicinity of the Fox River, and is not developed as a potable water supply aquifer. A confined aquifer with a thickness of 15 to 30 meters (50 to 100 feet) of sand and gravel, within the St. Charles bedrock valley, exists beneath the proposed corridor on the west bank of the Fox River. A public well located near the west terminus of the corridor is installed in a 24 meter (80 feet) thick layer of sand and gravel beginning 27.5 meters (90 feet) below the ground surface. Public and some private wells in the central and eastern part of this corridor are completed in the deep Cambrian aquifer. This is due to the lack of a satisfactory shallow water bearing aquifer. Several small private wells are located in the shallow Silurian dolomite. Private and public wells located in the western third of the corridor are generally completed in the confined sand and gravel aquifer.

There are approximately 20 private wells reported as being located within 300 meters (1,000 feet) of the corridor. One public well is located in the confined sand and gravel aquifer within 150 meters (500 feet) of the western corridor limit, and two deep public wells are located within 300 meters (1,000 feet) near the Fox River.

Groundwater Quality

There are at present no known sources of groundwater contamination within the C&NW/Dean Street corridor. Several possible sources of environmental impairment are associated with the Moline Foundry, located just north of the intersection of 17th Street and Dean Street in St. Charles, Illinois. The Moline Foundry site is bounded on the south by the Chicago & NorthWestern Railroad tracks and Dean Street. Consequently, some areas of the Moline Foundry property are within the proposed corridor.

Groundwater quality information is available for 13 shallow wells (less than 150 meters (500 feet) in depth), which include 26 data sets, and 12 deeper wells extending to depths greater than 150 meters (500 feet) consisting of 26 data sets. The following summarizes the analytical results.

Comparisons were made between groundwater chemistry in shallow wells versus deep wells. The deeper wells have higher mean concentrations of several dissolved ions, including potassium, sodium, and chloride, in comparison to shallow wells. Calcium, sulfate, nitrates and iron were

generally higher in the shallow wells.

Several parameters had maximum values which exceeded current Class I potable groundwater standards. Chloride, total dissolved solids, barium, manganese, and mercury had maximum concentrations in the deeper wells which exceeded Class I standards. In the shallower wells, only manganese and mercury exceeded the Class I standards. These exceedances appear to be naturally occurring. All other values were within Class I groundwater standards.

2.3.7 Water Quality and Water Resources

The Central Region is generally defined as extending from river mile 67.2 (State Street bridge) to approximately river mile 59.3 (downtown St. Charles) (see Exhibit 2.1-7). This 12.7 kilometer (7.9 mile) reach of the Fox River contains three corridors. The Fox River is crossed by all three corridors. Five additional streams are also crossed. Three of the streams are associated with the Brewster Creek watershed and include Brewster Creek, the North Arm of Brewster Creek, and the Brewster Creek tributary. These are crossed by both the CC&P/Stearns Road and Red Gate Road corridors. The two remaining streams are the 7th Avenue Creek and State Street Creek crossed by the C&NW/Dean Street corridor.

Fox River

Fox River flow increases through the Central Region with inputs from the streams crossed in this corridor and two additional streams, Norton Creek and Ferson Creek. Neither of these two streams are crossed by the corridors. There are no wastewater treatment plant (WWTP) discharges to the Fox River within the corridor; however, three WWTP outfalls exist between the Central Region and the North Region.

There are no water supply intakes in this region. Aurora uses the Fox River as a water supply source with the intake located at river mile 50.0, 16 kilometers (10.1 miles) downstream of the C&NW/Dean Street corridor.

The Fox River maintains a channel width of approximately 100 meters (330 feet) throughout this region (Taylor, et al., 1995). The river depth and substrate are similar through the three corridors and are affected by the two dams in the area. The first dam is located 0.2 kilometers (0.1 miles) upstream of the Central Region (1.9 kilometers (1.2 miles) upstream of the CC&P/Stearns Road corridor). A second dam is located 0.3 kilometers (0.2 miles) downstream of the C&NW/Dean Street corridor. The Fox River within CC&P/Stearns Road corridor is generally shallower with a higher velocity than the southern two corridors located closer to the dam within the Central Region. The physical characteristics of the Fox River within the three corridors are shown in Table 2.3-9.

The land uses in the Central Region vary with each corridor but are generally developed land and agricultural. The C&NW/Dean Street corridor is highly developed within the City of St. Charles while Red Gate Road and CC&P/Stearns Road corridors show a combination of land uses. Public

parks and forest preserves are adjacent to the Fox River at all three crossings.

Table 2.3-9
Fox River Physical Characteristics - Central Region

Corridor	Stream Depth (meters/ft)	Substrate	Velocity Descriptor	Riparian Descriptor	Habitat Descriptor
CC&P/Stearns Road	0.3 - 0.8 (0.1-0.25)	Gravel, cobble	Moderate	Wooded (west) Thin riparian zone separating river from industrially/ agriculturally developed land	Riffle-like shallow depths. Moderate turbidity
Red Gate Road	1.0 - 1.5 (0.3-0.5)	Primarily cobble overlain with 0.08 to 0.13 m layer of silt	Slow	Residential (south) Wooded (north)	Pool with high turbidity
C&NW/Dean Street	0.5 - 2.5 (0.15-0.8)	Sand/silt, some cobble. Deep mud and silt (0.5 m in depth)	Slow	Commercial (south of RR bridge) City Park (north of RR bridge)	Pool

Source: Taylor, et al., 1995

Ambient Water Quality Monitoring Network (AWQMN) Station DT09 is located 1.8 kilometers (1.1 miles) upstream of the CC&P/Stearns Road corridor and is indicative of water quality entering the region (see Exhibit 2.1-7). Water quality in the Fox River within the region will be impacted by runoff from both the developed and agricultural areas. The annual mean chloride levels ranged between 67 and 94 mg/ℓ between 1990 and 1995 with a maximum of 117 mg/ℓ, which is below the general use water quality standard of 500 mg/ℓ and the public water supply standard of 250 mg/ℓ. All metals achieved the water quality standards with the exception of cadmium.

The CC&P/Stearns Road corridor survey collected 23 species of fish. The family represented by the most number of species was Cyprinidae (minnows and carps) with seven species. The Red Gate Road corridor was represented by 13 species with Cyprinidae and Centrarchidae (sunfishes) each represented by four species. Eleven species were collected in the C&NW/Dean Street corridor - the lowest number of species collected within this region. The family represented by the most number of species is Centrarchidae with five species. The fish surveys conducted in 1994 did not find anything of significance in any of the three corridors (INHS, 1996).

The number and diversity of the mussels collected in the Fox River varied by corridor. Sampling of the Fox River within the CC&P/Stearns Road corridor produced the highest number (27) of live mussels for the region (and the Fox River study area), but the lowest number (7) of species for the

region (and the Fox River study area). The live mussels collected at the CC&P/Stearns Road corridor represented three mussel species, including the elktoe, a federal species of concern. Included in the four dead mussel species collected at CC&P/Stearns Road was the ellipse (*Venustaconcha ellipsiformis*), an Illinois Watch List mussel. The Red Gate Road corridor Fox River sampling produced two live mussels of the same species. Ten dead species were collected from the Fox River within this corridor, including shells of the elktoe, for a total of 11 mussel species, the highest for the region (and the Fox River study area). The C&NW/Dean Street corridor sampling only produced ten dead mussel species. Dead shells of the state threatened spike (*Elliptio dilatata*) were collected from the Fox River within the Red Gate Road and C&NW/Dean Street corridors (Taylor, et al., 1995). Exhibits 2.3-13, 2.3-14, and 2.3-15 illustrate the locations of threatened and endangered species found in the CC&P/Stearns Road, Red Gate Road, and C&NW/Dean Street corridors, respectively.

The Fox River had a shallow run with clean substrate in the CC&P/Stearns Road corridor that was unlike other corridors which are too silty to support mussel populations (INHS, 1996).

Aquatic macroinvertebrates were sampled for each of the three corridors. The following is a summary of the collection results:

Table 2.3-10
Fox River Aquatic Macroinvertebrates - Central Region

Corridor	Number of Taxa	Taxa Represented by the Most individuals (Number collected)
CC&P/Stearns Road	24	Chironomidae (433)
Red Gate Road	4	Oligochaeta (142)
C&NW/Dean Street	3	Oligochaeta (5)

Source: Taylor, et al., 1995

The greatest number of taxa were identified from the CC&P/Stearns Road corridor where solid substrate was available for colonization by macroinvertebrates in the rocky riffle (Taylor, et al., 1995). Diversity was lowest at the C&NW/Dean Street corridor due to the presence of the dam directly downstream where the substrate consisted of mud and silt. This habitat is unfavorable for many aquatic macroinvertebrates. No federal or state listed endangered or threatened species of aquatic macroinvertebrates, or species under consideration for such listing, were collected from the Fox River in the vicinity of any of the proposed bridge corridors in Kane County during the present surveys, nor are any known or thought likely to occur at these sites (Taylor, et al., 1995).

The Index of Biotic Integrity (IBI) determined from the fish surveys conducted at DT09 is 36, and the Macroinvertebrate Biotic Index (MBI) determined from the aquatic macroinvertebrate survey is 5.5 (IEPA, 2000). The IBI rating indicates the Fox River is a moderate aquatic resource and the MBI rating indicates a highly valued resource. The Potential Index of Biotic Integrity (PIBI) for the Fox River at DT09 is 60, indicating a unique aquatic resource (IEPA, 1996). However, the existing conditions of the Fox River only allow support as a moderate aquatic resource.

The 2000 use assessment for the Fox River at AWQMN Station DT09 was assessed as partial support for overall use, aquatic life use, and swimming . Fish consumption was assessed as full support (IEPA). This segment is also identified on IEPA's Section 303(d) list for water quality limited waters. Fecal coliform and dissolved oxygen are the causes of this impairment.

CC&P/Stearns Road Corridor

The CC&P/Stearns Road corridor crosses the Fox River, Brewster Creek, the North Arm of Brewster Creek, and the East Branch of Brewster Creek twice (see Exhibit 2.3-8). There are identified floodways on the Fox River, the North Arm of Brewster Creek and Brewster Creek. The floodway for the Fox River is approximately 160 meters (500 feet) wide at the corridor, and the other floodways are approximately 6-7 meters (20-22 feet) wide.

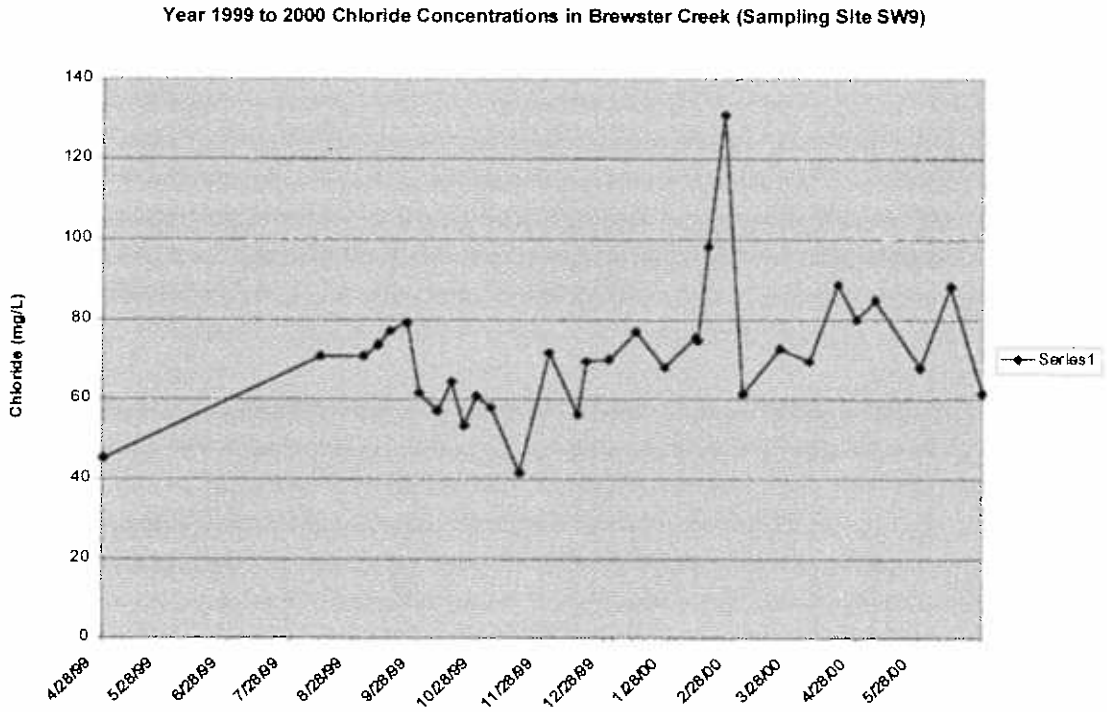
Brewster Creek

Brewster Creek merges with the Fox River at river mile 65.9 on the east side of the river (Exhibit 2.1-7). The creek is crossed by both the CC&P/Stearns Road corridor and the Red Gate Road corridor (Alternatives A and B).

Brewster Creek is the largest Fox River tributary in the study area with a drainage area of 4,500 hectares (17.5 square miles). The stream originates as overflow from two ponds located in the Pratt's Wayne Woods County Forest Preserve. The watershed includes undeveloped or open areas, agricultural area, developed land (residential, stables, quarry, and nursery). There are two main tributaries, the North Arm of Brewster Creek and the East Branch of Brewster Creek, included in this watershed. These two tributaries are also discussed individually.

Between Illinois Route 25 and the confluence with the Fox River, the substrate of Brewster Creek is cobble, gravel, and sand. Several riffles and a cobble island exist in the area upstream of Illinois Route 25. Stream width varies from 3.5 to 8 meters (11.5 to 26.2 feet). Depth ranges from 0.2 to 0.7 meters (0.6 to 2.3 feet) with moderate to high water clarity. Bank vegetation in the watershed primarily consists of shrub and woodland (Taylor, et al., 1997).

The Illinois State Geological Survey (ISGS) conducted water quality sampling of the Brewster Creek watershed from 1996 to 1997 and during the winter season of 1999 to 2000 (Miner, Benton, and Weaver, July 10, 2000). This sampling included chlorides and heavy metals. During the 1999 to 2000 winter season, surface water concentrations of chloride and specific conductance were monitored at seven locations in the Brewster Creek watershed (See EXHIBIT 2.3-8a). Two monitoring stations (SW-7 and SW-9) were located on the main stem of Brewster Creek. Biweekly sampling was conducted from May 1999 through July 2000. All concentrations were less than the General Use Water Quality Standard. At the monitoring station SW-7 upstream of Dunham Road, the highest chloride concentration was 78 mg/L. The following chart depicts the variability at monitoring station SW-9 located near Illinois Route 25, where the highest chloride concentration was recorded as 130 mg/L. All values remained below the chloride General Use Water Quality Standard.



Brewster Creek was also sampled for fish, mussels, and water quality at two locations. Water quality parameters measured in the field included temperature, dissolved oxygen, conductivity (field and specific), and salinity (Taylor, et al., 1997). Only temperature and dissolved oxygen have established water quality standards and these standards were not exceeded.

The fish and mussel surveys were conducted in two locations (Taylor, et al., 1997). Four species of fish were collected at one site. Three of these species were identified as uncommon (less than five individuals collected) while the spotfish shiner was identified as common (between 5 and 10 individuals collected). At the other site, three species of fish were collected, all assessed as uncommon.

No live mussels were collected in Brewster Creek. Shells of seven mussel species were collected at one site including the state endangered slippershell (*Alasmidonta viridis*) (Taylor, et al., 1997). The location of this site is shown on Exhibit 2.3-13. Suitable habitat for mussels was present at this site. Shells of three mussel species were collected at the second site, none of which are listed as either threatened or endangered. Habitat at this second site was not considered as good as the first site due to runoff from the nearby nursery (Taylor, et al., 1997).

An MBI value of 4.5 was determined for Brewster Creek (IEPA, 1996). Additional MBI studies

were indicated a good stream rating with an MBI value of 4.9 upstream of Illinois Route 25. Brewster Creek downstream of Illinois Route 25 was characterized as a good stream rating with an MBI value of 5.5 and a fair stream rating with an MBI value of 7.0 downstream of Illinois Route 25 (IDNR, 1998 and Huff &Huff, Inc. 2000). The overall use and aquatic life use assessment for Brewster Creek has been rated as full support with no rating for fish consumption and swimming provided (IEPA, 1996). The overall use and aquatic life was not assessed on Brewster Creek in the 2000 Illinois Water Quality Report (IEPA, 2000)

Brewster Creek was characterized as "fair" with IBI values of 38 and 30 upstream of Illinois Route 25. A good stream rating with IBI values of 46 and 42 were determined downstream of Illinois Route 25 (IDNR, 1998 and Huff & Huff, Inc. 2000).

A habitat assessment of Brewster Creek was conducted both upstream and downstream of Illinois Route 25 by IDNR (1998). IDNR utilizes the Stream Habitat Assessment Procedure (SHAP) that rates habitat as excellent ($\geq$142), good (141-100), fair (100-59), and poor ($\leq$58). IDNR assessed Brewster Creek as good with a rating of 124 upstream of Illinois Route 25 and a rating of 110 downstream of Illinois Route 25.

North Arm of Brewster Creek

The North Arm of Brewster Creek merges with Brewster Creek west of Illinois Route 25. The North Arm of Brewster Creek is only crossed by the CC&P/Stearns Road corridor.

The North Arm of Brewster Creek is less than 1.6 kilometers (1 mile) in length and drains a watershed of less than 712 hectares (2.75 miles^2) before joining Brewster Creek. The tributary originates just northeast of the Woodland Landfill and basically flows around the perimeter of the landfill. The North Arm of Brewster Creek runs along the western edge of a large wetland/fen area (South Elgin Fen), an Illinois Natural Area Inventory site, prior to joining Brewster Creek.

This small tributary is approximately 6 meters (20 feet) in width with a depth of less than 0.3 meters (1 foot). In the area of the South Elgin Fen, the stream has heavily wooded and vegetated banks, and the stream bottom is silty in appearance.

Sampling results at monitoring station SW-9 during the 1999 to 2000 winter season showed chloride concentrations varying from 40 mg/L in May 1999 to 130 mg/L in March 2000. All of the stream concentrations were below the General Use Water Quality Standard.

The North Arm of Brewster Creek water quality was monitored by the ISGS at two locations. Chloride concentrations for the two sites were 76.4 mg/ℓ and 78.8 mg/ℓ, and were below the General Use Water Quality Standard of 500 mg/ℓ. Both lead samples were less than 0.05 mg/ℓ. All metals analyzed were below the General Use Water Quality Standards.
Sampling results at monitoring station SW-11 during the 1999 to 2000 winter season showed chloride concentrations varying from 30 mg/L in May 1999 to 90 mg/L in March 2000. All of the stream concentrations were below the General Use Water Quality Standard.

The North Arm of Brewster Creek was not surveyed for either fish, mussels or aquatic

macroinvertebrates, and the IEPA did not assess this creek for overall use.

East Branch of Brewster Creek

The East Branch of Brewster Creek is crossed by the CC&P/Stearns Road corridor. This creek joins Brewster Creek approximately 1.6 kilometers (1 mile) above the confluence of Brewster Creek and the Fox River. This tributary originates near gravel pits and residential areas east of Pratt's Wayne Woods and flows north to Pratt's Wayne Woods through agricultural areas prior to joining Brewster Creek.

The tributary width near Illinois Route 25 ranges from 2 to 3.5 meters (6.5 to 11.5 feet) with a depth of 0.2 to 0.6 meters (0.6 to 1.9 feet). Although the upper reaches of the stream are channelized, there are extensive, tight meanders upstream of Dunham Road. The substrate in the project area consists of gravel, sand, some cobble, and overhanging snags. Water clarity was high and this was associated with wetlands and the possibility of springs supplying water to the stream (Taylor, et al., 1997).

The East Branch was sampled by both the ISGS and the INHS. Reported INHS data only included temperature, dissolved oxygen, conductivity (field and specific) and salinity. Both temperature and dissolved oxygen achieved the General Use Water Quality Standards.

The ISGS conducted sampling at three locations in 1996/1997 and biweekly sampling at two locations (SW-1 and SW-8) in 1999/2000 (see exhibit 2.3-8a). Concentrations of chloride, total dissolved solids, and heavy metals in 1996 and 1997 were all below the General Use Water Quality Use Standard. Chloride concentrations of 50 mg/L to 55.7 mg/L were measured during the one sampling event in 1996/1997. Sampling point SW-1 was located upgradient of Dunham Road and SW-8 was placed just downstream of the UP railroad and Elmhurst Chicago Stone pipe plant. Chloride concentrations at SW-1 typically fluctuated between 38 mg/L and 113 mg/L except for a maximum concentration of 220 mg/L reported in February 2000. The chloride concentrations were higher at the downstream monitoring location (SW-8). Chloride concentrations varied from 41 mg/L to 89 mg/L for all months, except February and May 2000. A maximum chloride concentration of 290 mg/L occurred in May 2000, and not likely to be associated with deicing activities. The February concentrations were likely associated with deicing activities.

Three locations were sampled in the East Branch of Brewster Creek. Total dissolved solids were analyzed during the sampling. Chloride levels ranged from 50 mg/ℓ to 55.7 mg/ℓ, which are below the General Use Water Quality Standard of 500 mg/ℓ. Lead levels were below 0.05 mg/ℓ in all samples. All the metals analyzed were below the General Use Water Quality Standards.

The fish and mussel surveys conducted in the East Branch at two sites collected six species of fish at one site and three species of fish at another (Taylor, et al., 1997). The fantail darter was the most abundant species at each location. No unionid mussels were observed at either of the sites and aquatic macroinvertebrates were not surveyed. The IEPA did not assess the East Branch for overall use support.

IDNR assessed the MBI, IBI, and habitat in the East Branch of Brewster Creek (IDNR, 1998). The MBI value of 4.7 determined the rating of good for the East Branch of Brewster Creek. The IBI value of 32 determined the East Branch of Brewster Creek as fair and the habitat assessment determined an overall stream rating of excellent.

Huff & Huff, Inc. conducted a habitat assessment downstream of Dunham Road in the East Branch of Brewster Creek (H&H, 2000). In addition, H&H assessed the MBI and IBI values both upstream and downstream of Dunham Road in the East Branch of Brewster Creek. A fair stream rating was assessed using the IBI and PIBI. A good stream rating was assessed using the MBI.

Red Gate Road Corridor

The three alignment options (Red Gate Road to Illinois Route 25 north-alignment A, middle-alignment B, and Red Gate/Army Trail Road-alignment C) all cross the Fox River (see Exhibit 2.3-8). Alignments A and B additionally cross Brewster Creek along Illinois Route 25, south of the CC&P/Stearns Road corridor, as well as the Brewster Creek Tributary after connecting to the segment common with the CC&P/Stearns Road alignment. The Fox River has an identified floodplain width of 180 to 250 meters (600 to 800 feet), the Brewster Creek floodway width is 45 meters (150 feet) wide, and the Brewster Creek Tributary has no identified floodway.

Brewster Creek & Brewster Creek Tributary

A summary of the water quality and biological resources of Brewster Creek and the Brewster Creek Tributary is located in the CC&P/Stearns Road corridor description above, and applies to the Red Gate Road corridor as well.

C&NW/Dean Street Corridor

The corridor crosses the Fox River, State Street Creek, and Seventh Avenue Creek (see Exhibit 2.3-9). Seventh Avenue Creek is crossed at two locations: north of the tracks at 7th Avenue and, due to corridor-related improvements, on Main Street at 8th Avenue. The corridor crosses State Street Creek near 12th Street. This corridor traverses about 120 meters (400 feet) of Fox River floodway. Improvement to Main Street near 8th Avenue will cross approximately 12 meters (40 feet) of floodway of 7th Avenue Creek. North of the tracks along 7th Avenue, there is no identified floodway to the 7th Avenue Creek. There is no identified floodway at the State Street Creek crossing. Along State Street Creek, there have been reports of flooding problems in the area located east of Randall Road.

State Street Creek

State Street Creek is crossed by the C&NW/Dean Street corridor near 12th Street west of the Fox River. State Street Creek is a direct tributary to the Fox River. This intermittent stream originates north of the Union Pacific Railroad near Second Avenue and Marquerite Street. The stream flows perpendicular to the Fox River through the City of St. Charles and merges with the Fox River on the west side of St. Charles. The watershed is comprised of commercial and residential properties. The Creek is conveyed underground in a culvert where the proposed roadway crosses the stream. The stream resurfaces to the southeast near 11th Street, behind an apartment building at 1035 Dean Street.

The creek substrate at the proposed roadway crossing is gravel/cobble and sand. Minimal siltation was observed and was localized in a large pool below the culvert outfall. State Street Creek has a width of approximately 1.5 meters (5 feet) and a depth of 0.1 meters to 0.3 meters (0.3 to 1 foot). The bank full width at the base of the culvert outfall was approximately 9 meters (30 feet) and the bank full depth was up to 0.9 meters (3 feet). Bank erosion was evident. Several residential yards have been undercut on the southern bank of the stream. Bank vegetation consists of scrub/shrubland, trees, and cultivated yards. The trees and shrubs provide moderate canopy cover (up to 65% in dense uncultivated areas).

State Street Creek was not monitored for water quality by either the ISGS or INHS. Therefore, no water quality data including water samples, fish, mussel, or aquatic macroinvertebrate surveys were available for this stream. This creek was not assessed by the IEPA for overall use.

Seventh Avenue Creek

Seventh Avenue Creek is crossed by the C&NW/Dean Street corridor at two locations. The main corridor crosses Seventh Avenue Creek north of State Avenue near the intersection of Seventh Avenue and State Avenue. The second crossing near the intersection of Main Street and Eighth Avenue is due to the improvements along Main Street.

Seventh Avenue Creek is a direct tributary to the Fox River. This intermittent stream flows southeast and parallels the Fox River for approximately one mile before turning southwest toward the river near Seventh Avenue and Spring Avenue. The watershed consists of commercial and residential development. The stream substrate is comprised of gravel/cobble with minimal silt at the proposed roadway stream crossing.

Seventh Avenue Creek has a width of approximately 3.5 meters (11.5 feet) at the proposed roadway crossing. The stream depth at this point is 0.1 meters (0.3 feet). This stream has a bank full width of approximately 9 meters (30 feet) and a bank full depth of approximately 1.4 meters (4.6 feet). Bank vegetation consists of cultivated grass (residential yard), shrubs, trees, and uncultivated grass/shrubland. The trees and shrubs were located primarily north of the State Avenue crossing and on the west bank of the stream. The trees provide moderate canopy cover (approximately 60%). Concrete and wood debris exist in the stream bed.

Seventh Avenue Creek was not monitored for water quality by either the ISGS or INHS. Therefore, no water quality data, including water samples, fish, mussel or aquatic macroinvertebrate surveys are available for this stream. This creek was not assessed by the IEPA for overall use.

2.3.8 Wetlands

CC&P/Stearns Road

A total of 34 separate sites were surveyed utilizing methodology established by the U.S. Army Corps of Engineers (COE) and the Wetland Policy Act of 1989 to determine if the site was a

wetland, as opposed to a river or stream, or manmade ditch or pond. The corridor was surveyed for location, type and extent of aquatic resources in 1993 and 1994 (INHS) and again in 1996 and 1997 to see if the limits of sites delineated had changed. The corridor was surveyed again in 1999-2000 because of the long time period since the last survey and the results are presented in the *Wetland Resource Technical Report* (1998) except as superseded in the *Technical Memorandum* (2000). Wetlands were defined as those sites meeting both the definition of a wetland utilizing the methodology established by the U. S. Army Corps of Engineers (COE) and the Wetland Policy Act of 1989. Two of the sites (#26 and #27) were dropped from further discussion because they occurred in croplands and have been classified by the NRCS as "non-wetland prior converted".

Rivers and streams include the adjacent riparian corridor, which may also meet the definition of wetland in the COE field manual. Manmade ditches and ponds exhibit some or all of the characteristics of wetlands, but are manmade stormwater features maintained for that purpose.

The functions of the wetlands in this corridor were identified using best professional judgment, available scientific literature, and the WET II methodology (Adamus et al. 1987). Wetland functions include the physical, chemical, and biological characteristics of a wetland. Wetland values are those characteristics that are beneficial to society. Twelve functions and values were assessed for each wetland and include hydrologic functions, biogeochemical functions, biological functions, and social functions.

The sites surveyed are summarized by category and characteristics in Tables 2.3-11(a), (b), and (c). Exhibit 2.3-10 illustrates the corridor surveyed and each site assessed with the site limits that were field staked. Sites listed on Table 2.3-11(b), Rivers and Streams, are further discussed individually in Section 2.3.7, Water Quality and Water Resources.

Those sites surveyed which were classified as ditches and manmade ponds and are listed on Table 2.3-11© are important only for purposes of estimating total mitigation required and are not further discussed in this Section.

Nineteen wetlands were identified along the proposed CC&P/Stearns Road Corridor and their characteristics are summarized in Table 2.3-1(d) and are as shown on Exhibit 2.3-10. These nineteen wetlands are generally within six watersheds all tributary to or part of the Fox River Watershed representing East Branch Brewster Creek, Brewster Creek, the North Arm of Brewster Creek, the Fox River, an unnamed tributary watershed east of McLean Boulevard, and the Day's Fen drainage watershed.

Due to the presence of high quality fens and other wetlands, the area surrounding CC&P/Stearns Road corridor was the subject of a preliminary hydrogeological investigation. The results of this study are discussed in Section 2.3-6.

In general, the depth to water was found to range from 1.5 to 6 meters (5 to 20 feet). Preliminary hydrogeological analysis of the monitoring well data by the ISGS suggested that the area fens and seeps on the east side of the Fox River are supported by the shallow aquifer and that the shallow

groundwater flow direction is west toward the Fox River.

Fens and Seeps Within the CC&P Stearns Road Corridor:
Fens are defined by Swink and Wilhelm (1994) as: "a general term used in reference to habitats which are calcareous in nature and which are fed throughout the year by a flow of water at or just beneath the surface." The alkaline nature of the substrate is a result of the groundwater passing through calcareous geologic strata. Few species of plants can survive in the very alkaline environment and thus fen vegetation is uncommon.

The CC&P/Stearns Road Corridor contains two fen/seep wetlands systems. These are Wetland Nos. 10 (Brewster Creek Fen/Seep), and 17 (McLean Boulevard Fen/Seep also known as Day's Fen). Wetland No. 3 (South Elgin Sedge Meadow) is located immediately off-site. A fen is a type of wet meadow (typically a palustrine emergent wetland) fed by an alkaline water source such as a calcareous spring or seep. Wetland No. 15 may also represent a fen/seep community; however, additional information is needed to determine if it has alkaline water or is groundwater fed.

The alkaline water is typically the result of groundwater movement through careous glacial drift that emerges from the subsurface into surficial springs or seeps. For the CC&P/Stearns Road Corridor, the groundwater moves through glacial outwash deposited during the late Wisconsinan stages of Pleistocene glaciation (Willman 1971).

Wetland Descriptions
Wetland No. 3 - South Elgin Sedge Meadow
Wetland No. 3 is a 7.61 hectare (18.80 acre) sedge meadow/wet meadow/marsh complex also known as the South Elgin Sedge Meadow and is identified as an Illinois Natural Areas Inventory Site and a candidate for Nature Preserve status. The fen and associated wetland complex are located outside the corridor east of the Fox River and west of Illinois Route 25, between the CNIC Railroad line and the Chicago and Northwestern Railroad line. The South Elgin Sedge Meadow is within the North Arm of Brewster Creek watershed and receives drainage from the Woodland Waste Management site to the northeast of Gilbert Street. The property is currently privately owned. This fen wetland complex is composed of several habitat types including graminoid fen, sedge meadow and marsh. According to Byers (1992), these communities are comprised of the following:

A. Graminoid fen -- Associates of this community that have been recorded at South Elgin Fen include cotton grass (*Eriophorum angustifolium*), shrubby cinquefoil (*Potentilla fruticosa*), bog bedstraw (*Galium labradoricum*), Kalm's lobelia (*Lobelia kalmii*), Grass of parnassus (*Parnassia glauca*), swamp thistle (*Cirsium muticum*), fringed gentian (*Gentiana procera*), swamp betony (*Pedicularis lanceolata*), Ohio goldenrod (*Solidago ohioensis*), and valerian (*Valeriana ciliata*). It appears from inspection of the original Illinois Natural Areas Inventory (INAI) maps, that a portion of this community was destroyed through drainage and fill activities by the adjacent property owner to the east.

B. Sedge meadow -- The sedge meadow grades almost imperceptibly into marsh communities

along a shallow gradient. Dominant plants of the sedge meadow include five species of sedges (*Carex spp.*), four species of rushes in the Scirpus and Juncus genera, and two species of the Eleocharis genera. Other associates of this community include New England aster (*Aster novae-angliae*), Riddell's goldenrod (*Solidago riddellii*), bluejoint grass (*Calamagrostis canadensis*), marsh shield fern (*Dryopteris thelypteris pubescens*), spotted Joe Pye weed (*Eupatorium maculatum*), common boneset (*Eupatorium perfoliatum*), common mountain mint (*Pycnanthemum virginianum*), and blue vervain (*Verbena hastata*).

C. Marsh -- This community is virtually indistinguishable from the sedge meadow community. Some species more typically associated with this community include both species of cattail (*Typhus spp.*), blue flag (*Iris virginica shrevei*), mad-dog skullcap (*Scutellaria lateriflora*), rice cut grass (*Leersia oryzoides*), arrowhead (*Sagittaria latifolia*), and small duckweed (*Lemna minor*). Much of this community is now dominated by purple loosestrife (*Lythrum salicaria*).

D. A small portion of degraded woodland occurs along the northeastern border of the proposed preserve. The dominant overstory species is bur oak (*Quercus macrocarpa*). The understory herbaceous layer has not been inventoried. Other woody species that occur along the perimeter of the wetland communities include cottonwood, quaking aspen (*Populus tremuloides*), and pussy willow (*Salix discolor*).

Three man-made excavated ponds also exist in this fen complex. The site is identified in the NWI as a semi-permanently flooded, emergent, palustrine wetland (PEMF). In addition, the man-made open water areas are identified as palustrine, unconsolidated bottom, intermittently exposed and excavated areas (PUBGx) and was identified as non-wetland and non-inventoried hydric soil on the NRCS map. For the purpose of the wetland delineation, the INHS determined that the dominant plant species for the entire complex include tussock sedge (*Carex stricta*), cattail (*Typha latifolia*), and reed canary grass. The Floristic Quality Index (FQI) is 61.1 and indicates that the wetland is a high quality natural area, with many species native to Illinois.

Primary hydrologic inputs were identified as groundwater, precipitation, and runoff from surrounding ground. The primary hydrologic output estimated during the field visit is evapotranspiration. Some drainage exists along the southern edge of the fen/marsh complex via a small channelized section of the North Arm of Brewster Creek.

The watershed that directly contributes runoff to this wetland complex is limited to approximately 14 hectares (35 acres) bounded by railroad tracks to the north and south, and the North Arm of Brewster Creek on the west. The North Arm of Brewster Creek passes to the west of the wetland complex. During normal base flow, the elevation of this stream is below the groundwater and ground surface elevations in the wetland complex. Therefore, the primary surface water source to the wetland complex is direct rainfall and runoff from the 15 hectares (37 acre) watershed.

During storm flows, the North Arm of Brewster Creek periodically overflows its banks and partially or completely inundates the wetland complex. It is estimated that this phenomenon occurs on average once every two to five years. Groundwater flow occurs generally in a

west/southwesterly direction. Groundwater is located approximately 15 cm (6 inches) below the water surface on average in the wetland complex. This conclusion is variable due to the hummocky nature of topography within the complex. The groundwater recharge area for this complex extends for several hundred hectares (square miles) and generally originates from the northeast. It is estimated that the average time for groundwater to flush through the wetland complex is approximately one to two months. Available groundwater monitoring indicates natural background chloride levels ranging from 13 to 20 mg/ℓ in and near the wetland complex. Measured chloride concentrations in the North Arm of Brewster Creek are approximately 80 mg/ℓ.

Two state threatened and endangered plants have been reported from the fen: bog bedstraw (*Galium labradoricum* state endangered) and false asphodel (*Tofieldia glutinosa* state threatened). Bog bedstraw was recorded from South Elgin Fen during the initial Illinois Natural Areas Inventory. Although this species was not recorded by Wilhelm (1978) or Young (1986), Bowles (1991) recorded the presence of this species at the South Elgin Fen in July 1988. Bowles (1991) reports this species is restricted to 18 sites in three counties in northeastern Illinois where it occurs locally in calcareous portions of sedge meadows, infrequently in calcareous floating mats, or rarely in bogs. False asphodel was observed in the most recent study for the Technical Memorandum (2000). Other threatened or endangered plant species that may possibly occur in the fen include white lady's slipper (*Cypripedium candidum*), marsh speedwell (*Veronica scutellata*), and two sedges (*Carex crawei* and *C. viridula*). Habitat for the Yellow Headed Blackbird (*Xanthocephalus xanthocephalus*) and the Least Bittern (*Ixobrychus exilis*), two state listed bird species, is also present within the fen wetland complex. However, none of these species were observed during the INHS field study. No federal listed species were found.

The functional assessment analysis indicates that the wetland generally has a high functional rating for the following functions: groundwater discharge, sediment stabilization, wildlife diversity/ abundance, plant habitat and diversity, and uniqueness/heritage. The wetland also contains essential habitat for two state listed animal species indicating valuable wildlife habitat, although the INHS did not observe these species during the field surveys. This wetland also has a high uniqueness/heritage function that is primarily due to the management of the fen by an organized conservation group for the primary purpose of preservation or ecological enhancement. Since the site is on the INAI listing and maintained by staff of The Nature Conservancy Voluntary Stewardship Network, it represents a high heritage value. The wetland has a high educational value since this fen is a unique area in Illinois. The storage of floodwater increases the functional value for flood flow alteration and overall water quality protection, but will, over time, reduce the functions of plant habitat by lowering floral diversity, wildlife habitat and possibly uniqueness/heritage.

Wetland No. 4

Wetland No. 4 is a 0.45 hectare (1.12 acre) emergent/scrub/shrub wetland located immediately south of the CNIC Railroad line and about 115 meters (375 feet) west of Illinois Route 25 (Figure

3-1). This wetland is located immediately south of Wetland No. 5. The wetland was dominated by reed canary grass, sandbar willow, box elder and cottonwood. The FQI value for this site is 7.2 and indicates an area that has undergone disturbance. This site is located in a topographic depression.

The wetland provides a moderate potential for water quality protection since it has high probability for sediment stabilization, sediment/toxicant retention and nutrient removal/transformation. The wetland was rated moderate for wildlife diversity/abundance.

Wetland No. 4 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 6 [Wetland 6 is outside the current proposed corridor. The following discussion is included to allow evaluation of possible options outside the corridor]

Wetland No. 6 is a pond that has emergent vegetation around the perimeter. The wetland is located between the Union Pacific Railroad line (UP) and Illinois Route 25 about 140 meters (460 feet) east of Illinois Route 25.

Dominant vegetation includes broad-leafed cattail (*Typha angustifolia*), cottonwood seedlings, water pepper (*Polygonum hydropiper*), and barnyard grass (*Echinochloa crusgalli*). The low FQI of 6.5 is indicative of a disturbed plant community. The wetland provides moderate water quality protection since it has a high potential for both sediment/toxicant retention and nutrient removal/transformation. The vegetated shoreline does provide moderate potential for sediment stabilization. The wetland has moderate potential wildlife diversity/abundance due to its open water areas surrounded by vegetation.

Wetland No. 7 [Wetland 7 is outside the current proposed corridor. The following discussion is included to allow evaluation of possible options outside the corridor]
Wetland No. 7 is a 0.93 hectare (2.30 acre) wet meadow located between the UP Railroad line and Illinois Route 25, approximately 335 meters (1,100 feet) east of Illinois Routes 25 and 45 meters (150 feet) southwest of the railroad (Figure 3-1). This site is associated with Wetland No. 6. It is likely that fill placed between Wetland No. 6 and No. 7 has disrupted the contiguous hydrological connection of these two wetlands.

The depressional wetland was dominated by reed canary grass and relatively dense stands of scouring rush (*Equisetum hyemale*). Also found in this area were sedges (*Carex spp.*) and rushes (*Juncus spp.*). The FQI for this site is 11.6 and is of low natural quality. The functional analysis indicates that the wetland generally has a high potential for floodflow alteration due to its depressional nature. It has a high potential for both sediment/toxicant retention and nutrient removal/transformation. The wetland has a moderate potential wildlife diversity/abundance due to the multilayer vegetation strata.

Wetland No. 8 [Wetland 8 is outside the current proposed corridor. The following discussion is included to allow evaluation of possible options outside the corridor]
Wetland No. 8 is a 1.13 hectares (2.79 acres) wet shrubland located along the Brewster Creek tributary, between the CNIC Railroad line and the UP Railroad line. The wetland is split by the CNIC Railroad line. The portion to the north of the tracks is a 6 to 9 meters (20 to 30 foot) wide linear wetland between the Elmhurst Chicago Stone property and the CNIC Railroad line. Fill (concrete blocks) appears to be limiting the northern extent of the wetland. The wetland south of the tracks widens out into the floodplain.

This segment is dominated by sandbar willow, orange jewelweed (*Impatiens capensis*), Joe-Pye weed, big bluestem (*Andropogon gerardii*), and reed canary grass. The wetland has fair natural quality as indicated by the FQI value of 17.5. Other notable species include tussock sedge, common arrowhead, blue-flag iris (*Iris virginica shrevei*), water horehound (*Lycopus americanus*), cup-plant (*Silphium perfoliatum*), and skunk cabbage (*Symplocarpus foetidus*). These species typically inhabit higher quality wetlands. The dominant vegetation for this segment was comprised of sandbar willow and reed canary grass. Although the railroad tracks divide these two wetlands, they do have some of the same vegetation species. The FQI value for this portion (19) indicates that this wetland also has fair natural quality.

The functional assessment analysis indicates that this wetland has a high probability for flood flow alteration due to its location within the 100-year floodplain. Since the wetland can provide stormwater attenuation, the probability for sediment/toxicant retention and nutrient removal/transformation is high. The vegetated shorelines also provide a moderate potential for sediment stabilization within the wetland. Despite having little open water area for water fowl, the wetland does provide suitable habitat for native Illinois wildlife species.

Wetland No. 9 [Wetland 9 is outside the current proposed corridor. The following discussion is included to allow evaluation of possible options outside the corridor]
Wetland No. 9 is a 2.19 hectare (5.41 acre) wet meadow/wet shrubland complex associated with a tributary of Brewster Creek and the Brewster Creek Fen Nature Preserve. The wetland is located along Brewster Creek tributary, immediately south of the UP Railroad line and approximately 490 meters (1600 feet) east of Illinois Route 25. The wetland extends outside the corridor to the south and west, eventually connecting to the DeSantos' Brewster Creek INAI site in the Red Gate Road Corridor. The wetland is dominated by box elder and reed canary grass. The FQI for this site is 5.9 and indicates that the area is highly disturbed. Groundwater flow patterns indicate that the normal water source for this wetland primarily originates from groundwater. The groundwater recharge area that provides water to this wetland complex extends more than one mile due east. Normal stream flow is directly tapped into the groundwater. This flow originates from the east, and proceeds in a west/northwest flow direction.

Although base flow is contained within the creek banks approximately 0.30 to 0.60 meters (1 to 2 vertical feet) below the ground surface elevation in the wetland, flood flows periodically exceed the top of bank elevations and inundate the wetland areas. The results of the functional analysis indicates that this wetland has a high probability for flood flow alteration. This wetland, due to

its proximity to the Brewster Creek Fen Nature Preserve, provides a moderate level of groundwater discharge. The presence of trees and shrubs provide moderate level of sediment stabilization that contributes to shoreline protection and lowers erosion potential. The wetland lacks the ability to retain significant amounts of sediment and nutrients and the effect on water quality is probably moderate. The wildlife diversity/abundance function was rated as moderate. As indicated by the INHS during the survey (INHS 1993), the area may contain suitable habitat for the yellow-headed blackbird and the least-bittern, which are both state listed threatened or endangered species. Proximity to the Brewster Creek Fen Nature Preserve and its large size enhances the wildlife habitat function contributing to a higher value. Due to its proximity adjacent to the Brewster Creek Fen/Seep Nature Preserve, the uniqueness/heritage function was rated high by the WET II methodology.

Wetland No. 10 Brewster Creek Fen Nature Preserve
The Brewster Creek Fen Nature Preserve (also known as Wetland No. 10) is a 1.36 hectare (3.37 acre) sedge meadow and wet shrubland located between the UP Railroad line and Illinois Route 25. This wetland is located outside corridor boundaries. In 1997, the wetland and surrounding area received Illinois Nature Preserve status.

The elevational gradient is generally from east to west sloping gently at first, then more apparently, until the grade flattens along the floodplain of the East Branch of Brewster Creek. The tributary itself is the elevational level point and it drains from north to south through the site. The primary hydrologic inputs are somewhat unclear. On the fairly level upper plateau, few drainage patterns are apparent and the soil is well drained. At the toe of the gentle slope that demarcates the uplands from the sedge meadow floodplain of the East Branch of Brewster Creek, groundwater slowly emerges at the surface and drains laterally across the sedge meadow into the creek. The tributary and the associated sedge meadow community periodically flood during extreme rainfall events. The soils along the East Branch of Brewster Creek are saturated for most, if not all, of the year. Thus, the primary hydrologic inputs are likely groundwater discharge, precipitation, and overbank flow from the East Branch of Brewster Creek.

The INHS determined that the wetland is dominated by shrubs of red-osier dogwood and heart-leaved willow, and several herbaceous species including swamp aster (*Aster puniceus*), bluejoint grass (*Calamagrostis canadensis*), tussock sedge, spotted Joe-Pye weed, and reed canary grass. An extensive vegetative survey by the INHS identified 78 plant species for this area with a FQI of 34.3 which indicates an extremely uncommon natural area with many species native to Illinois. A study on the vegetation in the fen was conducted by Byers in 1996. Byers recorded a total of 249 species, including 199 native species in 1996. Byers calculated a FQI of 59.48 in 1996 although he included the dry mesic forest upslope from the wetland area. Areas with a FQI of 50 or greater are extremely rare since they represent less than 0.5% of the area in the Chicago region (Swink and Wilhelm 1994). The most recent assessment (1999) calculated an FQI of 53.65, indicating a high quality natural area.

According to Byers, three natural communities are aligned along an elevational gradient that vary from sedge meadow along Brewster Creek to seeps located at several locations along the toe of the slope, and dry-mesic forest on the higher ground located well away from Brewster Creek.

According to Byers, the Brewster Creek Fen may have characteristics to be either in the sedge meadow, fen or seep community. Plants associated with each of these communities are present at Brewster Creek Fen. The sedge meadow community is located in the wetland basin between Brewster Creek tributary and a short distance from the toe of the slope where groundwater emerges. Byers surmises that this community has been degraded by sedimentation occurring along the creek and subsequent invasion by reed canary grass. In addition, brush encroachment by species commonly associated with floodplain forests such as box elder, eastern cottonwood, and common buckthorn have invaded in the absence of fire and perhaps also because of sedimentation along the creek.

Dominant plants recorded by the INHS for the seep community include a variety of sedges (*Carex spp.*), red osier dogwood, black ash (*Fraxinus nigra*), skunk cabbage, fowl manna grass (*Glyceria striata*), orange jewelweed, and clearweed (*Pilea pumila*). Characteristic plants include great angelica (*Angelica atropurpurea*), marsh marigold (*Caltha palustris*), turtlehead, and cinnamon willow herb (*Epilobium coloratum*). These species occur at Brewster Creek Fen and their distribution appears to parallel the groundwater discharge zones. Few of the characteristic plants recorded by White and Madany (1978) for fen communities are present at Brewster Creek Fen and the site lacks either a floating layer of sedge peat or strongly calcareous spring runs.

Although the namesake for this site is Brewster Creek Fen, Byers (1996) reports Dr. Gerould Wilhelm concurs with Nature Preserve Commission staff's assessment that the groundwater discharge zones located along the toe of the slope support a seep community. White and Madany (1978) define a seep "... (as) an area with saturated soil caused by water flowing to the surface in a diffuse rather than concentrated flow. Seeps may have local areas of concentrated flow, and the water usually collects in spring runs. Seeps are usually smaller than 0.04 hectares (0.1 acre), and are most common along the lower slopes of glacial moraines, ravines, and terraces." Byers concludes that the characteristics for Brewster Creek wetland matches the geological and topographical setting for seeps.

Groundwater flow patterns indicate that the normal water source for this wetland primarily originates from groundwater. The groundwater recharge area that provides water to this wetland complex extends more than 1.60 kilometers (one mile) due east. Normal stream flow is directly tapped into the groundwater. This flow originates from the east, and proceeds in a west/northwesterly flow direction. Although base flow is contained within the creek banks approximately 30 - 60 cm (1 to 2 vertical feet) below the ground surface elevation in the wetland, flood flows periodically exceed the top of bank elevations and inundate the wetland areas.

According to Byers (1996), the seep community that borders the upland contains the weak-stemmed wood sedge (*Carex laxiculmis*), a state threatened plant species. In addition to this plant species, this area may contain suitable habitat for the yellow headed blackbird and the least bittern. However, none of these plant or animal species were found during the field study by INHS.

The wetland has a high functional rating for the following functions: groundwater discharge, wildlife diversity/abundance, plant habitat and diversity, and uniqueness/heritage. Because of its

proximity to Brewster Creek Tributary and data that indicate that portions of the wetland are within the 100-year flood plain and may flood from overbank flow, the floodflow alteration function is high. In conjunction with Wetland No. 9, the capacity for stormwater attenuation is high. Due to its position in the landscape and presence of seeps, this wetland has a high potential for groundwater discharge. In combination with Wetland No. 9, the portions of Wetland No. 10 that are flooded by stream water do provide a high functional capacity to protect water quality.

The wetland provides high quality wildlife and plant habitat. The exceptional plant species still inhabiting the fen/seep indicate that this area has a high functional capacity for plant and wildlife cover, and wildlife food sources. The wetland also contains essential habitat for two state listed animal species indicating valuable wildlife habitat. This wetland also has a high uniqueness/ heritage function that is primarily due to its status as an Illinois Nature Preserve, and maintenance for the primary purpose of preservation or ecological enhancement. Like South Elgin, it is managed by volunteers from The Nature Conservancy. Since the site is a Nature Preserve, it represents a high heritage value. The wetland has a high educational value since this fen/seep is rare in Illinois.

Wetland No. 11
Wetland No. 11 is a 0.47 hectare (1.16 acre) fringe that surrounds an open water pond located 38 meters (125 feet) southwest of the intersection of Illinois Route 25 and Dunham Road. The emergent/scrub/shrub wetland was dominated by reed canary grass, gray dogwood and duckweed (*Lemna minor*). The FQI value of 6.5 indicates that the site has low natural quality.

The wetland has a high potential for floodflow alteration due to its depressional nature and position in the upper reaches of the landscape. The wetland provides moderate water quality protection since it has a high potential for both sediment/toxicant retention and nutrient removal/transformation. This is due to its closed hydrology. The vegetated shoreline provides moderate potential for sediment stabilization. The wetland has moderate potential wildlife diversity/abundance.

Wetland No. 11 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 12 [Wetland 12 is outside the current proposed corridor. The following discussion is included to allow evaluation of possible options outside the corridor]
Wetland No. 12 is a 3.19 hectare (7.88 acre) depressional wet meadow located immediately north of Illinois Route 25, 96 meters (315 feet) southwest of the intersection of Illinois Route 25 and Dunham Road. The southeastern edge of this wetland is located approximately 3 to 5 meters (16.4 feet) away from existing Illinois Route 25. The wetland is located on the Tri-County Landfill property. The dominant plants in this area include eastern cottonwood, sandbar willow, reed canary grass and tall goldenrod (*Solidago altissima*). The low FQI of 8.3 indicates that the wetland has been subjected to disturbance.

Wetland No. 13

Wetland No. 13 is a 0.66 hectare (1.65 acre) split from the East Branch of Brewster Creek by Dunham Road. The wetland is located in a topographic depression. At the time of the site visit, the wetland was dominated by reed canary grass and box elder. Since the location of adjacent highways, the vegetation community is low natural quality as evidenced by the FQI of 3.58. However, a vegetation survey conducted earlier (1996), in summer conditions, increases the FQI to 21.9 and reflects a high quality natural area. The wetland is periodically influenced by floodwater inundation of Brewster Creek Tributary.

The wetland has a moderate potential for floodflow alteration potential due to its location in the 100-year floodplain of Brewster Creek Tributary. The wetland does provide a moderate potential for sediment stabilization since it contains herbaceous and forested vegetation that stabilizes soil surfaces during flood events. The wetland has moderate potential for both the wildlife diversity/abundance and aquatic diversity/abundance biotic functions due to its location near an open water stream.

Wetland No. 13 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 15

Studies for the *Technical Memorandum* (2000) inventoried the part of this wetland adjoining the corridor. The inventoried part of Wetland No. 15 is an approximately 0.93 hectare (2.30 acre) emergent/scrub/shrub wetland located to the south of the South Elgin Fen complex, separated by the CNIC Railroad line. Wetland No. 15 is located on the Midwest Ground Cover property, the Commonwealth Edison power line right-of-way, and portions of the CNIC Railroad right-of-way. Since this wetland contains moderate to high quality plant species that may inhabit fen areas, it is likely that Wetland No. 15 and Wetland No. 3 (the South Elgin Fen) were contiguous prior to the construction of the CNIC Railroad or its predecessor.

The wetland is dominated by reed canary grass, purple loosestrife (*Lythrum salicaria*), foxtail grass (*Setaria faberi*), knee grass (*Panicum dichotomiflorum*) and gray dogwood. The FQI of 16.3 indicates a moderate to high quality natural area. An inventory conducted in summer conditions (1996) found the FQI to be 23.4, which is considered high in natural area quality.

This wetland is located in a topographic depression immediately south of the CNIC Railroad. A small drainage ditch exists in the southern portion of this wetland area and may provide some drainage although no surficial drainage patterns were observed during the field visit. The functional assessment indicates that the wetland has a high potential for groundwater discharge. Although the topography would not indicate that groundwater discharge is high, the location of the wetland south of the South Elgin Sedge Meadow and the potential for being contiguous with the South Elgin Sedge Meadow prior to the construction of the CNIC Railroad, it is likely that this wetland is receiving significant amounts of groundwater discharge.

Wetland No. 15 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 15'

Wetland No. 15' is a 0.04 hectare (0.11 acre) scrub/shrub/forested wetland located immediately west of wetland 15 and south of the CNIC Railroad tracks. The wetland was dominated by reed canary grass, red-osier dogwood (*Cornus stolonifera*) and American elm. The FQI was 6.7 indicating a degraded vegetation community.

The functional analysis indicates the wetland provides some stormwater storage. Although the wetland is small, the presence of a shrub layer surrounded by a woodland, the wildlife diversity/abundance function is moderate.

Wetland No. 15' is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 16

Wetland No. 16 is a 0.46 hectare (1.15 acre) emergent depressional area located immediately north of Stearns Road approximately 869 meters (2,850 feet) east of Dunham Road. The southern edge of this wetland may be located within the existing Stearns Road right-of-way. The dominant species in this area includes reed canary grass. The low FQI of 10.3 indicates that this is a highly disturbed area having low natural quality. This wetland is located in a topographic depression just north of the existing Stearns Road.

The functional analysis indicates that the wetland provides some stormwater storage. The lack of an inlet and outlet for the wetland and proximity to existing Stearns Road and farmland, the wetland has a high potential for sediment/toxicant retention, and nutrien t removal/transformation. Although the wetland is small, the presence of two strata and the fact that the wetland is distant from other wetland areas, the wildlife diversity/abundance function is moderate.

Wetland No. 16 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 17

Wetland No. 17 is a 2.08 hectare (5.14 acre) wet meadow/emergent/seep wetland located approximately 152 meters (500 feet) west of McLean Boulevard and immediately north of the CNIC Railroad tracks. This wetland is also known as the Day's Fen or McLean Boulevard Fen. The wetland is situated along a slope that extends from higher elevations associated with farm fields to lower elevations adjacent to the existing CNIC Railroad. Near the top of the slope are several seep/spring runs that are oriented in a roughly north to south alignment.

Vegetation surveys have been conducted by the INHS in 1994 (Taft & Hill, 1994) and 1995 (Hill, 1995; Wilhelm, et al, 1995). The INHS did not delineate the boundaries of the wetland in 1994 or 1995. The wetland was delineated in August 1997 and in December 1999. Vegetative

monitoring for the *Technical Memorandum* was conducted in June, July, August, and September 1999.

The wetland is a complex of three similar communities representing: (1) seep/run areas that are in close proximity to flowing water, (2) nearby saturated areas underlain by peat/muck that is dominated by tussock sedge with occasional shrub hummocks, and (3) reed canary grass areas that are associated with existing farm tile and channels. Also associated with the seep/run area was slender bog arrow grass (*Triglochin palustris*), a state endangered species.

Areas near the seep/run community are dominated by thick hummocks of tussock sedge interspersed with dark green bulrush (*Scirpus atrovirens*) and reed canary grass. Occasionally, intermixed with the tussock sedge are shrub hummocks comprised of green ash, box elder, sandbar willow, buckthorn, glossy buckthorn (*Rhamnus frangula*), and American elm. Between shrub areas and seep areas, swamp thistle, fen willow herb, and great blue lobelia were also found.

The areas along the east side of the wetland were dominated by reed canary grass that was growing over possible tussock sedge hummocks. Evidence of farm tile was also found in these areas and may indicate that the portions of the wetland overrun by reed canary grass have been subjected to past farming activities or drainage.

The presence of many high quality plant species contributed to the high FQI of 48.8. Many of the species found are typical inhabitants of fens or seep areas (Swink & Wilhelm, 1994). This area has been investigated as a possible INAI site and has recently been acquired by the Kane County Forest Preserve District.

The hydrology of the Day's Fen wetland is predominantly groundwater discharge that originates from the base of an existing farm field and travels downhill to swales located on the north side of the CNIC Railroad. In areas that are nearby seeps or runs, the muck was saturated to the surface. Hydrologic inputs are primarily groundwater discharge, overland sheet flow, and precipitation. Water drains from the site via the swale located at the toe of slope for the CNIC Railroad. Although the topographic slope of the wetland is relatively steep, apparently the groundwater discharge maintains the soil in a permanently saturated state. The drainage ditch eventually discharges into a culvert that conveys water from the north side of the railroad tracks to the south and into a drainage ditch located on the Fox River Stone Company property. This ditch eventually discharges directly into the Fox River.

The wetland contains slender bog arrow grass, which is a state endangered species and was observed during the 2000 site visit. No other state or federal threatened or endangered species were identified. According to the IDNR Natural Heritage Database, Crawes sedge (*Carex crawei* state threatened) is scattered throughout the lower portion (southern edge) within the CNIC Railroad right-of-way.

Studies performed for the *Technical Memorandum* indicate that compared to other similar natural areas, the site is degrading over time.

The functional assessment indicates that the wetland has high groundwater discharge, sediment stabilization, wildlife diversity/abundance, plant habitat area, and uniqueness/heritage. The wetland has a high functional capacity for wildlife diversity/abundance primarily due to its large area and interspersion of herbaceous vegetation with shrubs/trees. Similarly, the presence of high quality plant species and high FQI of 48.79 indicates that the plant habitat area function is also high. The presence of rare and state endangered species indicates that this wetland has a high functional capacity for uniqueness/heritage. The management by the Kane County Forest Preserve District indicates that this area is an environmental asset.

Wetland No. 18

Wetland No. 18 is a wet meadow located approximately 457 meters (1,500 feet) east of McLean Boulevard and north of the CNIC Railroad tracks. This 1.08 hectare (2.67 acre) wetland is adjacent to an upstream dry stormwater detention pond associated with a new residential subdivision to the north. This wetland is likely a remnant of a larger wetland system that existed prior to the residential development. The wetland is dominated by reed canary grass and sandbar willow. The low FQI of 5.3 indicates a highly degraded vegetation community. The hydrology of the wetland has likely been altered due to construction of the dry stormwater detention basin. A drainage channel was flooded at the time of sampling with water that was 30 centimeters (1 foot) deep and stagnant. Water is conveyed from a drainage ditch under the CNIC Railroad embankment by a culvert and into a ditch along the south side of the CNIC Railroad.

The functional assessment indicates that this wetland does provide a moderate level of flood flow alteration since it probably holds water that backs up on the north side of the tracks before discharging into the existing culvert. The reed canary grass provides some sediment stabilization along the stream channel and contributes to moderate levels of production export.

Wetland No. 18 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 21

Wetland No. 21 is a 0.07 hectare (0.17 acre) emergent/scrub/shrub wetland located south of the CNIC railroad tracks and southeast of Wetland No. 18. The wetland was dominated by cottonwood, cattail, common reed, reed canary grass and common water plantain (*Alisma subcordatum*). The FQI was 5.7 indicates a highly degraded vegetation community.

The functional assessment indicates that this wetland does provide a moderate level of flood flow alteration since it probably holds water. The reed canary grass provides some sediment stabilization. Since the wetland contains two different vegetative strata- it most likely provides moderate wildlife quality.

Wetland No. 21 is not known to contain any state or federal endangered, threatened or species of

special concern.

Wetland No. 22

Wetland No. 22 is a 0.06 hectare (0.14 acre) scrub/shrub wetland located east of Wetland No. 21 and south of the CNIC railroad tracks. The wetland was dominated by gray dogwood. The FQI was 6.5 indicates a highly degraded vegetation community.

The functional assessment indicates that this wetland does provide a moderate level of flood flow alteration since it probably holds water . The gray dogwood provides some sediment stabilization. Since the wetland is dominated by a shrub-layer it probably provides moderate wildlife quality.

Wetland No. 22 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 23

Wetland No. 23 is a 0.07 hectare (0.18 acre) scrub/shrub wetland is located southeast of Wetland No. 22 and south of the CNIC railroad tracks. The wetland is a fringe surrounding an abandoned open water pond. The wetland was dominated by sandbar willow. The FQI was 7.56 indicates a highly degraded vegetation community.

The functional assessment indicates that this wetland does provide a moderate level of flood flow alteration since it probably holds water. The sandbar willow provides some sediment stabilization. Since the wetland is dominated by a shrub-layer surrounding an open water area, it probably provides moderate wildlife quality.

Wetland No. 23 is not known to contain any state or federal endangered, threatened or species of special concern.

Wetland No. 28

Wetland No. 28 is a 0.03 hectare (0.08 acre) forested wetland located within the nursery north of Brewster Creek and west of IL Route 25. The wetland was dominated by American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), wild black currant (*Ribes americanum*) and fowl manna grass (*Glyceria striata*). The FQI was 8.9 which is considered low in natural area quality.

The functional analysis indicates the wetland provides some stormwater storage.

Wetland No. 28 is not known to contain any state or federal endangered, threatened or species of special concern.

TABLE 2.3-11(a)
SUMMARY OF WETLAND CHARACTERISTICS FOR SITES CLASSIFIED "WETLANDS" IN THE CC&P / STEARNS ROAD CORRIDOR

Map No.[5]	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI[1]	Functions [4]	Wetland Size hectares (acres)
3*	PEMF PUBGx	NW NIH	tussock sedge cattail reed canary grass	Houghton muck	South Elgin ~~Fen~~ Sedge Meadow INAI Site	61.1	Groundwater discharge Wildlife diversity / abundance Plant habitat Uniqueness / heritage	7.61 (18.80)
4	PUBGx	NIH	sandbar willow reed canary grass box elder cottonwood	Houghton muck	Adjacent to railroad and nursery. SE of South Elgin Fen	7.2	Sediment / toxicant retention Nutrient removal / transformation	0.45 (1.12)
6*	PUBGx	NIH	narrow leafed cattail cottonwood seedlings smartweed barnyard grass	Houghton muck under fill Orthents	Depression, adjacent to kennel. Altered by excavation and fill	6.5	Sediment / toxicant retention Nutrient removal / transformation	0.93 (2.30)
7*	PUBGx	W	reed canary grass	Will	Depression, adjacent to railroad	11.6	Sediment / toxicant retention Nutrient removal / transformation	0.28 (0.70)
8*	PEMC	W	sandbar willow reed canary grass	Will	Floodplain, adjacent to Brewster Creek and railroad	19	Sediment / toxicant retention Nutrient removal / transformation Plant habitat area	1.13 (2.79)

TABLE 2.3-11(a)
SUMMARY OF WETLAND CHARACTERISTICS FOR SITES CLASSIFIED "WETLANDS" IN THE CC&P / STEARNS ROAD CORRIDOR

Map No.[5]	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI[1]	Functions [4]	Wetland Size hectares (acres)
9*	PFO1C PEMC	W	box elder reed canary grass	Will	Wet meadow, flood- plain of Brewster Cr. adjacent to Brewster Creek Fen Nature Preserve	5.9	Sediment stabilization Floodflow retention wildlife diversity / abundance uniqueness / heritage	undetermined[3]
10*	PFO1C PEMC	W NIH	red osier dogwood heart-leaved willow swamp aster bluejoint grass tussock sedge spotted Joe-Pye weed reed canary grass	Houghton muck	Brewster Creek Fen Nature Preserve, Brewster Creek Tributary, residences	34.3	Groundwater discharge Wildlife diversity / abundance Plant habitat area Uniqueness / heritage	1.36 (3.37)
11	PFO1C	W	reed canary grass gray dogwood duck week	Urban land-Orthents complex	Depression, surrounded by roads Landfill	6.5	Sediment / toxicant retention Nutrient removal / transformation	0.47 (1.16)
12*	PEMC	W	cottonwood sandbar willow reed canary grass Canada goldenrod	Houghton muck	Depression, surrounded by roads Landfill	8.3	Sediment / toxicant retention Nutrient removal / transformation floodflow alteration	3.19 (7.88)
13	PEMC	NIH W GT	reed canary grass box elder	Otter	Depression, Roadway/Prairie Path	3.6	Ground water discharge Plant habitat	0.66 (1.65)

TABLE 2.3-11(a)
SUMMARY OF WETLAND CHARACTERISTICS FOR SITES CLASSIFIED "WETLANDS" IN THE CC&P / STEARNS ROAD CORRIDOR

Map No.[5]	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI[1]	Functions [4]	Wetland Size hectares (acres)
15	NM [2]	NW	reed canary grass purple loosestrife foxtail grass knee grass gray dogwood	Houghton muck	Adjacent to South Elgin ~~Fen~~ Sedge Meadow, south of railroad tracks, fen-type community,	16.3	Sediment / toxicant retention Nutrient removal / transformation Plant habitat Uniqueness heritage	0.93 (2.30)
15'	NM [2]	NIH	reed canary grass	Houghton much	Adjacent to South Elgin Sedge Meadow, south of railroad tracks	6.7	Sediment / toxicant retention Nutrient removal / transformation	0.04 (0.11)
16	NM	NW/PC W	reed canary grass	Markham	Depression, adjacent to cropland and roadways	10.3	Sediment / toxicant retention Nutrient removal / transformation	0.46 (1.15)
17*	NM [2]	W FWP NIH	Tussock sedge reed canary grass	Lena muck	Days Fen Hillside seep, adjacent to cropland and gravel pit	48.8	Ground water discharge Wildlife diversity / abundance Plant habitat area	2.08 (5.14)
18	NM [2]	W Developed	reed canary grass sandbar willow	Markham Fox	Adjacent to ditch, railroad, residential area, detention basin	5.3	Sediment / toxicant retention Nutrient removal / transformation	1.08 (2.67)
21	NM [2]	GT	cottonwood cattail common reed reed canary grass common water plantain	Drummer	Edge of gravel pit	5.7	Sediment / toxicant retention Nutrient removal / transformation	0.07 (0.17)

TABLE 2.3-11(a)
SUMMARY OF WETLAND CHARACTERISTICS FOR SITES CLASSIFIED "WETLANDS" IN THE CC&P / STEARNS ROAD CORRIDOR

Map No.[5]	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI[1]	Functions [4]	Wetland Size hectares (acres)
22	NM [2]	NW	gray dogwood	Urban land-Orthents complex	Private property scrub / shrub	6.5	Sediment / toxicant retention Nutrient removal / transformation Wildlife habitat	0.06 (0.14)
23	PUBGx	GT AW	sandbar willow	Urban land-Orthents complex	Private property scrub / shrub	7.6	Sediment / toxicant retention Nutrient removal / transformation Wildlife habitat	0.07 (0.18)
28	NM [2]	NIH	American elm green ash wild black currant fowl manna grass	Will	Nursery	8.9	Sediment / toxicant retention Nutrient removal / transformation	0.03 (0.08)

* LOCATED OUTSIDE CORRIDOR BOUNDARIES

[1] FQI - Floristic Quality Index (Swink & Wilhelm, 1994 Methodology)

[2] NM - Not Mapped

[3] Extends for long distance outside corridor

[4] Function assessed by Wet II, BPJ, and other sources

[5] Number assigned in Companion Wetland Technical Report

NWI - National Wetland Inventory

NRCS - Natural Resource Conservation Service

NWI

A - temporarily flooded
C - seasonally flooded
F - semi-permanently flooded
G - intermittently flooded
H - permanently flooded
P - Ppalustrine
R - riverine
Z - lower perennial
EM - emergent
FO - forested
OW - open water
UB - unconsolidated bottom
d - partially drained/ditched
f - farmed
h - diked/impounded
x - excavated
1 - broad-leafed deciduous

NRCS

W - wetland
AW - artificial wetland
FW - farmed wetland
FWP - farmed wetland pasture
GT - ground truth
NI - non-inventoried
NIH - non-inventoried hydric soils
NW - non-wetland
PC - prior converted

TABLE 2.3-11(b)
SUMMARY OF OTHER SITES SURVEYED
RIVERS AND STREAMS

Map No.	Description	NWI Classification	Surrounding Land Use Type	Total Area Identified [1] hectares (acres)
1	Fox River	R2UBH	Woody Raparian Corridor, Landscaping,. Nursery	3.70 (9.15)
2	Brewster Creek - Rte. 25 to Fox River	PF01A	Woody Raparian Corridor, Landscaping, Nursery	1.78 (4.45)
13'	East Branch of Brewster Creek - Dunham Road to Illinois Prairie Path	PEMC	Woody Raparian Corridor/Roadway, Fill	0.74 (1.85)
14	East Branch of Brewster Creek - Dunham Road to 1000' Upstream	PEMC	Woody Raparian Corridor/State Park	2.30 (5.76)
25	East Branch of Brewster Creek - Illinois Prairie Path to CNICR.R.	NM	Concrete Pipe Manufacturing Plant	0.18 (0.44)
2'	North Arm Brewster Creek - Confluence to CNIC R.R.	PF01A	Woody Riparian Corridor/Floodplain Forest/Landscaping, Nursery	0.95 (2.35)

[1] Area identified includes both "Waters of the U.S." and adjacent wetlands.

TABLE 2.3-11©
SUMMARY OF OTHER SITES SURVEYED
DITCHES AND MANMADE PONDS

Map No.	Description	NWI Classification	Total Area Identified [1] hectares (acres)
5	Railroad Ditch	NM	0.03 (0.09)
18	Railroad/Roadway Ditch	NM	0.24 (0.6)
19	Railroad Ditch	NM	0.03 (0.08)
19'	Railroad Ditch	NM	0.05 (0.12)
20	Railroad Ditch	NM	0.27 (0.65)
24	Detention Pond	PUBGx	0.03 (0.08)**
29	Irrigation Pond	NM	0.06 (0.16)

** Area within surveyed corridor, extends outside corridor.

Red Gate Corridor

The locations of the sites inventoried for wetland determinations in the Red Gate Road Corridor are shown on Exhibit 2.3-11. Table 2.3-12 summarizes the wetlands delineated in this corridor. Wetland Nos. 1 and 4 are within all three alignment alternatives (identified as A, B, and C) for this corridor. Wetland sites 2 and 3 are within alignment C exclusively. Wetland Nos. 5, 6 and 7 fall within alignments A and B. Alignments A and B also include wetlands in theCC&P/Stearns Road corridor east of Illinois Route 25. General land use and vegetative cover of areas adjacent to identified wetlands are also illustrated in Exhibit 2.3-11.

Wetland No. 1
Wetland No. 1 is a 0.28 hectare (0.69 acre) wet meadow located 34 meters (112 feet) west of Randall Road and 41 meters (135 feet) south of Bolcum Road. The site is temporarily flooded by the collection of surface runoff after periods of rain, and provides low quality wildlife habitat. The dominant plant species within the wetland area are water smartweed, common ragweed (*Ambrosia artemisiifolia elatior*), and giant ragweed (*Ambrosia trifida*). The FQI of this wetland is 5.1 and the mean C is 1.5, indicating poor natural quality. The NWI identified the sites as a farmed, temporarily flood, emergent, palustrine wetland (PEMAf).

Wetland No. 2
Wetland No. 2 is a 0.05 hectare (0.12 acre) pond located 89 meters (292 feet) east of the Fox River and 95 meters (312 feet) southwest of Pearson Road within a residential area and provides wildlife habitat of low quality. The dominant plant species are comb pondweed (*Potamogeton pectinatus*) and narrow-leaved cattail. The FQI is 7.9 and the mean C is 3.2, indicating poor natural quality. The site is not identified in the NWI. This pond is a jurisdictional wetland.

Wetland No. 3
Wetland No. 3 is a pond located 108 meters (354 feet) east of the Fox River and 108 meters (354 feet) south of Pearson Road. The 0.27 hectare (0.67 acre) site collects precipitation and provides a water source and low-quality habitat for wildlife. The dominant plant species include sandbar willow, reed canary grass, and longbeak buttercup (*Ranunculus longirostris*). The FQI is 9.6 and the mean C is 3.6, indicating poor natural quality. The site is identified in the NWI as an intermittently exposed, palustrine wetland with an unconsolidated bottom (PUBG).

Wetland No. 4
Wetland No. 4 is a 0.24 hectare (0.60 acre) pond located 6 meters (20 feet) east of Illinois Route 25 and 305 meters (1,000 feet) north of Army Trail Road. The pond collects precipitation and surface runoff and provides wildlife habitat of good quality. The dominant plant species are silver maple, American elm, common duckweed, and river bulrush. The FQI is 11.7 and the mean C is 3.2, indicating low to moderate natural quality. The site is identified in the NWI as an intermittently exposed, palustrine wetland with an unconsolidated bottom (PUBG).

Wetland No. 5

Wetland No. 5 is a wet meadow located 10 meters (33 feet) east of Illinois Route 25 and 368 meters (1,207 feet) north of Seminary Road. The 0.28 hectare (0.69 acre) site collects surface runoff and precipitation, while also providing wildlife habitat of moderate quality. The dominant plant species include sedges (*Carex spp.*), reed canary grass, and cattail. The FQI is 7.7 and the mean C is 2.9, indicating low natural quality. The NWI identified the sites as a seasonally flooded, emergent, palustrine wetland (PEMC).

Wetland No.6

Wetland No. 6 is a 0.08 hectare (0.20 acre) wet meadow located 13 meters (43 feet) east of Illinois Route 25 and 1,016 meters (3,332 feet) north of Seminary Road. The site functions as a drainageway, collecting precipitation and surface runoff. A culvert under Illinois Route 25 directs water into the site. The dominant plant species consist of sedge (*Carex tribuloides*), reed canary grass, and cattail. The FQI is 5.0 and the mean C is 2.0, indicating poor natural quality. The site is not identified in the NWI.

Wetland No. 7

Wetland No. 7 is a 0.09 hectare (0.22 acre) pond located 6 meters (20 feet) west of Illinois Route 25 and 692 meters (2,270 feet) north of Seminary Road. The pond collects and retains surface runoff and precipitation while providing wildlife habitat of moderate quality and is being impacted by grazing from livestock. The dominant plant species are slender spike rush (*Eleocharis tenuis verrucosa*), floating manna grass (*Glyceria septentrionalis*), and cattails. The FQI is 10.4 and the mean C is 3.6 indicating a site with poor to moderate quality. The site is not identified in the NWI, but is a jurisdictional wetland.

Wetland No. 8

Wetland No. 8 is a 0.06 hectare (0.15 acre) mixed emergent-forested wetland located immediately adjacent to Illinois Route 25 (east side) along the main channel of Brewster Creek. This site collects surface runoff from the adjacent roadway and residences, and serves as overbank flood storage for Brewster Creek. The dominant plant species are clearweed (*Pilea pumila*), American elm, and box elder trees. The FQI is 16.5 and the mean C is 3.1, indicating an area of fair quality. This area was not identified in the NWI or the NRCS. This wetland is located partially within the Illinois Route 25 right-of-way and most likely within the DeSantos' Brewster Creek INAI site. This wetland is located downstream of higher quality wetlands to the east along the creek (INAI areas), as well as the Brewster Creek Fen Nature Preserve. The wetland community is located primarily north of the creek near the roadway; the south side of the creek is mowed lawns (Exhibits 2.3-10 and 2.3-11)

C&NW/Dean Street Corridor

The locations of the sites inventoried for wetland determinations in the C&NW/Dean Street Corridor are shown on Exhibit 2.3-12. Table 2.3-13 summarizes the wetlands delineated in this corridor. General land use and vegetative cover of areas adjacent to identified wetlands are also illustrated in Exhibit 2.3-12.

Wetland No. 1

Wetland No. 1 is a 0.41 hectare (1.0 acre) pond located approximately 12 meters (40 feet) northeast of Dean Street and approximately 128 meters (420 feet) west of 17th Street. This pond provides rainwater storage and wildlife habitat of fair quality. Hydrophytic vegetation is largely confined to a narrow band around the periphery of the pond. The dominant plant species are sandbar willow, reed canary grass, and purple loosestrife. The FQI for the site is 7.2 with a mean C of 3.2, indicating poor natural quality. The NWI classifies the site as diked/impounded, intermittently exposed, palustrine wetland with an unconsolidated bottom (PUBGh).

TABLE 2.3-12
SUMMARY OF WETLAND CHARACTERISTICS IN THE RED GATE ROAD CORRIDOR

Map No.	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI [1]	Function	Wetland Size, hectares (acres)
1	PEMAf	W	giant ragweed ragweed water smartweed	Peotone	Depression surrounded by cropland and roads	5.1	Runoff retention Wildlife habitat	0.28 (0.68)
2	NM [2]	NIH	cattails pondweed	Undetermined Hydric	Pond, Residential area	7.9	Runoff retention Wildlife habitat	0.05 (0.12)
3	PUBG	W	sandbar willow reed canary grass long-beaked buttercup	Undetermined Hydric	Pond, Residential area	9.6	Runoff retention Wildlife habitat	0.27 (0.66)
4	PUBG	W NIH	silver maple American elm duckweed river bulrush	Undetermined Hydric	Pond, Residences and Roadways	11.7	Runoff retention Wildlife habitat	0.24 (0.60)
5	PEMC	W NIH	sedges cattails reed canary grass	Milford	Pond, surrounded by croplands and road	7.7	Runoff retention Wildlife habitat	0.28 (0.69)
6	NM [2]	NM [2]	reed canary grass cattails sedges	Milford	Depression, Farm, Residential, Adjacent to Road	5.0	Drainageway Runoff collecting	0.08 (0.20)
7	NM [2]	NM [2]	spikerush floating manna grass cattails	Undetermined Hydric	Pond, Residential Developing	10.4	Runoff retention Wildlife habitat	0.09 (0.22)
8 [4]	NM [2]	NM [2]	clearweed green ash american elm box elder	Will	Residential/Nursery, Adjacent to Road	16.3	Wildlife habitat Runoff retention Floodplain storage	0.06 (0.15)

[1] FQI - Floristic Quality Index (Swink & Wilhelm, 1994 Methodology)
[2] NM = Not Mapped
[3] Extends for long distance outside corridor
[4] Not identified by INHS
NWI - National Wetland Inventory
NRCS - Natural Resource Conservation Service

NWI
P- Palustrine
EM - emergent
FO- forested
OW - open water
UB- unconsolidated bottom
A- temporarily flooded
C- seasonally flooded
F- semi-permanently flooded
G- intermittently exposed
H- permanently flooded
d- partially drained/ditched
f- farmed
h - diked/impounded
x - excavated
1 - broad-leafed deciduous

NRCS
PC- prior converted
W- wetland
NIH- non-inventoried hydric soils
NI- non-inventoried

TABLE 2.3-13
SUMMARY OF WETLAND CHARACTERISTICS IN THE C&NW / DEAN STREET CORRIDOR

Map No.	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI [1]	Function	Wetland Size, hectares (acres)
1	PUBGh	W	sandbar willow purple loosestrife reed canary grass	Undetermined Hydric	Pond, Commercial, Industrial Development	7.2	Flood storage Wildlife habitat	0.4 (1.1)

[1] FQI - Floristic Quality Index (Swink & Wilhelm, 1994 Methodology)
[2] NM = Not Mapped
[3] Extends for long distance outside corridor

NWI - National Wetland Inventory
NRCS - Natural Resource Conservation Service

NWI
P- Palustrine
EM - emergent
FO- forested
OW - open water
UB- unconsolidated bottom
A- temporarily flooded
C- seasonally flooded
F- semi-permanently flooded
G- intermittently exposed
H- permanently flooded
d- partially drained/ditched
f- farmed
h- diked/impounded
x- excavated
1- broad-leafed deciduous

NRCS
PC- prior converted
W- wetland
NIH- non-inventoried hydric soils
NI- non-inventoried

2.3.9 Biology

2.3.9.1 Vegetation and Cover Types

CC&P/Stearns Road Corridor

The dominant cover types of the CC&P/Stearns Road Corridor consist of developed (suburban) areas and agricultural lands. Overall quality throughout the corridor is poor, as human disturbance has been pervasive (Wilm, et al., 1994). The eastern portion of this corridor contains large wetland complexes that, although fragmented, represent a valuable habitat resource. Table 2.3-14 indicates the area of each vegetative cover type within a 100-meter (328-foot) corridor. The Illinois Natural History Survey (INHS) has identified the different cover types within the corridor and assigned letters to the different communities, which are referred to in parentheses in the text. These areas are illustrated in Exhibit 2.3-10 by their letter descriptor; these letter are not to be confused with grades given to certain sites as an evaluation by INHS.

A variety of communities were noted, and five areas were identified as significant based on their high natural quality. These are the South Elgin Sedge Meadow (noted as I on cover types and as wetland site #3), the Brewster Creek Fen/Sedge Meadow (A/Site 1 in Hill, 1995; wetland site #10), McLean Boulevard Fen (now known as Day's Fen (D/Site 4a in Hill, 1995; wetland site #17), an unnamed native prairie remnant (A/Site 2 in Hill, 1995) and a wetland community adjacent to the unnamed tributary to Brewster Creek (now referred to as the East Branch of Brewster Creek) east of Dunham Road (A; wetland site #14), north of Stearns Road.

Four wetland areas have been rated as high quality natural areas, with three being described as unique. The three unique areas are: the South Elgin Fen (I) which is classified as sedge meadow/wet meadow/marsh and rated as a graminoid fen of A and B grade quality, and which has been proposed for Illinois Nature Preserve Status; the Brewster Creek Fen and Sedge Meadow (A/Site 1 in Hill, 1995), a grade C+ fen/marsh/sedge meadow (I) which has received Illinois Nature Preserve status; and Day's Fen (D/Site 4a in Hill, 1995) which has recently been discovered. The Nature Conservancy Volunteer Stewardship Network is currently managing both the South Elgin and Brewster Creek Fen sites. The South Elgin Sedge Meadow is classified by the Illinois Natural Areas Inventory as a Category I and II site. The fourth wetland area rated as high quality is a grade C and D sedge meadow, grade C marsh which borders the unnamed tributary to Brewster Creek (East Branch) east of Dunham Road (H). This area has been somewhat disturbed in the past. The FQI ratings, as well as detailed descriptions of these wetlands are provided in Section 2.3.8.

Potential habitat exists for State listed threatened or endangered plant species in the South Elgin Fen. The habitat in the South Elgin Fen is suitable for the following state listed species: Crawe's sedge (state threatened), little green sedge (state endangered), white lady's slipper (*Cypripedium candidum,* state endangered), bog bedstraw (state threatened), false asphodel (state threatened), and marsh speedwell (*Veronica scutellata,* state threatened) (Wilm, 1994). Previous reports from the South Elgin Fen noted the actual presence of bog bedstraw, false asphodel and spotted coral-root orchid (*Corallorhiza maculata*, state threatened). The Brewster Creek Fen site also contains

suitable habitat for the same species listed for the South Elgin Fen. No federal or state listed threatened or endangered species were found in the fens during the most recent surveys conducted by INHS for this project (Phillips, 1995).

As shown in Table 2.3-14, the dominant cover types for this corridor providing habitat were floodplain forest, forblands, and shrublands.

TABLE 2.3-14
Cover Type in CC&P/Stearns Corridor
(within a 100-meter corridor)

Cover Type	Hectares
Developed	81
Agricultural	28
Upland Forest	1.4
Floodplain forest	1.6
Shrubland	3.3
Shrubland/Non-native Grassland	1.2
Forbland	4.1
Marsh/Wet shrubland	6.4
Wet shrubland	0.1
Wet Meadow	1.6
Sedge Meadow/Wet Meadow/Marsh	0.3
Marsh	1.2
Pond	0.1
Total	**130**

Upland woodlots (B) are scattered throughout the corridor (Exhibit 2.3-10), with most located within residential lots, the Tri-County Park, and the YMCA property located east of Illinois Route 25. These scattered woodlots provide moderate wildlife habitat. The upland forests evaluated are of low floristic quality, indicating degradation (Wilm, et al., 1994). A few old remnant red oaks (*Quercus rubra*) and bur oaks are present, but the dominant tree species are box elder, chokecherry, and slippery elm. Understory vegetation is dominated by buckthorn, honeysuckle, smooth dogwoods and poison ivy (*Rhus radicans*).

Areas identified as floodplain forest (A) are located adjacent to the east bank of the Fox River, and along Brewster Creek and its tributaries. These floodplain forests are dominated by trees under 50 years old and the overall condition of these woodlots are poor (Wilm, et al., 1994). A few older trees include an occasional red oak. The dominant tree species found in these areas are box elder, green ash, cottonwood, chokecherry, and American elm. Exotic shrubs and herbs, such as

buckthorn, honeysuckle, sandbar willow, reed canary grass, and garlic mustard, have become established indicating that these woodlots are becoming degraded, with natural floristic quality decreasing.

The floodplain forests along Brewster Creek (A) and its tributaries are adjacent to or part of wetlands associated with the South Elgin Fen (I), the Brewster Creek Fen (A/Site 1 in Hill, 1995) and the Brewster Creek wetland complex north of the Stearns Road-Dunham Road intersection. The degradation apparent in this community is due to the development of the region for residential and industrial/mining purposes. These forests provide marginal to moderate wildlife habitat (Wilm, et al., 1994).

Shrublands © within the corridor are described as very young forests in early succession after human disturbance. These are located primarily along the CNIC Railroad tracks but are also scattered throughout the corridor wherever human disturbance has disrupted the natural plant communities (Wilm, et al., 1994). The shrublands are dominated by box elder, buckthorn, honeysuckle, chokecherry, garlic mustard, burdock (*Arctium minus*) and smooth brome. These are generally linear in nature and highly degraded with very low floristic quality. A few remnant prairie species, such as big bluestem (*Andropogon gerardii*), prairie dock (*Silphium terebinthinaceum*) and green milkweed (*Asclepias syriaca*), are still found within the railroad right-of-way. These areas provide marginal wildlife habitat, but their linear nature may provide narrow corridors for movement of wildlife.

The shrubland/non-native grasslands (D) are similar to shrublands, only more open (Wilm, et al., 1994). This allows higher percentages of grasses to grow. These non-native grasses include reed canary grass and smooth brome. The species of shrubs are similar to those identified for shrublands. The shrubland/non-native grasslands community is primarily located just west of McLean Boulevard north of the CNIC Railroad. This community type is also located immediately adjacent to the Day's Fen, discussed in detail at the end of this section. The shrubland/ non-native grasslands adjacent to the Day's Fen are also successional/disturbed and provide only marginal wildlife habitat.

Forbland areas (E) are identified as mostly former or fallow farm fields or deserted farmhouse areas (Wilm, et al, 1994). These are highly degraded areas just recovering from disturbance and are dominated by non-native species. Dominant species included field aster (*Aster pilosus*), Canada goldenrod, timothy (*Phleum pratense*), orchard grass, and Kentucky blue grass. The forbland areas occur adjacent to agricultural lands and developed lands throughout the corridor. A forbland is also located in a state managed area (Tri-County State Park) (Wilm, et al., 1994). This area of former agricultural fields is currently undergoing restoration management with the apparent goal to re-establish native prairie to the site. In addition to the dominant species mentioned, prairie species which appear to be re-introduced are big bluestem, cup-plant (*Silphium perfoliatum*), purple coneflower (*Echinacea purpurea*) and yellow coneflower (*Ratibida pinnata*).

Two native prairie communities were identified. An approximately 0.4 hectare (1 acre) remnant prairie (A/Site 2 in Hill, 1994) was identified south of the CNIC tracks and east of the Union

Pacific (C&NW) tracks. This prairie is of high floristic quality with many native prairie species present (Tessene, 1993). These include big bluestem, little bluestem (*Andropogon scoparius*), rough blazing star (*Liatris aspera*), nodding wild onion (*Allium cernuum*), copper shouldered oval sedge (*Carex bicknellii*), prairie violet (*Viola pedatifida*), lady's tresses (*Spiranthes magnicamporum*), purple prairie clover (*Petalostemum purpureum*) as well as the woolly milkweed (*Asclepias lanuginosa*, state endangered). This native prairie also provides potential habitat for the ear-leafed foxglove (*Tomanthera auriculata*, state threatened) (Wilm, 1993). This prairie is currently being managed by the Fox Valley Land Foundation. Some shrubs and non-native weeds are present on the site but are limited to the periphery. With on-going management, weeds and shrubs will not further degrade this site. This prairie has received a NARI index of 24.6 indicating a high quality natural community. Some of the more aggressive native species are also growing along the railroad right-of-way.

A second native prairie community is located west of McLean Boulevard, north of the CNIC tracks (C/Site 4 in Hill, 1995). This community is more degraded than the other prairie remnant and is not apparently being managed. Notable species found here include downy shadbush (*Amelanchier arborea*), blazing star, nodding wild onion, thimbleweed (*Anemone cylindrica*), starry false Solomon's seal (*Smilacina stellata*) and early buttercup (*Ranunculus fascicularis*). This prairie is located east and west of the McLean Boulevard (Day's) Fen. This 0.8 hectares (2.0 acres) prairie is degraded, most likely due to active farming activities adjacent to the north.

Other communities identified within the corridor include riverine, ponds and streams. Three ponds (F1) are associated with the South Elgin Sedge Meadow. These ponds have all been excavated and contain open water year round (Wilm, et al., 1994). The plant communities associated with these ponds are sandbar willow and purple loosestrife, indicating a generally degraded condition.

Red Gate Road Corridor

The Red Gate Road Corridor primarily consists of developed land, large agricultural tracts, non-native grassland areas, and small upland forests (see Exhibit 2.3-11). Table 2.3-15 indicates the acreage of each vegetative cover type within a 100-meter (328-foot) corridor of the three alternate alignments, including north (Alignment A), middle (Alignment B), and south alignment (Alignment C) alignments.

A variety of communities were noted, and one area was identified as significant based on its high natural quality and has been named on the Illinois Natural Area Inventory (INAI). This site, identified as DeSanto's Brewster Creek, is located in Alignments A and B at the crossing of Illinois Route 25 and Brewster Creek (Site 11 in Hill, 1994). The different vegetation communities are assigned letters (in parentheses) and are illustrated in Exhibit 2.3-11 (see also 2.3-10 where common to CC&P/Stearns Road corridor).

This area was first identified by Wilhelm, et al, in 1995 for the Illinois Natural Heritage Database. According to the Element Occurrence and Sighting Report Form, a state listed endangered plant species - yellow-lipped ladies tresses (*Spiranthes lucida*) -- was observed. Exhibit 2.3-10 shows

the approximate boundary of the INAI site, as shown by the Illinois Natural Heritage Database. This site is currently privately owned. According to the documentation, it appears the INAI boundary abuts the existing Illinois Route 25 right-of-way.

The vegetation community consists of mowed lawns along the existing roadway and a mixed forested floodplain, emergent wetland community adjacent to the creek. Dominant species include box elder, American elm, and clearweed near the roadway, to higher quality, swamp white oaks (*Quercus bicolor*), rice cutgrass (*Leersia oryzoides*), Lobelia, Joe Pye weed, and cinnamon willow herb, further from the roadway. These two communities are separated by a sharp bend in the creek, which has created an entrenched deep cut bank approximately 60 meters (200 feet) east of Illinois Route 25. This community extends beyond the corridor study area, upstream along Brewster Creek. This community may extend into wetlands 9 and 10 (Brewster Creek Fen Nature Preserve), identified as part of the CC&P/Stearns Road corridor. The DeSantos' Brewster Creek site is currently receiving minimal management (burns and protection of endangered species from wildlife) by the current owner of the site.

This site was not identified by the original INHS reviews for this project. Cursory reviews of the site and wetland delineation were conducted in 1997. The DeSantos' Brewster Creek INAI site falls within the corridor for the Red Gate Road alignments A and B. This site is also located approximately 400 meters (1,300 feet) south of the proposed CC&P/Stearns Road intersection with Illinois Route 25.

This corridor ties into the CC&P/Stearns Road Corridor near the intersection of Illinois Route 25, Gilbert Road and the CNIC Railroad tracks. As a result, some of the community types identified for the CC&P/Stearns Road Corridor will be incorporated into this corridor as well. In addition to the communities identified in Table 2.3-15, this corridor includes the portion of the CC&P/Stearns Road Corridor east of Illinois Route 25. The types of communities included are: floodplain forests (A) along Brewster Creek and its tributaries which are adjacent to or part of wetlands associated with the South Elgin Fen; the Brewster Creek Fen (A/Site 1 in Hill, 1995) and the Brewster Creek wetland complex north of the Stearns Road-Dunham Road intersection; a grade C and D sedge meadow, and a grade C marsh which borders the unnamed tributary to Brewster Creek (East Branch) east of Dunham Road (A), Tri-County Park, and within the YMCA property located east of Illinois Route 25; shrublands © which are located primarily along the CNIC Railroad tracks but are also scattered throughout the corridor; forbland areas (E) which are identified as mostly former or fallow farm fields which are highly degraded areas just recovering from disturbance and are dominated by non-native species; and one native prairie community (A/Site 2 in Hill, 1995) located south of the CNIC tracks and east of the Union Pacific (C&NW) tracks (Wilm, et al., 1995). This prairie is of high floristic quality with many native prairie species present. These communities common to the CC&P/Stearns Road corridor are illustrated on Exhibit 2.3-10.

As shown in Table 2.3-15, the dominant cover types were developed, agricultural, non-native grassland, and upland forest.

TABLE 2.3-15 Cover Type in the Red Gate Road Corridor (within 100 meter corridor)			
Cover Type	Hectares North (A) Alignment	Middle (B) Alignment	South © Alignment
Developed	24	15	13
Agricultural	21	21	20
Upland Forest	11	8.4	21
Shrubland	1.8	1.8	1.8
Non-native Grassland	22	33	34
Wet Meadow	0.2	0.2	0.04
Pond	0.3	0.3	0.3
Total	**80**	**80**	**90**

The following vegetative communities described are those present along the three alignment alternates for the Red Gate Road Corridor south of Gilbert Road, excluding the CC&P/Stearns Road Corridor.

Areas designated as agricultural land (B) are found mostly west of the Fox River. Both Alignments A and B will cross agricultural land north of the existing Red Gate Road, and west of Illinois Route 31. The agricultural communities are of very low natural floristic quality (FQI 5.8, mean C 3.3) and are considered established communities for grazing. These areas are dominated by native grasses such as couch grass (*Agropyron repens*), fescue, Kentucky blue grass, and white clover (*Trifolium repens*). The few trees found in these pastures are dominated by bur oak.

All three Red Gate Road corridor alignments will cross various tracts of upland forest communities (D1) distributed throughout the corridor alignments. The overstory of these forests consist of scattered old trees, including oaks, in excess of 80 years old. The understory is young second growth from 20 to 60 years old. These areas have been highly disturbed by past grazing and timbering. Exotic shrubs are common in the understory. The overall rating of these forests is moderate to poor based on an FQI of 18.1 and a mean C of 2.9. The dominant plant species in these forests include an overstory of hackberry (*Celtis occidentalis*), wild black cherry, and American elm. The understory consisted primarily of American elm, wild black cherry, sugar maple (*Acer saccharum*), Tatarian honeysuckle (*Lonicera tatarica*) and buckthorn. The herbaceous layer vegetation consisted mainly of poison ivy, garlic mustard, ground ivy (*Glechoma hederacea*), Virginia creeper, annual bedstraw (*Galium aparine*) and great Solomon seal.

Two areas of upland forest were identified separately due to their higher quality and uniqueness. The first (D2) is located immediately north of Army Trail Road and Dunham Road in Alignment C. This area is unique and appears to have been managed as a private arboretum in the past. The dominant trees are sugar maple, and white and bur oaks. Management of the area appears to have ceased as the understory is now being invaded by exotic or weedy species, such as garlic mustard and poison ivy. Unusual planted species of trees included Mock orange (*Philadelphus* spp.), bottlebrush buckeye (*Aesculus parviflora*) and Norway spruce (*Picea abies*), all three of which were common.

The second upland forest (D3) is located immediately north and south of Army Trail Road from approximately 300 to 666 meters (984 to 2,180 feet) east of Illinois Route 25 in Alignment C. This area is rated as good floristic quality based on an FQI of 22 and mean C of 3.6. The overstory is comprised of mature sugar maples, white oaks and northern red oaks which are between 40 and 90 years old. Shrubs in the understory are relatively uncommon with the understory comprised of sugar maple, white ash (*Fraxinus americana*) and American linden (*Tilia americana*) saplings. The understory is comprised of diverse native wildflowers and are dominated by sedges (*Carex rosea*), enchanter's nightshade, Virginia creeper, and woolly blue violet (*Viola sororia*). This upland forest has been further classified as a mesic upland forest remnant (Site 7 in Hill, 1994) (Hill, 1994).

A third upland forest (D1) was identified approximately 0.25 km (0.4 miles) west of Dunham Road just south of Army Trail Road as a mesic upland forest remnant (Site 8 in Hill, 1994) (Hill, 1994). This upland forest is located in Alignment C. The dominant plants included dames rocket (*Hesperis matronalis*), garlic mustard, box elder, and white ash. A rare fern, goldie fern (*Dryopteris goldiana*) was identified in this forest. This is a notable find because it may be the only population of goldie fern in Kane County (Hill, 1994). The goldie fern is not listed as threatened or endangered.

Shrubland © is found along all three alignments in various locations throughout the corridor. The plant communities are highly degraded which is reflected in their low FQI of 5.6 and mean C of 1.5. The dominant shrubs here are gray dogwood and young box elders. Herbaceous vegetation was dominated by Canada goldenrod, Kentucky blue grass and grape vines (*Vitis* spp.)

Non-native grasslands (A) are located within all three Red Gate Road alignment corridors. This community is dominated by non-native grasses and forbs as well as a few common native species. Alignment C crosses a large field (over 15 hectares (40 acres)) on both sides of Red Gate Road along the west side of the Fox River. Alignment B crosses a 12-hectare (29.6 acres) field on the east shore of the Fox River. These two fields are now incorporated into the Kane County Forest Preserve District site located on the eastern terminus of Red Gate Road, east of Illinois Route 31. Both Alignments A and B would cross small fields along Illinois Route 25. Most of the non-native grasslands identified in the corridor appear to be former cropland. The natural quality of all the non-native grasslands is low based on the FQI of 3.7 and the mean C of 1.5. The dominant plants in this community include smooth brome, orchard grass, annual fleabane (*Erigeron annuus*), reed

canary grass, timothy, and Kentucky blue grass.

The Red Gate/Army Trail Road corridor has one major wetland community type, wet meadow (F), which is discussed in detail in Section 2.3.8. This community type is located at various locations throughout the corridor. Other non-upland communities identified within this corridor include riverine and ponds.

Four separate pond communities (E) were noted. Two ponds are located just east of the Fox River along the extension of Red Gate Road in Alignment C. The third pond is located near the proposed intersection of Alignments A and B, with Illinois Route 25. The last pond is located near Courier Avenue in the Valley View area of Alignments A and B. These ponds provide water and habitat for wildlife. The dominant plant communities associated with these ponds are generally common native species with the exception of reed canary grass. The dominant tree species include silver maple and American elm. Dominant shrubs include sandbar willow and buttonbush (*Cephalanthus occidentalis*) along with young silver maples and American elms. In addition to reed canary grass, other dominant herbs include slender spike rush, floating manna grass, comb pondweed (*Potamogeton pectinatus*), longbeak buttercup, common duckweed, river bulrush, and narrow leaf cattail. The overall rating for these four communities is of low to moderate natural quality based on an FQI of 17.6 and a mean C of 3.5.

C&NW/Dean Street Corridor

This corridor primarily consists of developed areas within the City of St. Charles. Approximately 87 per cent of the project area is urban land associated with the roadway, railway easements, and residential land use. Vegetation is limited to forbland and shrubland (A), as shown in Table 2.3-16. Exhibit 2.3-12 illustrates the type and location of the identified vegetation communities along this corridor as identified by the Illinois Natural History Survey (INHS). The Fox River © and one wetland (1B) area provide the only other habitat. No communities of natural area quality exist within the project corridor (Ketzner, et al., 1995). A significant natural area, the Murray Prairie (INAI Site No. 630), is located south and 0.7 km (0.4 miles) west of the corridor. This site, now called the LeRoy Oaks Nature Preserve, is beyond the corridor limits.

TABLE 2.3-16
Cover Type in C&NW/Dean Street Corridor
(100 m corridor)

Cover Type	Hectares
Developed	36
Shrubland/forbland	5.3
Pond (Wetland)	0.4
Total	**42**

Shrubland/forbland (A) was identified along most of the Union Pacific (C&NW) railroad right of way. The communities are long and narrow and located on both sides of the tracks. An additional area (approximately 0.3 hectare (0.8 acre) of a 0.7 hectare (1.7 acre) area) is located within the corridor south of Dean Street between Randall Road and 17th Street. Both areas are highly disturbed, mostly by periodic mowing, especially along the railroad tracks. The natural quality of these areas is considered fair with over 50 per cent non-native species (Ketzner, et al., 1995). A few trees, such as box elder and Siberian elm (*Ulmus pumila*), occur within the community; however, woody vegetation is periodically cut immediately adjacent to the railroad. (Ketzner et al., 1995). An uncommon European weed, sparrow weed (*Thymelaea passerina*), was located in the railroad right of way. It is of botanical interest but has no status in Illinois (Hill, 1997).

Another area of shrubland/forbland (A) is associated with the southern edge of Pottawatomie Park. This 1.0-hectare (2.5-acres) of forbland is associated with adjacent areas maintained for picnicking and recreation.

The shrub/forbland (A) located at the northeast corner of the C&NW Railroad tracks and IL Route 25 (5th Avenue) extends outside the corridor to the north. This relatively open area contains numerous ponds located outside the corridor. As the site is surrounded by high density, urban development, including the parcel within the corridor, it only provides marginal value for wildlife habitat.

The man-made pond (1B), north of Dean Street and east of Randall Road, is classified as a wetland. This open water area is described in Section 2.37. Weedy forbland surrounds the hydrophytic vegetation (Ketzner, et al., 1995).

2.3.9.2 Wildlife

CC&P/Stearns Road Corridor

Within the CC&P/Stearns Road corridor, areas capable of providing necessary habitat for wildlife are limited mainly to the remaining woods, wetlands, and waterbodies. The prairie remnants will provide only marginal habitat due to their relative isolation and small size. The larger Kane County Forest Preserve sites south of the corridor provide much more suitable habitat for area wildlife. These forest preserves; Blackhawk and Tekawitha, along with a private facility, Vasa, comprise approximately 141 hectares (348 acres) in total area and are linked through the Fox River corridor, making movement between sites easier. The IDNR managed Tri-County Park is large enough to provide suitable wildlife habitat. However, this park is currently undergoing management with the intent to re-establish native prairie to the site, so frequent disturbance of this area is expected. Tri-County State Park is immediately adjacent to Pratts' Wayne Woods Forest Preserve, part of the DuPage County Forest Preserve District. These sites combine for a total of 1,600 hectares (4,000 acres) of potential wildlife habitat. Finally, the Elgin YMCA Camp located east of Illinois Route 25 south of the CNIC tracks is approximately 33 hectares (82 acres) of mixed woodland and open space which provides moderate wildlife habitat. The YMCA Camp is immediately adjacent to the Brewster Creek Fen Nature Preserve.

Although limited in size, the South Elgin Sedge Meadow, Brewster Creek Fen/Sedge Meadow and Day's Fen provide valuable habitat for both plants and wildlife, due to their unique character.

The presence of large areas of open space in close proximity to the CC&P/Stearns Road project study area provides potential habitat for wildlife within the corridor. The presence of corridors of open space linking these habitats to the project study area allows the potential free movement of wildlife from site to site. These corridors include the Fox River, Brewster Creek and its tributaries, as well as the Illinois Prairie Path. These corridors cris-cross much of the project study area east of the Fox River. Therefore, it is expected that there are many species that pass through or live within the project study area. Areas west of McLean Boulevard are still predominantly open with a combination of agricultural fields, nursery operations and mining. These areas do not entirely inhibit movement of wildlife through the area.

The suburban and industrial development areas within the corridor provide marginal wildlife habitat. The species normally present in this type of setting are species adapted to edges and those that can exist in close proximity to human activity.

Birds

A total of 59 bird species were counted by the INHS in the CC&P/Stearns Road Corridor (Amundsen and Enstrom, 1996). The majority of the species consisted of songbirds as well as a few geese, herons, ducks, and woodpeckers. Among those counted were northern cardinals, blue jays, varieties of sparrows, wood thrushes, starlings, robins, crows, red-winged blackbirds, downy woodpeckers, hairy woodpeckers (*Dendrocopos villosus*), black-capped chickadees, doves, brown-headed cowbirds, varieties of warblers, house wrens, kinglets, Canada geese, great blue herons, green-backed herons (*Butorides striatus*), wood ducks, and mallards. As many of these species are adapted to close proximity to humans and habitat edges, there is suitable habitat for these species within the corridor.

Species listed as Illinois species of concern located near the corridor include: eastern wood pewee, eastern phoebe (*Sayornis phoebe*), great crested flycatcher, marsh wren (*Cistothorus palustris*), golden-crowned kinglet, blue-gray gnatcatcher, wood thrush, gray catbird, cedar waxwing, warbling vireo (*Vireo gilvus*), blue-winged warbler (*Vermidoro pinus*), yellow-warbler (*Dendroica petechia*), common yellowthroat (*Geothlypis trichias*), eastern towhee, song sparrow, eastern meadowlark, sora (*Porzana carolina*), and the Baltimore oriole.

Suitable habitat for only two species of state endangered birds, the least bittern (*Ixobrychus exilis*, state endangered) and the yellow-headed blackbird (*Xanthocephalus xanthocephalus*, state threatened), is present (Wilm, et al., 1994). This habitat is confined to the South Elgin Sedge Meadow. The least bittern and yellow-headed blackbird are generally found in marsh conditions.

No sightings of state or federally threatened or endangered species of birds occurred during the breeding season census. However, sightings of state-listed species during the fall, winter and spring censuses include one brown creeper (state threatened), flybys of sharp-shinned hawks (state

endangered), one pied-billed grebe (*Podilymbus podiceps*, state threatened), and one foraging northern harrier (*Circus cyaneus*, state threatened) (Phillips, 1995). The pied-billed grebe and northern harrier were observed at the Brewster Creek Fen. It was determined that marginal breeding habitat existed for the snowy egret (*Egretta thula*, state endangered), little blue heron (*Florida caerula*, state endangered), northern harrier (state endangered), common barn owl (*Toto alba*, state endangered), short-eared owl (*Asia flambeaus*, state endangered), and the brown creeper (state threatened) (INHS, 1/20/96). Other observations include wood ducks with young observed within the wetland areas, indicating that breeding habitat for this species is present. Great blue heron, turkey vultures (*Cathartes aura*), and red-tail hawks were observed during summer, 1997.

Mammals

The natural communities, agricultural land, and developed areas found in the CC&P/Stearns Road Corridor offer habitat to a variety of small and large mammals. Many mammals are habitat generalists that use a variety of habitat types and occur in disturbed areas and close to humans (Hofmann, 1996). A total of 17 common mammal species were trapped or observed in representative natural communities, such as shrubland or forbland; however, 28 species are known or are likely to occur in the corridor. The most frequently captured was the white-footed mouse, which is a ubiquitous species.

No notable mammal species were present in the corridor (Phillips, 1995 and Hofmann, 1996). Evidence of beaver (*Castor canadensis*) activity was present near the Brewster Creek Fen, and muskrats (*Ondatra zibethicus*) are also common in areas where water is present and therefore may be found within the corridor. Other recorded small mammal trapping indicated that the following species are likely to be present within the corridor: opossums (*Didelphis virginiana*), woodchucks (*Marmota monax*), raccoons (*Procyon lotor*), and skunks (*Mephitis mephitis*).

Reports from the 1980's indicated that the river otter (*Lutra canadensis*, state endangered) was present along the Fox River within the project study area (Hofman, 1993). In 1986, a pair of river otters were spotted below the South Elgin Dam less than 2 kilometers (1.2 miles) north of the corridor. However, there has been no evidence of this species since that report, and the river otter is believed to be extirpated from this area. The habitat within the corridor is only marginally suited for otters due to development of the shoreline.

The CC&P/Stearns Road Corridor contains too little forest cover and too much developed land to provide suitable habitat for resident bobcats (state threatened) (Hofmann, 1996). However, possible transient bobcat might utilize western portions of the corridor west of the Fox River, in less developed Kane County. No bobcat nor bobcat sign have been recorded in the corridor (Hofman, 1996).

Reptiles and Amphibians

The eastern half of the corridor with larger wetland complexes provides some significant habitat for amphibians even through it is fragmented (Phillips, 1995). Common species of amphibians and reptiles were observed in the project corridor. The former Illinois State watch species, Blanding's

turtle (*Emydoidea blandingii*) was observed at Brewster Creek Marsh, 1 kilometers (0.6 miles) southeast of the project corridor in 1990. The most common amphibian varieties found in the suburban landscape were bullfrogs (*Rana catesbeiana*, requiring open water), the green frog (*Rana clamitans*), and northern leopard frog (*Rana pipiens*). These species are most likely present within the corridor. The western chorus frog was heard from all wetlands within the corridor. No notable species were observed (Phillips, 1995 and 1996).

Red Gate Road Corridor

Within the Red Gate Road Corridor, areas capable of providing necessary habitat for wildlife are limited mainly to the remaining woods, wetlands, and waterbodies. The remaining prairie remnants will provide only marginal habitat due to their relative isolation and small size. The larger Kane County Forest Preserve sites in the area provide much more suitable habitat for area wildlife. These forest preserve sites are located primarily in the CC&P/Stearns Road Corridor area associated with Red Gate Road Alignments A and B.

As with the CC&P/Stearns Road corridor, the presence of large areas of open space in close proximity to the Red Gate Road corridor study area provides potential habitat for wildlife. Corridors of open space link these habitats allowing the potential free movement of wildlife from site to site. These corridors include the Fox River, Brewster Creek and its tributaries, as well as the Illinois Prairie Path. These corridors cris-cross much of the project study area east of the Fox River. Therefore, it is expected that there are many species that pass through or live within the project study area.

The northern part of the corridor on the east side of the Fox River is industrial, while the remainder of the corridor is primarily suburban/residential on small and large lots. These industrial and suburban areas within the corridor provide marginal wildlife habitat. The species normally present in this type of setting are species adapted to edges and those that can exist in close proximity to human activity.

Birds

The area surrounding the Red Gate Road corridor is a mix of mining, industrial, agricultural, and residential land uses. Certain species of birds are common in areas such as these. Suburban landscapes generally support a typical avian community which consists of numerous songbirds. A total of 18 bird species were counted by the INHS during the fall of 1995 in the Red Gate Road Corridor (Amundsen and Enstrom, 1996). The species consisted of songbirds and woodpeckers. The birds counted by the INHS include red-bellied woodpecker, downy woodpecker, northern flicker, blue jay, crow, black-capped chickadee, white-breasted nuthatch (*Sitta carolinensis*), ruby-crowned kinglet, hermit thrush (*Hylocichla guttata*), robin, cedar waxwing, starling, yellow-rumped warbler (*Dendroica coronata*), northern cardinal, and varieties of sparrows and finches. As many of these species are adapted to close proximity to humans and habitat edges, there is suitable habitat for these species within the corridor.

No sightings of state or federally threatened or endangered species of birds were present during the breeding season census (INHS, 11/20/96). However, sightings of state listed species during

the fall, winter and spring censuses include one brown creeper (state threatened), and one-pied-billed grebe (state threatened) at Brewster Creek Fen. A northern harrier (state endangered) has been spotted foraging near the Brewster Creek Fen. Other sightings include the savannah sparrow (*Passerculus sandwichensis*, state watch listed special concern species), cedar waxwing (state watch listed special concern species), and the eastern meadowlark (state watch listed special concern species) in Kane County forest preserve areas.

Other observations include wood ducks with young observed within the wetland areas near Brewster Creek, indicating that breeding habitat for this species is present. Great blue herons, turkey vultures, and red-tail hawks were observed during summer, 1997.

Mammals

The natural communities, agricultural land, and developed areas found in the Red Gate Road Corridor offer habitat to a variety of small and large mammals. Many mammals are habitat generalists that use a variety of habitat types and occur in disturbed areas and in close proximity to humans (Hofmann, 1996). Within the Red Gate Road Corridor, a sugar maple forest area was used for trapping in 1995. Only three mammals were live trapped (one white footed mouse and two eastern chipmunks (*Tamias striatus*)) at the site north of Army Trail Road, and east of Illinois Route 25.

No mammal species of significance were present in the corridor (Phillips, 1995 and Hofmann, 1996). Evidence of beaver activity was present in Brewster Creek, and muskrats are also common in areas where water is present and therefore may be found within the corridor. Observations made of mammals in the vicinity of the corridor indicated that the following species are likely to be present within the corridor as well: opossums, woodchucks, raccoons, gray squirrel, eastern chipmunk, and skunks.

Reports from the 1980's indicated that the river otter (state endangered) was present along the Fox River within the project study area. In 1986, a pair of river otters was spotted below the South Elgin Dam less than 5 kilometers (3 miles) north of the corridor. However, there has been no evidence of this species since that spotting, and the river otter is believed to be extirpated from this area. The habitat within the corridor is only marginally suited for otters due to development of the shoreline.

Possible transient bobcats (state threatened) exist in less-developed areas west of the Fox River. Portions of this undeveloped land are now owned by the Kane County Forest Preserve District. None have been sighted within the project corridor (Hofmann, 1996).

Reptiles and Amphibians

The CC&P/Stearns Road portion of Alignment A and B has larger wetland complexes and provides some significant habitat for amphibians even though it is fragmented (Phillips, 1995). Common species of amphibians and reptiles were observed in the project corridor and no species of significance were observed (Phillips, 1995 and 1996). The former Illinois State watch species, Blanding's turtle (*Emydoidea blandingii*) was observed at Brewster Creek Marsh, 1 kilometers

(0.6 miles) southeast of the project corridor in 1990. The most common varieties found in the suburban landscape were bullfrogs (requiring open water), the green frog (*Rana clamitans*), and northern leopard frog (*Rana pipiens*). These species are most likely present within the corridor. The western chorus frog was heard from all wetlands surveyed within the corridor. Other observed species include the American toad (*Bufo americanus*) and the fox snake (*Elaphe vulpina*).

C&NW/Dean Street Corridor

The urban setting and structure of the communities in the corridor limit the wildlife habitat to fair quality. Shrubland/forbland areas remain disturbed through maintenance activities and lack natural quality.

Birds

Very little natural habitat exists along the C&NW/Dean Street Corridor (Amundsen and Enstrom, 1996). The majority of the corridor consists of urban and industrial properties. Due to this general lack of habitat, a single census point in the shrubland area was established by the INHS (Amundsen and Enstrom, 1996). This census point indicated bird species common in urban areas. A total of 26 bird species were counted by the INHS (Amundsen and Enstrom, 1996). The bird species included red-tailed hawk, mourning dove, downy woodpecker, northern cardinal, blue jay, American crow, black-capped chickadee, starling, northern cardinal, cedar waxwing, golden-crowned kinglet, brown thrasher (*Toxostoma rufum*), and varieties of sparrows, blackbirds, and finches. The cedar waxwing, song sparrow, Baltimore oriole, golden-crowned kinglet, and the gray catbird are Illinois listed species of special concern which were counted during the census. Marginal breeding habitat for the Cooper's hawk, and Bewick's wren (*Thryomanes bewickii*, state endangered) is present in the corridor. However, no individuals have been sighted during the conducted surveys (INHS, 11/20/96).

Mammals

The limited wildlife habitat supports fewer species than in any other corridor. Only three species were recorded during surveys of the area. The Virginia opossum, eastern cottontail (*Sylvilagus floridanus*), and woodchuck were observed; however, other common small mammals, such as gray squirrels, house mouse, and raccoon, would be expected to occur (Hofmann, 1996).

Reptiles and Amphibians

The only area of potential habitat for amphibians or reptiles was the open water pond/wetland (1B) area located east of Randall Road. Bullfrogs were observed in this area (Phillips, 1996).

2.3.9.3 Threatened and Endangered Species

Federal Listed Species

A single bald eagle was observed flying over the Dean Street corridor during the fall avian census. This individual was a transient. The proposed project will not impact the bald eagle.

State Listed Species

A single northern harrier was observed foraging over a forbland near the Brewster Creek Fen (Stearns Road Corridor) during the winter anian census. This individual is a migrant. The proposed project will not impact the northern harrier.

One pied-billed grebe was observed in the Brewster Creek Fen pond during the spring avian survey. This individual is considered a migrant. The proposed project will not impact the pied-billed grebe.

A total of seven brown creepers were observed in this section of the project corridor. One individual was observed in an upland forest (Stearns Road Corridor) during the fall avian census, two individuals during the fall avian census along the Red Gate Corridor (upland oak forest) and three during the fall census of Mooseheart Road (bottomland forest): and one individual during winter census (Mooseheart)-shrubland. All individuals are winter residents or fall migrants. The proposed projects will not impact the brown creeper.

The slender bog arrow grass has been observed in the McLean Boulevard Fen (Stearns Road). The species occurs 14 meters (42 feet) north of the proposed road right-of-way.

The wooly milkweed was observed in the gravel prairie remnant near the East Branch of Brewster Creek (Stearns Road). This prairie remnant occurs at the junction of the Union Pacific and CNIC Railroads and is located 225 meters (728 feet) from the proposed roadway. The proposed project will not impact the wooly milkweed.

The false asphodel has been observed in the South Elgin Sedge Meadow (Stearns Road Corridor).

The yellow-lipped ladies tresses has been observed at the DeSantos Brewster Creek Natural Area (Red Gate Corridor).

2.3.10 Air Quality

The existing air quality for the study area, including available data that may apply to the Central Region, is discussed in Section 2.1.10.

2.3.11 Noise

Noise analysis for a roadway project consists of comparisons of the existing traffic noise to the future Build and No-Build options. The analysis is defined in Section 4.1.11 and the results for the Central Region are found in Section 4.3.11.

2.3.12 Special Waste

CC&P/Stearns Road (see Exhibit 2.3-16 for locations)
The proposed road alignment parallels the Canadian National Illinois Central (CNIC), formerly the CC&P railroad tracks until the railroad tracks intersect Illinois Route 25, 1.12 kilometers (0.7 miles) east of Fox River. According to the Railroad Section of the Illinois Commerce Commission (ICC) there has not been a spill of hazardous materials from railroad cars along this section of the CNIC Railroad right-of-way since 1989 when recording of such spills began. However, there was a train derailment in January of 1999 that did not involve hazardous materials. Environmental data bases were reviewed as of July, 2001 to update the status of conditions in the corridor.

Hazardous Wastes
Woodland Landfill is an active landfill, located north of Illinois Route 25 and east of Gilbert Street. This site is located approximately 98 meters (300 feet) north of the centerline of the proposed corridor. The landfill accepts only non-hazardous waste.

Tri-County Landfill is a closed landfill, located between the active Woodland landfill to the west and east of Route 25 and is immediately adjacent to the corridor. The site is on the National Priority List as a Superfund site. Results of the remedial investigation/feasibility study indicate that groundwater monitoring wells in the vicinity of the Tri-County Landfill, located east of Route 25, and 114 meters (350 feet) north of the centerline of the proposed corridor exhibit low levels of volatile organic compounds such as benzene, pentachlorophenol and trichloroethene. Groundwater remediation is included in the Waste Management, Inc. Final Remedial Design approved by the IEPA in August 1987. The remedial design was implemented January, 2000.

The Elgin Landfill is a closed municipal landfill located just north of the Tri-County Landfill, approximately 1.6 kilometers (one mile) north of the centerline of the proposed corridor. The Elgin Landfill is included in the same remediation plan as the Tri-County Landfill. Since no landfill cover soils or drainage is expected to be disrupted by the addition of the roadway, the Woodland Landfill, Elgin and former Tri-County Landfill are not expected to be affected by the project.

Undetermined Waste Status
Just south of CNIC railroad and west of Illinois Route 31 is the Daily LeRoy Landfill, an inactive solid waste disposal site. The proposed alignment passes through the former landfill site. The Daily LeRoy Landfill was permitted and operational as of 1972. No known groundwater monitoring was included in the landfill operation. The less than ½ acre landfill was permitted to accept demolition debris and clean fill. The landfill was in an apparent violation in 1989 for allowing open dumping of roof shingles, asphalt, dry wall, cardboard and household waste. According to the landfill owner, Mr. Daily LeRoy and IEPA files, he removed these materials by the end of August 1989. The landfill reportedly closed in 1989; however, no IEPA closure documentation was included in the IEPA file for this facility.

Non-Hazardous Wastes

Four former underground storage tank (UST) sites are listed in the area and have a potential to impact the proposed corridor. The Elmhurst Chicago Stone Company adjacent to and south of the proposed corridor, replaced three underground storage tanks with above ground storage tanks (ASTs). Arc Disposal, Monarch Disposal (currently Alliance Waste Services) and Woodland Landfill are former registered UST sites north of the corridor. ASTs have reportedly replaced these USTs and no history of problems was noted during the UST excavations at these locations. An aboveground storage tank was noted near BioGro System, a small trucking operation, between the Union Pacific and Illinois Central Railroad tracks (adjacent to the proposed corridor). No leaks or spills from the ASTs have been reported. Since these ASTs are outside the proposed corridor, they are not expected to be involved in the proposed roadway impacts.

Tecza Nursery partially located within the proposed corridor just east of Randall Road has several aboveground storage tanks on site reportedly for fueling their equipment. No spills or concerns were noted in conjunction with the Tecza ASTs.

A Commonwealth Edison substation is located at the northeast corner of Umbdenstock Road and the CNIC Railroad, immediately adjacent to the proposed corridor. The substation has non-PCB containing transformers and, therefore, is not considered a concern to the project.

Red Gate Road (see Exhibit 2.3-17 for locations)
Land use within the three alignments (North, Middle and South) of the Red Gate Corridor have been predominantly farmland, woodland, and residential. West of the Fox River, the Red Gate Corridor passes by several large farm properties, residential developments, forest preserves, and a new middle school. Environmental data bases were reviewed as of July, 2001 to update conditions in the corridor.

Hazardous Wastes
No CERCLIS sites are known to be involved in the proposed roadway in this corridor.

Undetermined Waste Status
The only RCRA generator in the vicinity is the White Hamlin Plastics Company, 600 meters (2,000 feet) south of Courier Avenue and 82 meters (260 feet) west of the centerline of the north and middle alignment corridor. This RCRA small quantity generator has no violations on file, and is downgradient from the proposed corridor.

Non-Hazardous Wastes
The Red Gate/Illinois Route 25/Stearns Road Alignments (Alignments A and B) cross the Fox River north of Army Trail Road and follow Illinois Route 25 to the eastern component of the CC&P/Stearns Road alignment. An UST has been removed from the former Import Motors Cars property along Illinois Route 25 south of Courier Avenue. In addition, an auto service facility (RCRA small quantity generator) was located along Route 25 north of Courier Avenue. There are no known problems with these sites.

The land along Army Trail Road (South Alignment - C) includes large residential properties and wooded land. No evidence of potential contamination sources was found in the vicinity of the South Alignment.

C&NW/Dean Street (see Exhibit 2.3-18 for locations)
The proposed road alignment parallels the Union Pacific (UP - formerly C&NW) railroad tracks until the tracks intersect with Illinois Route 64 at 11th Street, 1.0 kilometer (0.6 miles) east of the Fox River. According to the Railroad Section of the Illinois Commerce Commission (ICC), there have been no reported railroad spills for this section of the C&NW railroad right-of-way since record keeping commenced in 1989. Two power substations are located 40 meters (130 feet) from the centerline of the corridor, but neither has PCB containing equipment.

Hazardous Wastes
The proposed alignment crosses the south portion of a former foundry property approximately 305 meters (1,000 feet) east of Randall Road. The Moline Foundry is a CERCLIS, UST, RCRA small quantity generator, and inactive Solid Waste Landfill (SWLF) site. The current status of the Moline Foundry site is a low priority Superfund site which entered the Pre-Notice cleanup program in 1996. The Moline Corporation produced molten iron from scrap metal from 1894 to 1991. The main solid waste from the molten iron production was foundry sand. Foundry sands are stockpiled approximately 325 meters (1,066 feet) north of the proposed centerline of the corridor and buried at undefined areas of the foundry property. The Moline Foundry also has PCB-containing transformers, a former chemical storage area, former ASTs/USTs areas, and buildings with suspect asbestos-containing materials within the proposed corridor. No further information for the site was obtained through a Freedom of Information Act request submitted to IEPA.

Applied Composites Corporation at 333 North 6th Street was found to be on the CERCLIS, LUST, UST, Toxic Release Inventory System, RCRA large quantity generator, CORRACTS (Corrective Action Sites) and RCRA violators lists. This site is located approximately 46 meters (150 feet) south of the corridor centerline. Operations at the site involve the production of molded plastic composites. No further remediation action is planned for this site (NFRAP status). A closure letter was issued for the LUST incident in 1990 and no additional incidents were reported as of April 1997. Groundwater flow is estimated to be to the southeast, away from the project area.

Two other CERCLIS sites in the vicinity are Burkart Oehlerkin at 410 S. First Avenue, 0.7 kilometers (0.45 miles) south of the proposed corridor and the O'Hara property at the intersection of Fern Avenue and 7th Street, 0.6 miles south of the corridor. Based on preliminary assessments, these sites were classified as low priority. These two identified CERCLIS sites are not within the proposed right-of-way and are not upgradient of the corridor.

Non-Hazardous Wastes
Although the USTs at the Moline Foundry have been removed, petroleum contamination was

noted during a limited soil sampling program within the proposed corridor on the foundry property. There are no other listed UST sites within the proposed alignment. However, the G. Porter Company, located within the proposed corridor, which is not registered as an UST site, has several fuel and/or gasoline pumps. This site is north of the Union Pacific tracks at Porter Court.

Six of the eight LUST sites within 305 meters (1,000 feet) of the proposed corridor have No Further Remediation letters. EM Automotive at 800 East Main Street, 49 meters (150 feet) south of the centerline of the proposed corridor with a gasoline release, and NBD Woodfield Bank, 82 meters (250 feet) south of the corridor centerline, with a diesel release, remain potential risk sites. Groundwater flow in the vicinity of these sites was estimated to be away from the project area.

2.3.13 Visual Resources

Within the Central Region can be found a full range of visual environments. North of the City limits of St. Charles to just outside of South Elgin the Fox River is relatively undisturbed or uninterrupted by human activities. The banks include forests and what residential development is nearby is commonly on wooded lots. This is partially attributable to the bordering Forest Preserves (i.e., Blackhawk, Tekewitha, Fox River Bluff West (a.k.a. Red Gate Forest Preserve) and Fox River Bluff East (a.k.a. Severson Forest Preserve). An existing railroad bridge and an abandoned one (currently used as a bicycle trail) provide limited visual interruption. Also notable is a newly-constructed high tower electric transmission line near the CNIC (formerly the CC&P) bridge over the Fox River.

Outside of the river area, much of the land use is either farmland, undergoing suburban residential conversion, residential, or industrial, including landfills.

Within the City of St. Charles the visual environment includes suburban housing of various sizes and ages, commercial and industrial sites (see discussion of Cultural Resources for additional information on historic properties) and Pottawattomie Park (an area maintained as mowed lawns for picnic and recreational activities. Also adjoining the river with the City is a scenic river walk. The existing roadway bridges over the Fox River exhibit a variety of styles with an attempt to maintain a historic flavor. The existing railroad bridge is a utilitarian design.

Housing in the unincorporated areas and the Village of Wayne includes houses built as summer cottages converted to year round residences to large lot estate development on wooded and pasture lots. Adjoining Wayne is also Pratts Wayne Woods Forest Preserve and TriCounty State Park which are undergoing development to serve a number of passive and active recreational uses. Within the Village of Wayne a number of the residential areas have a rural flavor attributable to the large lots often containing horse farms and trails.

2.3.14 Utilities

CC&P/Stearns Road Corridor
New electric transmission lines were completed in 1996 south of the Illinois Central (formerly the CC&P) Railroad tracks, between Illinois Route 25 and the west side of the Fox River. There is no other utility that could represent a major conflict.

Red Gate Road Corridor
The Williams Oil Pipeline runs essentially along existing Red Gate Road from the west and traverses easterly under/across the river where it then continues along Pearson Drive and subsequently along Army Trail Road to the east. The pipeline is located horizontally along the existing right-of-way line.

C&NW/Dean Street Corridor
There are two power sub-stations along the south side of the C&NW Railroad (now the Union Pacific Railroad) tracks owned by the City of St. Charles electric utility. The City distribution lines parallel the tracks on the south and Commonwealth Edison maintains a 34 kV line on the north. The proposed C&NW/Dean Street alignment was selected, in part, to avoid the substations.

In 1997 Ameritech installed fiber optic facilities near the intersection of Randall Road and Dean Street. This installation includes a vault for connections in the southeast quadrant of the intersection on a private easement.

2.4 South Region

2.4.1 Socioeconomics

2.4.1.1 Land Use

General
The South Region includes the Cities of Aurora, Batavia, and the Village of North Aurora. One bridge crossing corridor is being studied in this region: Illinois Route 56/Oak Street. The corridor is located predominantly within Aurora and Batavia Townships.

From the land use and socioeconomic perspective, the potential for impacts is within the City of Aurora and the Village of North Aurora. The only other community in proximity to or within the proposed corridor is a small portion of Batavia's extraterritorial planning jurisdiction. Land uses in this area are addressed below. Existing land uses and socioeconomic factors are represented on Exhibits 2.4-1 and 2.4-2.

Residential
Residential development within the study corridor is primarily detached single-family residential. In addition, concentrations of multiple-family dwellings occur near Harmony Court, south of the Oak Street, and at Laurel Drive, north of Illinois Route 56 (Butterfield Road), the Butterfield Trails Apartments. Residential projects that are proposed or committed to development are shown on Exhibit 2.4-1. Several projects have been proposed or have begun construction north of Illinois Route 56 and west of the Fox River.

The 1990 Census indicates that approximately 60 percent of the housing stock in both North Aurora and Aurora is owner occupied. These totals are slightly lower than the County total of nearly 67 percent (see Table 2.4-1). Owner occupancy is highest in the northern and western census tracts (see Exhibit 2.4-3 for census tract boundaries). The municipalities have higher renter occupancy rates than Kane County.

Housing values for owner-occupied housing stock are shown in Table 2.4-2. According to the 1990 Census, median home values for Aurora and North Aurora are both below the County median of $102,500. However, the two census tracts adjacent to the Mooseheart Road alignment (#8528.01 and #8528.02) have median home values greater than the County figure. These census tracts also include portions of Batavia.

Rent levels are shown in Table 2.4-3 for the affected census tracts, adjacent communities and Kane County.

Table 2.4-1
Housing Tenure (1990), Illinois Route 56/Oak Street Corridor

Census Tract/ Area	Total Housing Units	Occupied		Vacant		
		Owner	Renter	For Sale	For Rent	Other
# 8528.02	3,019	2,420	546	17	17	19
% of Total	100.0 %	80.2%	18.1%	0.6%	0.6%	0.6%
# 8529.02	2,980	1,651	1,232	18	49	30
% of Total	100.0 %	55.4%	41.3%	0.6%	1.6%	1.0%
# 8530.01	369	302	61	2	0	4
% of Total	100.0 %	81.8%	16.5%	0.5%	0.0%	1.1%
# 8530.04	1,345	744	459	8	123	11
% of Total	100.0 %	55.3%	34.1%	0.6%	9.1%	0.8%
Aurora	35,621	20,706	13,004	498	844	569
% of Total	100.0 %	58.1%	36.5%	1.4%	2.4%	1.6%
North Aurora	2,391	1,448	776	9	139	19
% of Total	100.0 %	60.6%	32.5%	0.4%	5.8%	0.8%
Kane County	111,496	74,514	32,662	943	1,781	1,596
% of Total	100.0 %	66.8%	29.3%	0.8%	1.6%	1.4%

Source: Department of Commerce, Bureau of the Census, (STF-1 Data)

Table 2.4-2
Housing Value (1990), Illinois Route 56/Oak Street Corridor

Census Tract/Area	Housing Value (000's)- Owner Occupied Housing Units				
	Total Units	<$100	$100 to $199.9	>= $200	Median Value
# 8528.02	2,231	648	1,417	166	$135.0
% of Total	100.0%	29.0%	63.5%	7.4%	
# 8529.02	1,238	745	469	24	$91.9
% of Total	100.0%	60.2%	37.9%	1.9%	
# 8530.01	271	193	77	1	$87.9
% of Total	100.0%	71.2%	28.4%	0.4%	
# 8530.04	708	350	357	1	$100.4
% of Total	100.0%	49.4%	50.4%	0.1%	
Aurora	17,970	12,116	5,361	493	$81.9
% of Total	100.0%	67.4%	29.8%	2.7%	
N. Aurora	1,354	732	618	4	$97.3
% of Total	100.0%	54.1%	45.6%	0.3%	
Kane County	65,250	31,658	26,346	7,246	$102.5
% of Total	100.0%	48.5%	40.4%	11.1%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

Table 2.4-3 Contract Rent (1990), Illinois Route 56/Oak Street Corridor					
Census Tract/Area	**Contract Rent* - Renter Occupied Housing Units**				
	Total Units	**<$500**	**$500 to $999**	**>=$1,000**	**Median Rent**
# 8528.02	527	407	114	6	$364
% of Total	100.0%	77.2%	21.6%	1.1%	
# 8529.02	1,207	813	393	1	$449
% of Total	100.0%	67.4%	32.6%	0.1%	
# 8530.01	36	14	22	0	$533
% of Total	100.0%	38.9%	61.1%	0.0%	
# 8530.04	446	101	312	33	$539
% of Total	100.0%	22.6%	70.0%	7.4%	
Aurora	12,680	8,770	3,883	27	$425
% of Total	100.0%	69.2%	30.6%	0.2%	
North Aurora	753	319	401	33	$515
% of Total	100.0%	42.4%	53.3%	4.4%	
Kane County	31,155	20,813	10,093	249	$439
% of Total	100.0%	66.8%	32.4%	0.8%	

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

* Contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included. Table does not include non-cash rents.

Commercial/Industrial

Commercial and industrial uses do not occur along Mooseheart Road. Several commercial uses occur along the Illinois Route 56/Oak Street alignment, near Randall Road, Lincoln Way, and Illinois Route 25 (see Exhibit 2.4-2). There are also several industrial uses along Illinois Route 56. Regional and community retail centers near the corridor include the Fox Valley Center and Northgate shopping centers, both in Aurora. Other concentrations of retail activity include downtown Aurora and the highway-oriented uses along Illinois Route 31 in North Aurora. Industrial/business park uses in North Aurora are concentrated along I-88, west of Illinois Route

31. The Village is also planning for future growth south of Illinois Route 56. Aurora's industrial/business park development is also concentrated along the I-88 Corridor. Exhibit 2.4-1 shows the locations of proposed or committed commercial and industrial development in the South Region.

Local/Regional Land Use Plans

All municipalities in the South Region are physically divided by the Fox River. Primary areas intended/anticipated to be developed in each municipality are shown on Exhibit 2.4-1. Official planning designations for vacant and agricultural land are shown on Exhibits 2.4-2. The Village of North Aurora projects future commercial growth along Orchard Road. Plans are proceeding for a new auto mall near the East-West Tollway (I-88) and a mixture of commercial and office/research is being promoted along the remainder of Orchard Road. The area north of the Tollway defines a growing employment center consisting of industrial and office/research uses. Additional office/research uses are planned south of Illinois Route 56, east of the Fox River. Residential uses are planned to the east of the Orchard Road Corridor. Village sewer and water services are currently available out to Deerpath Road.

The City of Aurora is also planning for development that will generate future tax base and employment growth in the area between Illinois Route 56 and the East-West Tollway. This area is planned for a mixture of industrial and office/research use. In addition, Farnsworth Avenue is viewed as a primary commercial corridor.

2.4.1.2 Population

The current and projected populations of municipalities in the South Region are listed in Chapter One, Table 1.4-1. All of the municipalities in the region are expected to experience growth from 1990 to 2020, ranging between a low of 82 percent (Batavia) to a high of 165 percent (North Aurora). Growth in all of Kane County is expected to be slightly lower than this range (74 percent). Population projections for the affected townships of Batavia and Aurora are shown in Table 2.1-1.

Age and race statistics for residents in the South Region and along the study corridor are provided in Tables 2.4-4 and 2.4-5, respectively. These tables also provide statistics for census tracts adjacent to the proposed corridor under consideration. The median age of residents in Aurora and North Aurora, and the census tracts along the proposed alignments, is consistent with the County median age of 30.9 years. The racial character of affected communities and census tracts is predominantly white. See Exhibit 2.4-3 for tract boundaries and the City of Aurora.

Table 2.4-4
Population Age (1990), Illinois Route 56/Oak Street Corridor

	Age Groups											
Census Tract/ Area	**< 5**	**5 to 17**	**18 to 20**	**21 to 24**	**25 to 44**	**45 to 54**	**55 to 59**	**60 to 64**	**65 to 74**	**75 to 84**	**> = 85**	**Median Age**
# 8528.02	904	1,995	270	294	3,348	949	327	278	444	238	57	32.5
# 8529.02	741	1,314	360	602	2,711	657	344	302	450	190	38	29.7
# 8530.01	77	244	42	53	407	95	29	28	35	11	3	29.9
# 8530.04	245	446	88	165	1,082	278	118	100	201	122	54	32.6
Aurora	10,159	20,850	4,511	6,619	35,233	7,980	2,974	2,692	4,657	2,791	1,115	28.5
North Aurora	538	1,042	178	311	2,264	549	224	193	347	201	93	31.8
Kane County	27,799	66,726	13,913	17,495	108,083	31,629	11,698	10,567	16,741	9,414	3,406	30.9

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

Table 2.4-5
Population by Race/Hispanic Origin (1990)
Illinois Route 56/Oak Street Corridor

Census Tract/Area	Total Persons	White	Black	Amer. Indian/ Eskimo	Asian or Pacific Islander	Other Race	Hispanic Origin (any race)
# **8528.02**	9,104	8,529	235	10	227	103	356
% of Total	100.0 %	93.7%	2.6%	0.1%	2.5%	1.1%	3.9%
# **8529.02**	7,709	6,424	788	8	141	348	1,182
% of Total	100.0 %	83.3%	10.2 %	0.1%	1.8%	4.5%	15.3%
# **8530.01**	1,024	802	133	1	49	39	78
% of Total	100.0 %	78.3%	13.0 %	0.1%	4.8%	3.8%	7.6%
# **8530.04**	2,896	2,820	30	7	22	17	48
% of Total	100.0 %	97.4%	1.0%	0.2%	0.8%	0.6%	1.7%
Aurora	99,581	73,761	11,814	237	1,314	12,455	22,864
% of Total	100.0 %	74.1%	11.9 %	0.2%	1.3%	12.5%	23.0%
North Aurora	5,940	5,496	184	9	158	93	307
% of Total	100.0 %	92.5%	3.1%	0.2%	2.7%	1.6%	5.2%
Kane County	317,471	269,675	19,006	620	4,474	23,696	43,535
% of Total	100.0 %	84.9%	6.0%	0.2%	1.4%	7.5%	13.7%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-1 Data)

2.4.1.3 Cohesion

Neighborhoods

Neighborhoods and subdivisions near the Illinois Route 56/Oak Street Alignment are identified on Exhibit 2.4-2. Recently constructed or under construction developments include: Harfield Estates, Pine Creek, the Vineyards, Kirkland Farms, Savannah, and Summer Wind. West of the Fox River, the residential areas north and south of Oak Street exhibit cohesive qualities. Subdivisions west of Randall Road, which have been constructed within the past several years, have not yet developed a cohesive character that can be demonstrated through degree of stability.

More established neighborhoods occur between Randall Road and Illinois Route 31. This area consists primarily of one- and two-story wood frame and brick single-family residential buildings dating approximately from the 1960's and 1970's. Additionally, there are newer single-family subdivisions north of Oak Street, such as Timber Oaks and Willow Lake. Homes are located on lots generally less then 10,000 square feet, and are well maintained. According to Village officials and real estate professionals active in this area, these neighborhoods are predominantly owner occupied and considered stable.

Residential interaction is focused around the use of several public facilities. Students north of Oak Street attend Goodwin Elementary School, which is south of Oak Street (see Exhibit 2.4-2). Residents south of Oak Street cross the roadway to Highlands Park. In addition, officials from the Village of North Aurora indicated that there is some pedestrian traffic between residential areas and the commercial centers that exist and are being constructed along Randall Road, at Oak Street. Neighborhood watch signs also indicate a degree of resident interaction and vested interest in the area.

The area between Illinois Route 31 and the west bank of the Fox River contains a small residential neighborhood, a few businesses, a fire station, and community center. The housing in this neighborhood is predominantly single-family residential, but some units are rented. This is an older area that was developed prior to the neighborhoods to the west along Oak Street. Since there is no through access in an east/west direction, this neighborhood is relatively quiet and isolated.

Institutional/Governmental

Schools

The South Region is served by West Aurora School District #129 and Batavia School District #101. Both service areas include areas east and west of the Fox River (see Exhibit 2.1-2). Public and private facilities are shown on Exhibit 2.4-1. The alignments considered pass near the Mooseheart Elementary and High School (private); Marmion Academy (private); Fox River Valley Baptist Church and School (private); and the Schneider and the Goodwin Elementary Schools (public). Jewell Middle School, which is scheduled to open in the fall of 1998, is west of Randall Road and north of Oak Street.

Currently, there is one crossing guard location in District #129, at Oak Street and Sycamore. This guard helps students crossing Oak Street to get to Goodwin Elementary School. Students north of the Mooseheart alignment are bused to Schneider Elementary School. Students in subdivisions east of Schneider Elementary School use the sidewalk along Illinois Route 56. Buses serving District #129 currently make no stops on Mooseheart Road or Illinois Route 56. The bus stops twice along Oak Street to pick up students. The primary routes traveled by school buses serving the District are Illinois Route 56, Oak Street and Illinois Routes 25 and 31.

Emergency services
Aurora and North Aurora each maintain a municipal police department. Unincorporated portions of Kane County are serviced by the Kane County Sheriff's Department. Fire and ambulance service in the corridor is provided by the Aurora, Batavia, and North Aurora Fire Protection Districts (see Exhibit 2.1-3). The Marywood Fire Protection District still exists, but the area within its boundaries is served by the Aurora Fire Protection District. Emergency service areas are split by the Fox River.

Health care
No local or regional health care facilities are located within the Illinois Route 56/Mooseheart Road/Oak Street Corridor. The South Region is served by two medical facilities in Aurora: Copley Memorial Hospital and Mercy Center for Health Care Services (see Exhibit 2.4-1).

Parks and recreation
The South Region is served by the Fox Valley Park District, with portions of the northern boundary in the Batavia Park District (see Exhibit 2.1-4). Both districts include areas east and west of the Fox River. Other public facilities are owned and maintained by the Kane County Forest Preserve District and the City of Aurora. The South Region offers a diverse array of park and recreation resources, both public and private. For additional information on parks, see Section 2.4.3.

2.4.1.4 Regional Economics
Household income statistics for the South Region are shown in Table 2.4-6. Aurora and North Aurora each have median income levels below that of Kane County. In addition, Aurora has a relatively high percentage of residents with incomes below the poverty level (10.6%), in comparison to all of Kane County (6.8%).

2.4.1.5 Environmental Justice
The alignment for the IL 56/Oak Street is located in the census tracts #8528.02, #8529.02, #8530.04, and #8530.01 (See Exhibit 2.4-3a).

Based on conversations with local officials, interviews with affected property owners; analysis of census data, and field reviews, there does not appear to be any other known concentrations of low-income or minority populations within this corridor, except as noted below.

A rental apartment community (Butterfield Trails) north of IL Route 56 in North Aurora in census tract #8528.02 is subsidized with Section 8 federal funding (See Exhibit 2.4-3a). This program provides rent assistance based on income and family size. Of the apartment community's 96 units, 12 (12.5%) are subsidized.

Census tract #8529.02 south of IL Route 56 has a higher low-income population percentage than Kane County as a whole. However, the percentage of low-income population in Aurora as a whole is comparable to that of census tract #8529.02 (See Table 2.4-6).

The Banbury Nursing Home is on Banbury Road, near Schneider School. A senior housing center is located north of the East-West Tollway (I-88) along IL Route 31. In addition, North Aurora municipal officials indicated that the attached single-family units south of Oak Street, near Harmony Court, are designed and marketed to seniors.

Census tract #8529.02 south of IL Route 56 has 27.3% minority population while Aurora has 36% and Kane County as a whole has 21.1%

Table 2.4-6
Income (1989), Illinois Route 56/Oak Street Corridor

Census Tract/Area	Median Household Income	Mean Household Income	% Persons Below Poverty Level*
# 8528.02	$50,899	$51,670	3.0%
# 8529.02	$34,784	$38,136	11.0%
# 8530.01	$46,167	$46,832	2.2%
# 8530.04	$36,250	$41,473	4.3%
Aurora	$35,039	$39,079	10.6%
North Aurora	$38,308	$41,450	4.2%
Kane County	$40,080	$46,835	6.8%

Source: 1990 Census, U.S. Department of Commerce, Bureau of the Census, (STF-3 Data)

**Does not include institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.*
Poverty statistics are based on a definition originated by the Social Security Administration in 1965 and subsequently modified by Federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget in Directive 14 as the standard to be used by Federal agencies for statistical purposes. Poverty thresholds are based on family size and composition and are revised annually to allow for changes in the cost of living.

In 1990, the civilian labor force unemployment rates in Aurora and North Aurora were 6.1% and 3.2%, respectively. These rates compare to figures of 4.7% and 6.6% for Kane County and the

State of Illinois, respectively. The manufacturing and service industries employ the most City of Aurora residents, 27.6% and 25.9% of the working labor force, respectively. These same two industries are also the top employers in North Aurora. However, in North Aurora, the service industry employs the greatest number (32.5%) with manufacturing second (18.1%).

Major employers in Aurora and North Aurora are listed in the table that follows. These numbers show the importance of the manufacturing and service industries to both economies.

Table 2.4-7
Major Employers, Aurora and North Aurora

Company	Estimated Employment
Caterpillar Tractor Company (Aurora)	3,050
Hollywood Casinos (Aurora)	1,500
Metropolitan Life Insurance (Aurora)	1,100
Mercy Center (Aurora)	1,000
Copley Memorial Hospital (Aurora)	860
Sears Roebuck & Co. (Aurora)	750
City of Aurora	676
National Seal (Aurora)	500
Farmers Insurance (North Aurora)	500
Aurora Pump (North Aurora)	325
Aurora Packing (North Aurora)	185
Dart Manufacturing (North Aurora)	125
Professional American Collections (North Aurora)	100
Daco (North Aurora)	84
D.R. Sperry (North Aurora)	65
Fibrex (North Aurora)	60

Sources: Community Profile: Aurora, Kane/DuPage Co. Illinois Department of Commerce and Community Affairs. April 8, 1994.

Community Profile: North Aurora, Kane Co. Illinois Department of Commerce and Community Affairs. January 14, 1994.

Table 2.1-5 illustrates anticipated employment growth in Kane County townships. Employment growth in Batavia and Geneva Townships (56.9%, combined) is projected to grow at a faster rate than Kane County (43.2%). Employment within Aurora Township is projected to occur at a more moderate pace of 14.7%.

Aurora Township has 47 separate tax districts and Batavia Township has 36. The school districts (West Aurora School District #129 in Aurora Township and Batavia School District #101 in Batavia Township) are the tax districts collecting the largest amount of property taxes in each townships. In general, schools collected most of the property taxes levied in both townships (59.3% in Aurora Township and 69.6% in Batavia Township). The following table illustrates the distribution of tax revenues by collecting source.

Table 2.4-8
Property Taxes by Collecting Source

Jurisdiction	Percent of Property Tax Dollars for Aurora Township	Percent of Property Tax Dollars for Batavia Township
School Districts	59.3	66.9
Cities and Villages	18.9	8.7
Park Districts	5.5	5.9
Kane County	6.3	6.8
Townships and Road Districts	5.1	3.0
Library Districts	0.3	2.2
Fire Districts	1.2	0.9
Kane County Forest Preserve	1.5	1.7
Miscellaneous Districts	2.0	1.2

Source: 1994 Kane County Abstract of Taxes. Kane County Clerk. April 1995

2.4.2 Agriculture

Agricultural parcels within the potentially affected area of the Illinois Route 56/Oak Street corridor are shown on Exhibit 2.4-2. For additional general background on agriculture, see Section 2.1.2.

Institutions in the South Region own much of the property being used for agricultural purposes. Approximately 400 meters (1,300 feet) north of the corridor, the Loyal Order of Mooseheart farms approximately 350 hectares (870 acres) out of the 480 hectares (1,200 acres) they own. Proceeds from these farming activities help support the operating costs and programs (such as 4-H) of Mooseheart. This farm is outside of the Illinois Route 56/Oak Street alignment. The Marmion Abbey owns and operates a Christmas tree farm on properties north of Illinois Route 56, near Hart Road and Raddant Road, north of their buildings. Proceeds from the sale of these trees help support the Abbey, which is responsible for the operation of the Marmion Academy, an all-boys high school.

2.4.3 Special Lands (Forest Preserves, Parks, etc.)

The special lands for the south region are illustrated on Exhibit 2.4-4. The Fox River Trail and the Illinois Prairie Path, because they cross several regions, are discussed in Section 2.1.3. The other properties of particular interest in this region include Highlands Park in the Village of North Aurora, the Red Oak Trail, and the Fox River Trail West.

The Fox Valley Park District is the major provider of special lands of interest in the south region. They own or lease approximately 780 hectares (1,920 acres) scattered among 40 sites. These facilities include open space, playgrounds and a proposed golf course.

Highlands Park - Fox Valley Park District
Highlands Park is located in the Village of North Aurora approximately 1.28 kilometers (0.8 miles) west of the Fox River on the north side of Oak Street. The park is surrounded by residential property. It is a rectangular parcel of 5.26 hectares (13 acre). One of the local streets, Sycamore Drive, bisects the park into pieces of 3.95 hectares (9.75 acres) and 1.31 hectares (3.25 acres). Currently, the park provides a playground, basketball court, two sand volleyball courts and two softball fields. The park is also used as a detention basin for stormwater runoff. This park was developed with a setback in anticipation of a potential widening of Oak Street.

Red Oak Trail (a.k.a. Fox River Trail East) - Fox Valley Park District
The Red Oak Trail begins on the east bank of the Fox River at the Illinois Route 56 bridge and travels north through the Red Oak Nature Center and Glenwood Park Forest Preserve, where it connects with the Batavia Spur of the Illinois Prairie Path before meeting with the Fox River Trail, just north of Fabyan Parkway in Batavia. The Red Oak Trail makes up part of the 25.8 kilometer (16 mile) 'Red Oak Loop' which includes parts of the Fox River Trail West, Red Oak Trail, and the Aurora and Batavia branches of the Illinois Prairie Path.

Monies from the Land and Water Conservation Fund were used to develop the Red Oak Trail (Project Number #17-00890). The Kane County Forest Preserve District, Fox Valley Park District and Batavia Park District were involved in this project.

2.4.4 Transportation

2.4.4.1 Roadway

Illinois Route 56 is the only east-west highway crossing the Fox River from north of the East-West Tollway to Wilson in Batavia, a distance of 5 kilometers (3 miles) (see Exhibit 1.4-1). Wilson is of limited value to travelers within the study region because it terminates on the east shortly after crossing the Fox River. Mooseheart Road and Oak Street provide limited continuity for east-west travel. These roadways are located west of the Fox River and do not cross the river. Interstate Route 88, the East-West Tollway, runs east-west approximately 2.5 kilometers (1.5 mile) south of Illinois Route 56. Fabyan Parkway, at 7 kilometers (4.5 miles) north of Illinois Route 56, is the only Kane County owned and maintained roadway crossing the Fox River. Jurisdiction of roadways crossing the Fox River are as follows:

TABLE 2.4-9
Existing River Crossings
South Region

River Crossing	Jurisdiction	No. of Lanes
Illinois Route 38	IDOT	4
Fabyan Parkway	Kane County	4
Illinois Route 56	IDOT	2
I-88 (East-West Tollway)	ISTHA	4
Wilson	City of Batavia	2

In 1995 Orchard Road was extended northeasterly from Oak Street, connecting to the west end of Mooseheart Road at Randall Road. It carries two lanes in each direction separated by a 4-foot painted median. The combination of Orchard Road and Randall Road now forms a continuous link from an interchange on the East-West Tollway (I-88) north to McHenry County.

The CATS *2020 Regional Transportation Plan* includes the construction of an additional lane in each direction for the East-West Tollway (Interstate 88) from Illinois Route 31 east to I-290.

The Illinois Department of Transportation has completed a Phase I study for the rehabilitation of the bridge carrying Illinois Route 56 over the Fox River. The scope of work includes the replacement of the Trail Race-Fox River bridge located just east of the Illinois Route 56 bridge over the main channel of the Fox River. The project also includes improvement of the approach roadways. That project was placed on hold pending further development of the Fox River Bridge Crossings Project.

The City of Aurora, in cooperation with the Illinois Department of Transportation and Federal Highways Administration, has been pursuing the construction of a new bridge carrying Sullivan Road over the Fox River. Sullivan Road runs east and west south of the East-West Tollway. The project is in the design stage, awaiting funding for construction.

2.4.4.2 Transit

Pace operates a number of bus routes in Aurora. Pace bus route 802, which originates in the City of Geneva, runs through the Village of North Aurora on Illinois Route 31 to the Transportation Center in Aurora. Pace route 523 operates from the Aurora Transportation Center to North Aurora along Illinois Route 31.

Metra operates commuter rail oriented to downtown Chicago from Aurora and Geneva.

2.4.4.3 Non-Motorized Transportation

The Fox Valley Park District maintains two trails, the Fox River Trail West and Fox River Trail East. The trails are located along the west and east banks of the Fox River. Additionally, the Illinois Prairie Path is located east of the study region and runs northwesterly. These trails are primarily recreational. For more information on paths as they are relevant to this project, see Sections 2.1.3 and 2.4.3.

2.4.4.4 Other Modes

The BNSF (formerly the Burlington Northern) Railroad runs along the west bank of the Fox River approximately parallel to Illinois Route 25. It carries freight trains only. There are no train stops within the study region. It operates a maximum four (4) trains per 24 hour period with no set schedule. The maximum speed is 32 km/hr (20 mph). The railroad has no plan for improvement nor abandonment of the tracks at this time.

2.4.5 Cultural Resources

2.4.5.1 Standing Structures

For a location map, see Exhibit 2.4-4a.

The two-and-one-half story Queen Anne farmhouse located at 4S 335 Deerpath Road, Aurora Township, rises from what appears to be a concrete foundation and is sheathed with narrow clapboard siding. The setting of this farmstead consists of substantial acreage that includes a number of outbuildings, among which are a barn, silo and milk house. Given the integrity and character of the farmhouse, further study would be required to determine National Register eligibility. As this structure will not be affected by the project, no additional studies to determine eligibility for the National Register of Historic Places (NRHP) will be conducted for this project.

The two-story clapboard sided residence at 3 Oak Street (Croushorn's Hotel), North Aurora, is oriented on an east/west axis. Despite the undistinguished vernacular form of the building, its large scale suggests that perhaps it once functioned as a boarding house. The SHPO has determined that this site is not eligible for inclusion on the NHRP.

The two-story brick structure located at the northeast corner of Illinois Route 56 and Illinois Route 31, North Aurora, exhibits the collegiate Gothic style, which is indicative of educational facilities such as this. Despite alterations to the previous front entrance, the integrity of this structure has been maintained. Its integrity, combined with the structure's association with the development of education within North Aurora, suggest further study to determine National Register eligibility. As this structure will not be affected by the project, however, no additional studies to determine eligibility for the NHRP will be conducted for this project.

The one-story factory at 112 Grant Street, North Aurora, is situated along the east bank of the Fox River. The factory was built for the D.R. Sperry Company late in the nineteenth century, although the company was founded as early as 1868 in nearby Batavia. Despite these intrusions and the structure's utilitarian appearance, the D. R. Sperry company continues to maintain the building in its original industrial capacity. This coupled with the factory's decent integrity of form, would merit further study to determine NRHP eligibility. Consultation with the SHPO demonstrated that the impacts to site consist only of some minor access revisions that would constitute no effect. Therefore, no additional studies will be conducted for this project.

The residence at 131 Illinois Route 25 in North Aurora, appears originally to have been a two-story gabled ell house. Despite mostly modern windows, this residence has a striking appearance as it is situated on a large lot. Also included on the property is a two-story carriage house, which is constructed of quarried stone. The house (with its subsequent additions), the carriage house, and the large lot combine to suggest a level of prosperity for its historical owner(s), who at present is/are unknown. Considering the overall historic integrity of the property and the lack of knowledge regarding the likely prominent owner(s), further study would be required to determine its NRHP eligibility. As this structure will not be affected by the project, no additional studies to determine eligibility for the NRHP will be conducted for this project.

The gabled ell farmhouse at 35W 117 South Butterfield rests on a coursed stone foundation and is sheathed with clapboard siding. Vernacular in form, this residence and its numerous outbuildings represent an example of a standard farmstead. The arrangement of the property overall provides a good example of farmstead layout. Further study would be required to determine NRHP eligibility. As this structure will not be affected by the project, no additional studies to determine eligibility for the NHRP will be conducted for this project.

2.4.5.2 Archaeology

Fieldwork on the Illinois 56/Oak Street alignment resulted in locating six isolated finds and the definition of 21 new sites. Four sites were recommended for Phase II testing or protection from disturbance.

Fieldwork was also completed on the Mooseheart Road alignment. With that alignment no longer under consideration due to section 4(f) considerations, those findings are not relevant to this project.

2.4.6 Geology

The geology of the south region, particularly surrounding the Illinois Route 56/Oak Street corridor, consists of glacial drift overlying the Silurian bedrock. This bedrock consists of the Kankakee and Elwood Formations at an approximate depth to bedrock ranging from 18 to 40 meters (60 to 130 feet). No major bedrock valleys are identified in the immediate vicinity of the Illinois Route 56/Oak Street corridor.

The overlying glacial deposits consist of the Yorkville Till Member of the Wedron Formation east of the river which comprises the Minooka Moraine. West of the river, the upper glacial deposits are the Equality Formation, which consists of quiet water and lake bed deposits overlying the Yorkville Till.

Some coarse grained sands and gravels are present as valley train deposits along the banks of the Fox River, and consist of the Henry Formation, generally less than 6 meters (20 feet) in thickness. Some sand and gravel pits were formerly present on the east side of the river, south of the Illinois Route 56/Oak Street corridor. Conco Western Stone operates a stone quarry in the Kankakee and Elwood Formations south of the proposed corridor on the east side of the river.

2.4.6.1 Bedrock and Structural Geology

The bedrock surface beneath the proposed Illinois Route 56/Oak Street corridor consists of Silurian age dolomite of the Kankakee and Elwood Formations. No major bedrock valleys are present in the area of the corridor, and the top of rock is at a fairly uniform elevation of approximately 200 meters (650 feet MSL), ranging in depth from 40 meters (140 feet) east of the river beneath the Minooka Moraine to 15 meters (50 feet) deep west of the Fox River. The dolomite is a commercial stone resource, exceeding 15 meters (50 feet) in thickness, and is mined south of the corridor at the Conco Western Stone Company quarry.

2.4.6.2 Surface Geology and Topography

The surface geology along the Route 56/Oak Street corridor is different on the east side of the Fox River from the west side of the river. East of the river, the glacial deposits form the Minooka Moraine with relief totally 40 meters (140 feet), rising to nearly 240 meters (790 feet MSL) elevation. At the Fox River, the elevation is less than 200 meters (650 feet MSL). West of the river, the corridor is underlain primarily by Equality Formation, quiet water, lake bed silt and clay sediments, and Henry Formation deposits. These formations form relatively flat topography with relief of 10 meters (30 feet) along the corridor, generally at an elevation of approximately 213 to 216.5 meters (700 to 710 feet MSL) elevations.

Valley train deposits of the Henry Formation are present along the Fox River Valley. These deposits generally do not exceed 6 meters (20 feet) in thickness. Former sand and gravel pits are present in these deposits on the east side of the river south of the proposed corridor.

The Illinois Route 56/Oak Street corridor includes soils typically associated with supporting the following ecotypes: Wet Savanna, Mesic Savanna, Mesic Prairie, Mesic Forest and Wet Prairie.

Current plant communities are shown on Exhibit 2.4-6.

2.4.6.3 Mineral Resources

Sand and gravel resources are limited to relatively thin, narrow valley train deposits along the Fox River. The deposits in the vicinity of the Fox River are generally less than 6 meters (20 feet) thick, and are limited to the immediate vicinity of the Fox River. Former sand and gravel mining east of the Fox River and south of the proposed corridor is no longer active.

Areas of Silurian dolomite with mining potential within this corridor are confined to the outcrop belt along the Fox River covered by less than 15 meters (50 feet) of overburden on both sides of the river. At this location, strata exposed by the river comprise the lower section of the Silurian and the Kankakee and Elwood Formations. Conco Western Stone Company is located approximately one mile south of the proposed corridor east of the Fox River, and is quarrying dolomite from the Kankakee and Elwood Formations. A deeper portion of the quarry exposes the Elwood Formation resting directly on the Ordovician Maquoketa shale.

No mining is proposed within the proposed corridor, and with the exception of the dolomite at depth, no commercial deposits of stone or sand and gravel are identified within the proposed corridor alignment.

2.4.6.4 Groundwater Resources

Groundwater Aquifers and Usage

A narrow area of an unconfined sand and gravel aquifer is present in the valley train deposits in the immediate vicinity of the Fox River. This area is covered by relatively thin, fine grained deposits of silt, sand, and some gravel generally less than 6 meters (20 feet) in thickness. Well data indicate that the bedrock is exposed or near the ground surface in this area, precluding thick, unconfined surficial aquifers. No major bedrock valleys are present. A confined sand and gravel aquifer has been identified both east and west of the river approximately 15 to 30 meters (50 to 100 feet) thick west of the river, diminishing to less than 5 meters (15 feet) east of the river.

The Illinois State Water Survey and Illinois EPA indicate four public water supply wells within 150 meters (500 feet) of the Route 56/Oak Street corridor. Six private wells are located within 150 meters (500 feet) of the corridor, five on the west side of the river where a confined sand and gravel aquifer is thickest, and one on the east side of the river, extending to greater than 150 meters (500 feet) deep.

Groundwater Quality

Along the proposed Route 56/Oak Street corridor, a Speedway gasoline service station at 15 Randall Road, southeast corner of Oak Street and Randall Road, was identified as a leaking underground storage tank (LUST) site. A Freedom of Information Act (FOIA) request and review of the data provided indicate petroleum contamination in the groundwater in the immediate vicinity of the Speedway station, but not in wells located near to either Randall Road or Oak Street as of sampling performed in September, 1995.

In addition to the Speedway service station site, an Illinois DOT report dated August 17, 1995 identified volatile organic compounds in a groundwater sample obtained from the D.R. Sperry Company located at 112 North Grant Street (northwest corner of River and Butterfield Roads, adjacent to the east side of the Fox River). The IDOT report states that the groundwater was obtained at a depth of 1.1 meters (3.2 feet) from a test hole installed on or adjacent to the Sperry site. Qualitative analysis for volatile organic compounds reported the presence of benzene, ethylbenzene, and toluene. Since the site was avoided, quantitative analysis was not undertaken.

Groundwater quality data are available for three wells (five separate data sets) less than 150 meters (500 feet) deep, and 13 wells greater than 150 meters (500 feet) deep consisting of 51 separate data sets. Comparison of the analyses of the deeper versus shallower wells for the Route 56/Oak Street corridor indicate higher concentrations of sodium, calcium, iron, sulfate, hardness as calcium carbonate, and chloride in the shallower wells as opposed to the deeper wells. This difference is a result of natural variation between the aquifers.

Several parameters had maximum values that exceeded Class I potable drinking water standards. No sources of contamination have been identified in the IEPA records reviewed associated with these exceedances. For deeper wells, the maximum concentrations of manganese and mercury exceeded the standards, and for the shallower wells, the maximum concentrations for arsenic, boron, iron, and manganese were exceeded.

2.4.7 Water Quality and Water Resources

The South Region of the Fox River is associated with the Illinois Route 56/Oak Street corridor that crosses the Fox River at river mile 52.0 (Exhibit 2.1-7). Illinois Route 56 currently crosses Indian Creek via a culvert, and there is no existing bridge at the proposed Fox River crossing.

The existing land uses near the Fox River crossing include the North Aurora Village Hall, and commercial and light industrial uses. The corridor in this region is comprised of developed land, agricultural land, and undeveloped land. Bank vegetation consists of trees and mowed grass.

Fox River

The Fox River is 120 meters (400 feet) wide and 0.5 to 2.5 meters (1.6 to 8.2 feet) deep near the proposed crossing (Taylor, et al., 1995). The river within this corridor is pooled, with slow moving water and high amounts of sedimentation (Taylor, et al., 1995).

There are two wastewater treatment plants (WWTP) for Batavia and Mooseheart in close proximity to the crossing and two additional WWTPs (Geneva and St. Charles) upstream. There are two dams located in the region: one approximately 0.2 kilometers (0.1 miles) downstream and a second dam approximately 4.5 kilometers (2.8 miles) upstream of the Fox River crossing. The dams have resulted in slow water velocity and high sedimentation.

The City of Aurora obtains a portion of its water supply from the Fox River using an intake near

river mile 50.0, 3.2 kilometers (2.0 miles) downstream of the corridor. Aurora currently receives about half its potable water from the Fox River and the remaining half from groundwater aquifers (Singh, 1995).

Fox River Ambient Water Quality Monitoring Network (AWQMN) station DT38 is located approximately 9.8 kilometers (6.1 miles) downstream of the Illinois Route 56/Oak Street corridor (Exhibit 2.1-7). Indian Creek merges with the Fox River upstream of station DT38. Annual mean chloride levels during the 1990-1995 sampling period ranged between 70 and 108 mg/ℓ with a maximum level of 242 mg/ℓ. All chloride levels were below the General Use Water Quality Standard of 500 mg/ℓ and the public water supply standard of 250 mg/ℓ. The only metal calculated to exceed the water quality standards was cadmium.

The fish and mussel study was originally conducted for the Mooseheart Road corridor located immediately upstream. Due to the close proximity of the study area to the Illinois Route 56/Oak Street corridor, the Mooseheart study was applicable to the South Region.

During the fish survey, the state-listed threatened fish, river redhorse (*Moxostoma carinatum*) was collected and released in August 1994 in the Fox River just below the mouth of Mill Creek, about 1.2 kilometers (0.75 miles) upstream of Illinois Route 56 (Taylor, et al., 1995).

Collection records indicate that in addition to the river redhorse collection, a greater redhorse (*Moxostoma valenciennesi*) was collected in the same area in October 1993. The greater redhorse is a state-listed endangered fish. The greater redhorse and river redhorse are reportedly very sensitive to pollution and have an intolerance to turbid water. They prefer sand/gravel substrates with moderate to swift current (Harris, 1993).

The mussel survey conducted for the Mooseheart Road corridor and applicable to the Illinois Route 56/Oak Street corridor identified nine species of dead mussels. No live mussels were collected. The dead species collected included the state threatened spike (*Elliptio dilatata*) and the elktoe (*Alasmidonia marginata* - a federal species of concern). The river is too silted to be suitable habitat for mussels at the Mooseheart corridor (INHS, 1996).

The aquatic macroinvertebrate survey was similarly conducted for the Mooseheart corridor but is applicable to the current Illinois Route 56/Oak Street corridor. Nine taxa of macroinvertebrates were collected for this site with oligochaeta representing the taxon with the most individuals collected (>200) (Taylor, et al., 1995). No federal or state listed endangered or threatened species of aquatic macroinvertebrates, or species under consideration for such listing, were collected from the Fox River in the vicinity of any of the proposed bridge corridors in Kane County during the present surveys, nor are any known or thought likely to occur at these sites (Taylor, et al., 1995).

The Index of Biotic Integrity (IBI) determined for station DT38 was 43 (IEPA, 1996). This is the highest IBI determined for the three AWQMN stations within the study area. The Macroinvertebrate Biotic Index (MBI) determined at this site was 5.4. The Potential Index of Biotic Integrity (PIBI) at this station was determined to be 60, which characterizes the area of

DT38 as a unique aquatic resource (IEPA, 1996). These indices indicate the area near the monitoring station is a highly valued resource. The region of the Fox River from Batavia to the confluence at the Illinois River was assessed for overall use as a full support stream. The aquatic life use and fish consumption assessment at DT38 is also assessed as full support, while swimming was rated as partial support/moderate impairment (IEPA, 1996).

Indian Creek

Indian Creek is a direct tributary to the Fox River. Indian Creek is approximately 14.6 kilometers (9.1 miles) long and originates northwest of the Kirk Road and Illinois Route 56 intersection. The stream flows south, parallel to the Fox River, where it is crossed by the proposed corridor at Illinois Route 56. The watershed includes agricultural fields and residential development.

Where the proposed roadway crosses the stream, the substrate was characterized as clay and silt. Recent residential construction had caused siltation in the immediate area and up to 50 meters (165 feet) downstream (Taylor, et al., 1997). This intermittent stream has a width of 2 to 6 meters (6.6 to 20 feet) with a depth of 0.3 to 0.8 meters (1 to 2.6 feet). Shoreline vegetation consists of grasses with minimal canopy cover. The upstream banks are rocky and stripped of vegetation due to on-going residential development.

INHS sampled Indian Creek for fish, mussels, and water quality at the point where the corridor crosses the stream (Taylor, et al., 1997). Water quality parameters measured in the field include temperature, dissolved oxygen, conductivity (field and specific) and salinity. Only temperature and dissolved oxygen have established General Use Water Quality Standards and these standards were not exceeded.

The fish survey conducted at Indian Creek collected six species of fish. The fathead minnow was the most abundant fish collected at this location. The mussel survey collected one lilliput (*Toxolasma parvus*) shell (Taylor, et al., 1997). The turbidity of the water prevented visual inspection of the substrate. The substrate was soft mud and silt.

No aquatic macroinvertebrate studies were conducted at this site, and the IEPA did not conduct a use assessment for Indian Creek.

2.4.8 Wetlands

The locations of the sites inventoried for wetland determinations in the Illinois Route 56/Oak Street Corridor are shown on Exhibit 2.4-6. Table 2.4-10 summarizes the wetlands delineated in this corridor. General land use and vegetative cover of areas adjacent to identified wetlands are also illustrated in Exhibit 2.4-6.

The Illinois Route 56/Oak Street corridor was subject to two separate wetland determinations; one for the Illinois Route 56 /Oak Street corridor itself and another as part of the previous Mooseheart

Road corridor studies.

Wetland Nos. 1 and 3 described below are outside the proposed corridor. The site identified as Wetland No. 14 was originally delineated during the Mooseheart Road corridor studies. All other wetlands identified for either of the two corridors are outside the project limits.

Wetland No. 1
This forbland is located 38 to 95 meters (125 to 312 feet) south of Illinois Route 56 and from 533 to 591 meters (1,750 to 1,938 feet) east of Hart Road. While hydric soils were present, wetland hydrology and a predominance of hydrophytic vegetation was not. Therefore, the site was not determined to be a wetland. The NWI classifies the site as a temporarily flooded, emergent, palustrine wetland (PEMA). The site is also outside of the area that will be impacted by the proposed project. Dominant vegetation includes fat-hen saltbush (*Atriplex patula*), spikerush (*Eleocharis erythropoda*), and crested rye grass (*Lolium perenne*). The FQI for this site is 2.5 and the mean C is 0.9, indicating a poor quality, disturbed site.

Wetland No. 2
Wetland No. 2 is a 1.3 hectare (3.2 acre) wet meadow located 144 to 295 meters (472 to 968 feet) north of Illinois Route 56 and 48 to 153 meters (157 to 502 feet) east of Kirk Road. This site is not classified by the NWI and has been designated by the National Resources Conservation Service as a farmed wetland. The site lies within a crop field in a natural drainage area and is probably cropped in dry years. The FQI for this site is 3.2 with a mean C of 1.0, indicating poor natural quality. Dominant vegetation includes fall panic grass (*Panicum dichotomiflorum*) and water smartweed.

Wetland No. 3
Wetland No. 3 is a 0.3 hectare (0.7 acre) floodplain forest located between 768 and 826 meters (2,520 to 2,709 feet) north of Illinois Route 56 and between 132 to 192 meters (433 to 630 feet) east of Kirk Road. It is located outside of the impact area of the proposed Illinois Route 56/Oak Street corridor.

Wetland No. 4
Wetland No. 4 is a marsh that extends for 504 to 720 meters (1,653 to 2,362 feet) south of Oak Street and is bisected by Randall Road. The dominant vegetation is reed canary grass, narrow leaf cattail, and the common cattail. The marsh has fair floristic quality, covers an extensive area and provides considerable water storage. The Floristic Quality Index (FQI) for this site is 10.3 with a mean C of 2.3. This wetland is classified by the NWI as partially drained ditched, seasonally flooded, emergent, palustrine wetland (PEMCd). This marsh extends for a large distance outside the corridor and, therefore, the entire size was not determined.

Wetland No. 5
Wetland No. 5 is a 0.1 hectare (0.25 acre) marsh 55 to 120 meters (180 to 394 feet) south of Oak Street and 732 to 756 meters (2,400 to 2,480 feet) east of Orchard Street. It may have been created by the landowner and provides some wildlife habitat. Dominant vegetation includes the

inland rush *(Juncus interior)*, common water horehound, reed canary grass, Canada goldenrod *(Solidago canadensis)*, and the common cattail. The FQI for this site is 8.5 with a mean C of 1.8, indicating poor natural quality. This site was not classified by the NWI.

Wetland No. 14

Wetland No. 14 is a wet shrubland located immediately south of Illinois Route 56, about 60 meters (197 feet) east of Raddant Road. This site was not classified by the NWI, and is dominated by black willow (*Salix nigra*) and reed canary grass. The FQI for this site is 5.0, indicating poor natural quality. This is a jurisdictional wetland.

TABLE 2.4-10
SUMMARY OF WETLAND CHARACTERISTICS IN THE ILLINOIS ROUTE 56 / OAK STREET CORRIDOR

Map No.	NWI Classification	NRCS Classification	Predominant Vegetation	Soil Type	Surrounding Land Use and Basin Type	FQI [1]	Function	Wetland Size, hectares (acres)
1	PEMA	FW	fat hen salt bush spikerush rye grass	Milford	Non-wet	2.5	---	Non-wetland
2	NM [2]		water smartweed fall panic grass	Milford	Depression surrounded by cropland and farmed	3.2	Flood storage Wildlife habitat	1.3 (3.2)
3	PFO1C	W	green ash American elm black willow	Milford	Floodplain forest	10.6	Flood storage Wildlife habitat	0.3 (0.8)
4	PEMCd	FW	reed canary grass cattails	Drummer	Depression surrounded by cropland and development	10.3	Flood storage Wildlife habitat	undetermined [3]
5	NM [2]	W	inland rush water horehound reed canary grass cattails	Milford	Depression surrounded by cropland and development	8.5	Wildlife habitat	0.1 (0.2)
14	NM [2]	NIH	reed canary grass black willow	Milford	Depression along stream, cropland and roads	5.0	Flood storage	undetermined [3]

[1] FQI - Floristic Quality Index (Swink & Wilhelm, 1994 Methodology)
[2] NM = Not Mapped
[3] Extends for long distance outside corridor

NWI - National Wetland Inventory
NRCS - Natural Resource Conservation Service

NWI
P- Palustrine
EM - emergent
FO- forested
OW - open water
UB- unconsolidated bottom
A- temporarily flooded
C- seasonally flooded
F- semi-permanently flooded
G- intermittently exposed
H- permanently flooded
d- partially drained/ditched
f- farmed
h- diked/impounded
x- excavated
1- broad-leafed deciduous

NRCS
PC- prior converted
W- wetland
NIH- non-inventoried hydric soils
NI- non-inventoried

2.4.9 Biology

2.4.9.1 Vegetation and Cover Types

The Illinois Route 56/Oak Street Corridor primarily consists of agricultural areas west of the Fox River and developed lands east of the Fox River. These two land uses represent 79 per cent of the area in the corridor and limit available habitat. Table 2.4-11 presents the eight vegetative cover types described by Admiraal and Wilm (1995). No natural areas exist within the corridor. The Illinois Natural History Survey (INHS) identified the different cover types within the corridor and assigned letters to the different communities, which are referred to (in parentheses) in the text. These areas are shown in Exhibit 2.4-6.

TABLE 2.4-11
Cover Type in Illinois Route 56/Oak St. Corridor
(within 100 meter corridor)

Cover Type	Hectares
Developed	64
Agricultural	39
Upland Forest	5.6
Tree Plantation	3.2
Shrubland	3.7
Non-native Grassland	11.4
Forbland	0.9
Wet Shrubland	0.3
Wet Meadow	0.2
Marsh	0.1
Total	**122**

Seven areas of upland forest (E), differentiated into three upland forest communities, occur in the corridor. Approximately 1.9 hectares (4.8 acres) of a 6.8-hectare (17-acre) upland forest tract (E1/Site 13 in Hill, 1994) located southeast of the intersection of Illinois Route 56 and Hart Road are in the project corridor. A small 0.3-hectare (0.8-acre) parcel (E1) is located about 675 m (2,210 ft) east and north of the Illinois Route 56 and Hart Road intersection. Both are young, second-growth, mesic upland forests with scattered mature 40- to 90-year old trees (Admiraal and Wilm, 1995). Dominant species are white oak, northern red oak, and slippery elm. Some grazing and clearing is evident.

A wet-mesic upland forest (E3) is located at the northwest corner of the Hart Road-Illinois Route 56 intersection. This 0.3-hectare (0.8-acre) tract also contains second growth trees with

hackberry, green ash, wild black cherry, white oak, American elm, and Siberian elm as the dominant species (Admiral and Wilm, 1995). Shrubs, such as honeysuckle and herb garlic mustard, are also dominant showing disturbance of the area.

Two other wet-mesic upland forest parcels (E3) exist in the corridor. One 0.7-hectare (1.8-acre) tract is north of Oak Street and adjacent to Illinois Route 31 (E3/Site 12 in Hill, 1994) while the second is part of a larger tract just east of Illinois Route 25. These wet-mesic forest communities are all similar in vegetative characteristics (Admiraal and Wilm, 1995).

A commercial tree plantation (F) consisting of Austrian pine (*Pinus nigra*) and Scotch pine (*Pinus sylvestris*) is located north of Illinois Route 56, on the east and west sides of Hart Road (Wilm, et al., 1994). Only 3 hectares (7.5 acres) of the approximately 10-hectare (25-acre) plantation is in the project corridor. Between the plantation and Illinois Route 56 is a fence row (B) with young second growth trees (20 to 40 years old), saplings, and shrubs. Box elder, black walnut, and American elm are the dominant tree species with shrubs of gray dogwood, buckthorn, and smooth sumac *(Rhus glabra)* present (Admiraal and Wilm, 1995).

Four shrubland areas © are noted ranging from just less than 0.8 to 1.2 hectares (2 to 3 acres) in size, all located east of the Fox River, with two areas (C2) along the Burlington Northern railroad embankment, west of Illinois Route 25 (Admiraal and Wilm, 1995). A few box elder trees are present and shrubs and saplings of box elder predominate. Two shrubland areas (C1) are located east of Kirk Road and south of Illinois Route 56. These areas contain 5- to 10-year old slippery elm saplings, crabapple (*Malus* sp.), rose (*Rosa multiflora*), and cherry shrubs (*Prunus* sp.).

Six separate non-native grassland areas (D) are mapped throughout the corridor. Several appear to have formerly been hayfield or pasture, but are currently unused (Admiraal and Wilm, 1995). Some are mowed, particularly along the roadways. The largest areas occupy the wide road ditches along Illinois Route 56 west of Kirk Road.

Forbland communities (A) were noted at three locations along the Illinois Route 56/Oak Street Corridor. These three areas vary in size from 0.1 to 0.6 hectares (0.3 to 1.5 acres). Two parcels (A1 and A2), east of the Fox River near Hart Road, are adjacent to non-native grass land. The third forbland area (A2) is located adjacent to a fence row area at Randall Road and a residential area. Agricultural fields predominate in this area.

Three small areas of wet shrubland (H) are associated with drainage ditches in the corridor. Five to ten year old sandbar willow saplings and shrubs, and reed canary grass dominate the vegetation (Admiraal and Wilm, 1995).

Wetland areas in the project corridor include a wet meadow (J), wet shrubland (H), and marsh (I1 and I2). These are described in Section 2.4.8

2.4.9.2 Wildlife

Wildlife habitat in the Illinois Route 56/Oak Street Corridor consists of agricultural lands, suburban areas, and small tracts of upland forest. Suburban and industrial development have

limited the amount and quality of wildlife habitat in the corridor. Wildlife species that are normally present under such limited conditions are those that have adapted to living on edges of distinct habitats, thus named edge species, and those that can exist in close proximity to human activity.

Birds

The suburban landscape supports a typical avian community which consists of songbirds, woodpeckers, doves, and geese. A total of 33 bird species were counted by the INHS in the Illinois Route 56/Oak Street Corridor (Amundsen and Enstrom, 1996). The bird species included Canada goose, ring-necked pheasant (*Phasianus colchicus*), mourning dove, belted kingfisher (*Megaceryle alcyon*), red-bellied woodpecker, downy woodpecker, northern flicker, blue jay, American crow, black-capped chickadee, white-breasted nuthatch, starling, American robin, hermit thrush, cedar waxwing, American redstart (*Setophaga ruticilla*), northern cardinal, indigo bunting (*Passerina cyanea*), and a variety of sparrows, blackbirds, and finches.

The Illinois list of species of special concern counted during the survey included the golden-crowned kinglet, gray catbird, cedar waxwing, American redstart, and the song sparrow. A single brown-creeper (state threatened) was noted during the winter census; however, there were none spotted during the breeding census period.

Mammals

Several types of communities, including agricultural land, provide suitable habitat for a variety of mammals. Many habitat generalists use a variety of habitat types and occur in disturbed areas and close to humans (Hofmann, 1996). A total of 17 common mammal species were trapped or observed in representative natural communities, such as shrubland or forbland; however, 28 species are known or are likely to occur in the corridor.

The project corridor contains areas of upland forest, shrubland, and wetlands that can be used by small mammals, such as the white-footed mouse. Corridor trappings indicated the presence of the meadow vole (*Microtus pennsylvanica*, Hofmann, 1996).

The habitat requirements of two mammals, the river otter (state endangered) and bobcat (state threatened), were evaluated for this corridor. A river otter was observed in August, 1981 in the upper reaches of Mill Creek, 5 kilometers (3 miles) northwest of the Illinois Route 56/Oak Street Corridor. The field survey results and lack of records since 1986 suggest no river otters inhabit the bridge crossing area. The shoreline is developed and this makes it unlikely resident otters would occur there (Hofmann, 1996).

The project corridor contains too little forest cover and too much developed land to provide suitable habitat for bobcats. It is possible that a transient bobcat might appear in the western portion of the corridor (Hofmann, 1996).

Reptiles and Amphibians

Scattered forest segments and fragmented areas of natural vegetation limit areas of value to amphibians and reptiles (Phillips, 1995). Only common species are expected to occur in the project area.

2.4.9.3 Threatened and Endangered Species

Federal Listed Species
No federal threatened or endangered species were observed in the project area.

State Listed Species
Two state listed species were observed in the corridor, the greater redhorse and the river redhorse. Both of these species occur in the Fox River near its meeting with Mill Creek. This area is over a mile north of the Mooseheart Road crossing. There is no suitable habitat for these two fish species in the project corridor. The proposed project will not impact the greater river redhorse.

Spike (*Elliptio dilatata*, state threatened) - mussel
Dead/shells of the mussel, spike (state threatened), were found in the Fox River; however, silty river conditions do not provide suitable habitat for mussels in this corridor (INHS, 1/9/96). Exhibit 2.4-7 shows the approximate location where this species was located.

Greater redhorse (*Moxostoma valenciennesi,* state endangered)
The greater redhorse prefers clean water and occurs in sandy to rocky riffles of medium to large rivers. In 1993 this fish was collected in the Mooseheart Road area, 1 kilometer (0.62 miles) north of the project crossing (Taylor, et al., 1997).

River redhorse (*Moxostoma carinatum*, state threatened)
The river redhorse fish prefers swift, deep, gravelly riffles of small and medium rivers and is intolerant of turbid water, silty bottoms, or excessive pollution. In 1994 this species was collected in the Mooseheart Road area 1 kilometer (0.62 miles) north of the project crossing (INHS, 1/9/96).

2.4.10 Air Quality

The existing air quality for the study area, including available data that may apply to the South Region, is discussed in Section 2.1.10.

2.4.11 Noise

Noise analysis for a roadway project consists of comparisons of the existing traffic noise to the future Build and No-Build options. The analysis is defined in Section 4.1.11 and the results for the South Region are found in Section 4.4.11.

2.4.12 Special Waste

(See Exhibit 2.4-8 for locations)

Undetermined Waste Status
A shed containing electrical equipment for crossing signals for BNSF Railroad is located at the

southwest corner of Illinois Route 25 and Butterfield Road (Route 56), within 50 meters (160 feet) of the existing roadways. The shed contains lead-acid batteries in racks. Soil testing for lead performed by ISGS in a September 1995, Preliminary Environmental Site Assessment (PESA), indicated that total lead levels in this area are 100 to 140 ppm, potentially extending to roadway excavation and grading locations. The current IEPA Tier 1 residential cleanup objectives for lead is 400 ppm where ingestion exposure is possible and 0.0075 to 0.1 ppm TCLP lead where there is potential for groundwater ingestion exposure. Since less than background values of total lead was noted in 1995 and no change in the status of this site has been recorded as of July, 2001, this site is considered a low risk to the proposed roadway project as long as any excavated soils are tested for TCLP lead during preparation of the design report or prior to disposal.

D.R. Sperry & Company Foundry is a RCRA small quantity generator, and a former UST site located north of the Illinois Route 56/Illinois Route 25 intersection, 115 meters (350 feet) north of the proposed corridor centerline. The business started in 1868, manufacturing filter presses. The company had a gasoline UST that has been removed.

Since metal manufacturing often results in special wastes, the 1995 IDOT Preliminary Environmental Site Assessment included sampling at two locations between the current D. R. Sperry facility and the proposed corridor, 5 meters (16 feet) north of Route 56. No significant volatile organic compound (VOCs) levels were noted in the soil samples recovered. Low levels (less than 3 ppm) of VOC compounds were detected in the headspace of a groundwater sample from a depth of 1.1 meters (3.6 feet). No testing for heavy metals was conducted. This area has remained unchanged in status from the time of the 1995 PESA until July 2001.

Non-Hazardous Wastes

A Speedway gasoline station is located at the southeast corner of Randall Road and Oak Street within 16 meters (50 feet) of the center of the corridor. The Speedway gasoline station is a UST, LUST and RCRA small quantity generator. There are no records of RCRA violations; however, the site has four registered USTs, located 10 meters (30 feet) from the centerline of the proposed corridor. A 1989 investigation found petroleum contaminated soils and groundwater at this site, which is reported to be upgradient of the proposed alignment. After removal of some of the contaminated soils, 1995 and 1996 follow-up monitoring showed residual contamination in the wells at the center of the site. Wells located at the northeast corner of the site, closest to the proposed corridor, showed only low levels of petroleum parameters. The IEPA reports that as of July 2001, contamination remains at this site.

A Shell gasoline station is located at the southeast corner of Butterfield Road (Route 56) and Illinois Route 25 intersection. This Shell gasoline station has three registered USTs which are located within 16 meters (50 feet) of Route 56 which is proposed for improvements. No VOCs were detected in the soil gas from this site during a Preliminary Environmental Site Assessment (PESA) performed by IDOT in 1995 and no new incidents at the site were reported as of July 2001.

An Amoco gasoline station is located at the southwest corner of Illinois Route 56/Kirk Road. There are no records of leaks since 1986, when the gasoline station was built. The UST site is within 50 meters (164 feet) of the centerline of the corridor and the end of the proposed

improvement area.

Chuck Owen, Inc. Body Shop, listed as a RCRA small quantity generator, is located along the east side of Illinois Route 25, approximately 250 meters (820 feet) south of the existing Illinois Route 56 centerline south of the proposed corridor. Feltes Sand & Gravel was located here from at least 1931. Six USTs are registered for this sand and gravel facility, however, the USTs were reportedly removed prior to sale of the parcel to Chuck Owen Auto Body. Testing conducted at the site during the 1995 IDOT PESA detected no VOCs significantly above background levels in soil gas taken from depths of 0.9 meters (3 feet) and 1.6 meters (5.2 feet) below grade at the site. No incidents have been reported at this site between 1995 and July 2001.

The Village of North Aurora garage, listed as a RCRA large quantity generator, is located on the south side of Butterfield Road and just east of Illinois Route 25 at 318 Butterfield Road. The site has no RCRA violations. The site, however, was also listed as a closed LUST. The LUST incident, involving gasoline and diesel fuel, received a No Further Remediation letter dated July 28, 1999.

2.4.13 Visual Resources

Land adjacent to the Illinois Route 56/Oak Street corridor consists of residential area and/or farmland. Between Orchard Road and Randall Road the land is primarily agricultural on both sides of Oak Street with the conversion to residential, commercial and industrial uses currently underway. In the vicinity of the Fox River, recreational areas exist on both sides on the river ranging from neatly manicured parks to forested areas. East of the Fox River properties adjacent to Illinois Route 56 are residential or farmland. Again, conversion of the farmland to residential is ongoing.

The crossing location on the Fox River is the most sensitive visual concern. This area is visible from the recreation areas. The existing Illinois Route 56 bridge is approximately 200 meters south of the corridor and is considered such an important visual feature that the bridge appears as part of the logo of North Aurora.

2.4.14 Utilities

There are no known potentially impacted major utilities within the Illinois Route 56/Oak Street Corridor.

CHAPTER THREE
ALTERNATIVES

Three possible courses of action have been identified for the overall project area:

- No-Build Alternative
- Congestion Management Alternative
- Build Alternative

The discussions in this chapter have been divided into a discussion of the overall project and then discussions by region (North, Central and South). The congestion management alternative is discussed only in the section on the overall project. This is because the congestion management alternative discussion is all encompassing of the project and does not vary by region.

3.1 Overall Project

3.1.1 No-Build Alternative

With the No-Build Alternative, the existing roadway network in eastern Kane County will remain basically unchanged. Normal maintenance, minor highway improvements and previously committed projects in the County will continue, but no new major improvements will be undertaken.

Urban development in Kane County is continuing to advance westward. Because of growing traffic congestion and the spacing of existing crossings, the existing roadways will provide the best access to accommodate this growth. With no new crossings, existing communities will find congestion increasing across the Fox River.

As a result of increased development and the automobile dependency caused by dispersed development, traffic volumes will increase. Without new bridges across the Fox River, the existing bridges will be forced to bear the projected increases in traffic demand. With the exception of the tollways, all of the bridges across the Fox River in Kane County are projected to operate over their capacity. This will affect drivers by extending the peak travel period and lengthening queues at the existing bridges' approach intersections, and the projected traffic demand will increase the pressure to widen existing bridges.

The cost of providing services such as schools and fire protection to each side of the river will increase as services are duplicated or suffer congestion delays. Community facilities such as parks and shopping areas will also become less accessible due to congestion. Any widenings will require substantial numbers of business and residential displacements, and could have an adverse effect

on the locally significant and/or National Register historic districts and structures that surround many of the existing bridges. Even the proximity impacts of increased congestion could detract from the economic viability and/or historic integrity and character of many downtown areas.

As stated earlier, westward growth is expected to take place along the existing arterials and tollways. However, Kane County's *2020 Land Resource Management Plan* has established the areas to the west as the Critical Growth and Agricultural/Village areas. These are to be preserved as lower-density areas, with development focused closer to the Fox River. Trips from these developments will tend to be longer as tollway dependence increases. The possibility for short trips, or alternate modes such as bicycle, walking or transit, will be further diminished as trips become more dispersed and crossings of the Fox River stay widely spaced.

With the No-Build Alternative, new developments (primarily residential, but all others also) in areas near the west bank of the Fox River but away from existing crossings will suffer from a lack of direct access to the east side of the Fox River. The most logical travel patterns for residents from these developments will be via the tollways for longer trips east or into the western part of Kane County. This helps support developments further west into Kane County as well as longer trips. A sense of community from the sharing of municipal services and other facilities will be diminished as trips within a shorter area (but across the Fox River) become more difficult. Again, shorter trips or alternate modes will be unattractive because of the lack of access to crossings and dispersed development.

As explained above, the No-Build Alternative does not address the need for the project. However, it is presented with the awareness that any proposed construction alternative will result in impacts to the man-made and natural environments, and may face regulatory obstacles as a result. The No-Build Alternative is therefore presented as a benchmark by which to judge the Build Alternative and determine if the benefits of the Build Alternative outweigh its impacts and regulatory requirements. Typical impacts to the man-made environment include business and residential displacements. A typical impact to the natural environment is habitat loss.

3.1.2 Congestion Management System (CMS) Alternatives

The Intermodal Surface Transportation Efficiency Act of 1991 amended Title 23 U.S.C. and the Federal Transit Act to include the provision that all Metropolitan Planning Organizations (MPOs) must develop and approve a Congestion Management System (CMS) to be eligible for federal transportation funding.

The goal of a CMS is to manage rather than eliminate congestion. In areas which exceed federal guidelines for ozone and/or carbon monoxide levels (known as nonattainment areas), the CMS places restrictions on single occupancy vehicle (SOV) projects and mandates travel demand reduction and operational management strategies. The Chicago metropolitan area is a nonattainment area for ozone levels.

Travel demand reduction (TDR) strategies are an attempt to reduce the number of vehicles on the road during the peak travel periods of the day (especially the morning peak period). Travel demand reduction strategies include employer sponsored programs such as:

- the staggering of work hours;
- carpooling and vanpooling facilities, programs, and incentives; and
- parking management.

Operational management strategies involve transportation network improvements to make the system function more efficiently. Examples of operational management strategies applicable to this project include:

- improved/new transit service,
- operational improvements to existing facilities, and
- elimination of bottlenecks.

The CMS procedures must take place early in the project development process in order to comply with the intent of the law. Representatives from the Chicago Area Transportation Study (CATS), the FTA, the Regional Transit Authority, and the transit operators in the project area (i.e., Metra which provides commuter rail service and Pace which provides bus service) were invited to participate in CMS consultation. A CMS meeting was held on March 2, 1995 (see Appendix A-CMS Coordination for minutes of this meeting) and additional meetings were held with Metra and Pace (Appendix A-CMS Coordination). The objective of these meetings was to reach agreement on the number and type of reasonable travel demand reduction and operation management strategies which could meet or contribute to the proposed project's purpose and need. The approach to CMS evaluation followed for this project also satisfies the requirement to evaluate a Transportation System Management (TSM) alternative.

3.1.2.1 Travel Demand Reduction (TDR) Strategies

Employer sponsorship of TDR strategies is completely voluntary. Many companies within Kane County have initiated TDR strategies. In addition, the Chicago Area Transportation Study (CATS), the region's MPO, provides TDR services for the metropolitan area. The CATS program provides assistance to commuters and their employers in Cook, DuPage, Kane, Lake, McHenry, Will and portions of Kendall and Grundy counties. The objectives of the CATS program are: congestion reduction, improved roadway safety, energy conservation and air quality improvement.

The TDR services offered to employer's rideshare services staff stress the use of rideshare in reducing suburb to suburb work trip commuting. When available and appropriate, other methods of reducing Vehicle Miles Traveled (VMT) are developed such as:

- Facility siting at mixed use locations.

- Bicycle/walking from nearby residential areas.
- Public transit in either the reverse or inbound direction.
- Parking management to encourage multiple occupancy vehicle use.
- Telecommuting and alternative work schedules to improve air quality.
- Subscription bus from either park n' pool facilities or as shuttle from transit.

To the extent possible, the CATS' TDR services have and will be incorporated into the Fox River Bridges project by coordination with the providers of these services, i.e., CATS, Pace and Metra. The actual provision of these services is beyond the ability of Kane County. With the dispersed spatial and temporal crossings of the Fox River, it is not expected that TDR could appreciably affect the capacity shortfall, especially since rideshare systems would also be limited by the existing congested crossings. It should be noted that capacity improvement is only one element of this project's purpose and need. TDR strategies which might reduce the peak hour travel demand on existing bridges would not support land use in accordance with the *2020 Land Resource Management Plan*. TDR strategies will not close the gaps in bridge crossings that result in developments without a nearby, efficient link connecting to the other side of the Fox River and that would allow additional walking or bicycling trips.

3.1.2.2 Operational Management Strategies

Improved/New Transit

As a result of the CMS consultation meetings, both METRA and Pace have taken the official position that a mass transit alternative alone can not eliminate the need for additional SOV capacity in the corridor (see Appendix A-CMS Coordination for these letters). The FTA and the RTA have delegated their CMS review authority to the area transit operators.

Opportunities to enhance and complement transit operations will also be considered with all of the build alternatives. METRA and Pace will continue to be involved in the project development process to ensure that build alternatives are compatible with and do not foreclose the future extension of mass transit service.

Operational Improvements to Existing Facilities and Elimination of Bottlenecks

Improvements to existing bridge crossings to increase capacity would not only require widening the bridge structures themselves but also the entire approach system (i.e., roadway and intersections). These improvements would require massive business and residential displacements and could adversely affect many local or National Register eligible historic districts. Operation improvements to existing facilities would also do little to improve access to those areas not well served by an existing bridge. In addition, these improvements would complement the progression of development into Kane County's Critical Growth and Agricultural Village areas as opposed to infilling of the Urban Corridor Area, a stated objective of Kane County's *2020 Land Resource Management Plan.*

3.1.3 Build Alternatives

The CMS consultation during the cooperative transportation planning process concluded that CMS strategies as stand-alone alternatives will not meet the purpose and need of this proposal. Therefore, the addition of SOV capacity across the Fox River, with applicable CMS strategies, is the only solution to the purpose and need for the project. The following sections of this chapter will discuss the build alternatives in each of the project area's three regions in comparison to the No-Build Alternative. The region discussions will also highlight the decisions in alignment development.

Not only will these corridors provide for enhanced motorized access in the North, Central, and South Regions, but all build alternatives in each region will accommodate bicycles and pedestrians by providing a minimum 3 meter (10 foot) multi-use lane on each bridge.

3.2.1 No-Build Alternative

The No-Build Alternative will require no new construction. Traffic volumes on the existing roadway network will continue to increase as development continues, resulting in inadequate capacity as well as increased congestion, delays, and accident rates. As development occurs away from existing crossings, vehicle miles of travel will continue to grow from new trips having to travel further to a river crossing. Maintenance costs on existing bridges north and south of Bolz Road will increase as necessary roadway repairs become more extensive and frequent due to excessive traffic loads. The continued congestion along Illinois Route 62, Main Street (Huntley Road), and Illinois Route 72 will have a negative effect on the provision of goods and services along the central business districts of Algonquin, Carpentersville and Dundee. Existing and proposed land uses, as well as employment, will be negatively affected by the increase in congestion, which will not complement infilling at higher densities or increase the incentive for linear growth.

3.2.2 Build Alternative

3.2.2.1 Bolz Road Corridor

The Bolz Road corridor is approximately 9.0 kilometers (5.6 miles) in length. The corridor passes through portions of the villages of Algonquin, Carpentersville and Barrington Hills as well as unincorporated areas of Kane County.

The corridor's western terminus is located at Huntley Road west of Randall Road, approximately 400 meter (1300 feet) northwest of the Huntley/Boyer intersection. From Huntley Road the corridor traverses developing properties crossing Boyer Road, Randall Road, Sleepy Hollow Road, and Illinois Route 31 on its way to the Fox River. After crossing the river, the corridor parallels existing Bolz Road; crossing over Williams Street, intersecting Amarillo Road and Illinois Route 25 to the eastern project terminus at Illinois Route 62 (see Exhibit 3.2-1). Illinois Route 62 is the logical eastern terminus for this corridor because it provides continuity in a southeasterly direction for 30 kilometers (18 miles).

The proposed four-lane facility would include improvements at all intersection crossings, new frontage roads to maintain existing access and new connections to driveways abutting the project.

The Bolz Road corridor had three primary alignment options -- the Straight Alignment and the North Alignment -- which differed only in the area between Sleepy Hollow Road and the Fox River, and a Illinois Route 25 to Illinois Route 62 variation. The Straight Alignment intersected Illinois Route 31 near Lathrop Lane. The North Alignment deviated from the straight alignment

by turning northeast just west of Sleepy Hollow Road and then running east just south of the Crescent Drive subdivision. The Illinois Route 25 to Illinois Route 62 variation was created to minimize adverse impacts to the Hickory Hills Park and to Woodland School (see Exhibit 3.2-1)

Straight Alignment

This alignment itself consisted of two secondary options, the variation also occurring between Sleepy Hollow Road and the Fox River. One option would pass south of the livestock export facility near Lathrop Lane to avoid relocating or impacting this business. The other option, passing directly between the two buildings of the livestock export site, would have resulted in impacts to the Perry-Lathrop House, a property eligible for the National Register of Historic Places, displaced at least four additional houses, split the livestock export facility's property, and been incompatible with the existing ongoing roadway development in the region. For these reasons, this second, direct option was eliminated from the Straight Alignment.

North Alignment

This alignment was developed to avoid the livestock export business and the residences located in the area of steep terrain by traversing further to the north in an area of gentle terrain with less development. It also leaves a larger portion of the single-owned parcel bounded by Illinois Route 31 and the Fox River intact, making the southern portion more attractive for future development. Early on in this project, the Forest Preserve District of Kane County (FPDKC) had expressed a preference for this alignment because it would create a smaller northern parcel. If this alignment had been selected, the FPDKC would have considered purchasing the northern portion in addition to the riverbank. The northern portion would then be available as expansion area for FPDKC's Buffalo Grove Campground to the north. Access to the riverbank and the camping area would be provided from the new roadway. The FPDKC recognized that the roadway's proximity impacts, such as noise, would outweigh any advantage a smaller northern parcel may have. This alignment, by staying along the Fox River longer, would have eliminated a larger area of forest adjoining the river. Finally, this potential purchase now appears to a very low priority for the FPDKC.

While the Village of Algonquin has allowed the construction of homes both north and south of the straight alignment, a right-of-way corridor of 49 meters (160 feet) has been preserved through the new subdivisions for the Straight Alignment. On-going construction of residential development without corridor protection has reduced the viability of the North Alignment.

Besides the on-going construction, the North Alignment abuts the backyards of 16 to 18 homes on Crescent Drive. Proximity impacts on the Crescent Drive would include increased traffic noise or noise barriers. Outside of the area between Sleepy Hollow Road

and the west bank of the Fox River, both the straight alignment and the north alignment are the same.

The north alignment requires the bridge to be built on a curve and the alignment to be longer. The result is a more right-of-way and higher construction and maintenance costs.

IL25 to IL62 Variation

For this option the alignment between Illinois Route 25 and Illinois Route 62 was varied from the straight alignment to minimize the adverse impacts created when the roadway was proposed to pass through the southern half of the Hickory Hills Park and along the north side of the Woodland School.

This new alignment, which was accepted by the Dundee Township Park District via a June 21, 2000 resolution (see Volume 3 - Coordination Documentation and Chapter 5 - Section 4(f) Evaluation), relocates the roadway along the north edge of the park. This alignment shift addresses the concerns of the Woodland School. By moving the alignment, it no longer crosses between the school and the park. Part of the acceptance includes a replacement/mitigation plan for the park impacts.

Based upon the above, the Straight Alignment with the southern variation between Illinois Route 31 and the Fox River and the IL25 to IL62 variation will be evaluated further in Chapter Four. The other variations will be dropped from further consideration as having a greater cost, greater impacts, less direct routing, incompatibility with ongoing development or as unacceptable to the local park district and school district, while offering no net benefits.

Two of the three corridors (CC&P/Stearns and C&NW/Dean Street) in the Central Region involve active railroads. Since the initiation of this project, both railroads have changed ownership. The Chicago Central & Pacific (CC&P) Railroad was sold to the Illinois Central (IC) Railroad (note: the IC was recently purchased by the Canadian National) and the Chicago & NorthWestern (C&NW) Railroad is now owned by the Union Pacific Railroad. In the interest of consistency with previous reports, the corridor names will remain CC&P/Stearns Road and C&NW/Dean Street. Any discussion of the railroad within the text, however, will refer to the current owner.

3.3.1 No-Build Alternative

Under the No-Build Alternative, Illinois Route 64 in St. Charles and State Street in South Elgin would continue to be the primary crossings of the Fox River in the Central Region. As was discussed in Chapter One, Illinois Street and Prairie Avenue Bridge do not provide the continuity necessary to be primary access roads. The State Street Bridge in the Village of South Elgin also lacks sufficient continuity to be a primary access road.

The No-Build Alternative would also allow traffic congestion on existing bridges to increase. In St. Charles, traffic will continue to grow such that travel across the Fox River to the other side of town will become increasingly difficult. As a result, downtown St. Charles would be less attractive as a cultural and economic center. Pressure to improve traffic flow by widening existing bridges and approach roads would increase.

Limited access makes it harder to share community services and discourages the shared use of facilities across the Fox River. One example of a municipal facility limited by access is Wredling School at the corner of Red Gate Road and Illinois Route 31 in St. Charles. This school serves residences on both sides of the Fox River.

The limitation of existing crossings means that new development west of the Fox River will follow the primary access roads (i.e., Illinois Route 64 and Hopps Road with its offset (indirect) connection to State Street) rather than concentrating development nearer the west bank of the Fox River. The limited access across the river also acts as a restriction on community cohesion. This is contrary to the Kane County *2020 Land Resource Management Plan* which encourages transportation facilities to complement compact contiguous growth focused around existing Fox River communities.

3.3.2 Build Alternatives

3.3.2.1 CC&P/Stearns Road Corridor

The CC&P/Stearns Road corridor extends from Randall Road at approximately McDonald Road eastward (parallel to the Chicago Central & Pacific tracks) across the Fox River and links up to existing Stearns Road, east of Dunham Road (see Exhibit 3.3-1).

Stearns Road was selected as the logical eastern terminus for this corridor because it is a designated Strategic Regional Arterial (SRA). DuPage County has widen the Stearns Road to four-lanes from just east of DuPage/Kane County line to Illinois Route 59. The construction limit of the CC&P/Stearns Road project would be the western terminus of the DuPage County improvement, approximately 200 meters (600 ft) east of the Kane/DuPage county line. The combined projects would provide a four lane arterial from Randall Road in Kane County to Illinois Route 59; a distance of approximately 11 kilometers (seven miles).

At this time, the CC&P/Stearns Corridor has one viable alignment: a four-lane roadway which matches into the four-lane Stearns Road proposed by DuPage County.

West of the river, the alignment would stay south of the Illinois Central (formerly the Chicago Central & Pacific) tracks forming at-grade intersections with Randall Road and McLean Boulevard. The right-of-way for much of this alignment is part of the Fox River Stone Quarry. By staying south, residential areas are avoided. Also, immediately east of the Fox River is the South Elgin Fen (also referred to as the South Elgin Sedge Meadow), just north of the tracks. This fen must be avoided as an irreplaceable wetland asset. There is no practical way to be south of the tracks at the fen and north of the tracks west of the Fox River. Due to problems with grades and sight distance, the proposed alignment will be grade separated below Illinois Route 31.

The choice of an alignment south of the tracks west of the Fox River is compatible with the Comprehensive plan for the Village of South Elgin and the redevelopment plans of the quarry. The viability of the corridor is dependent upon the restoration of the quarry.

Alignment options east of the river are extremely limited due, primarily, to the prevalent wetlands. After crossing the Fox River, the alignment intersects Illinois Route 25 at-grade south of the Illinois Central tracks. The alignment then follows Illinois Route 25 (which would be widened to four-lanes from two) northward across the CC&P tracks at-grade and under a new structure for the Illinois Central Railroad. This shift north is necessary to avoid the Brewster Creek and Lamplight Fens, as well as the Little Woods Cemetery.

The road departs from Illinois Route 25 to link into a relocated Stearns Road. Stearns Road is relocated north to form a new intersection with the proposed alignment, Illinois Route 25, and Dunham Road. The new intersection would eliminate the large skew angles of the current

intersection and would consolidate two three-legged intersections into a standardized configuration. The current intersection is a recognized safety hazard.

3.3.2.2 Red Gate Corridor

The Red Gate Road corridor is located primarily in unincorporated Kane County, but also includes portions of the City of St. Charles, the Village of Wayne and unincorporated DuPage County. It is centered on Red Gate Road and extends eastward from Randall Road in Kane County to link with Illinois Route 59 in DuPage County.

The primary alternate discussed in the *Corridor Analysis Document* was a four-lane alignment from Red Gate to Army Trail Road. That alternate followed Army Trail Road (widened to four lanes) to the alignment's eastern terminus at Illinois Route 59. The four lane Army Trail Road alternative was dropped from further study because of its adverse effect to the Oak Lawn Farm Historic District. Four other Red Gate corridor alternates were evaluated in the *Corridor Analysis Document* as a means of avoiding this adverse effect. Those four alternates were:

Two-lane Red Gate/Army Trail

This option follows the same alignment as the four lane alternative discussed above but does not require widening of existing Army Trail Road and, therefore, has a lesser impact on the Oak Lawn Farm Historic District.

Red Gate Road/Smith Road (a.k.a. Wayne Bypass)

This alignment originates at Randall Road and advances eastward along Red Gate Road (extended) to Army Trail Road. The alignment follows Army Trail Road (widened to four lanes) to the Kane/DuPage County line. From this point, the corridor continues approximately 0.8 kilometer (2,500 feet) east of the Dunham Road/Army Trail intersection in a southeasterly direction to join Smith Road where it intersects with Powis Road. The alignment in this area bisects a proposed major residential development. The alignment then continues along Smith Road and terminates where Smith Road ends at Army Trail Road, east of Illinois Route 59.

Although this alternate includes a widening of Army Trail Road to four lanes, the improvement turns south before the Oak Lawn Farm Historic District.

The Red Gate/Smith Road (a.k.a. Wayne Bypass) was dropped from further study because of the large number of houses bordering the alignment along Smith Road and its impact on the residential development.

Red Gate/Country Club Road/Smith Road

This alignment originates at Randall Road, proceeds east along Red Gate Road, and turns southeast to cross the Fox River south of the Red Gate Forest Preserve. The alignment follows Illinois Route 25 south to Country Club Road. From Country Club Road the alignment advances east to Dunham Road, south on Dunham to avoid the Royal Fox subdivision, and proceeds east again before turning north around the subdivision. The alignment then continues east to join Smith Road where it intersected with Powis Road. At this point, the alignment follows Smith Road to its termination at Illinois Route 59.

The Red Gate/Country Club Road/Smith Road alternate was dropped from further consideration because it failed to meet the purpose and need for the project. With its many twists and turns, it does not facilitate safe and efficient traffic movement. Also, the road would front many homes along Country Club Road and Smith Road.

Red Gate/Illinois Route 25/Stearns

There are two variations of alignments within this alternate. These alignments originate at Randall Road, advance along Red Gate Road turning north to cross the Fox River. The alignments then intersect Illinois Route 25 north of Army Trail Road. They follow Illinois Route 25 north to connect to a relocated Stearns Road at Dunham Road. From this point east, DuPage County is proposing to widen Stearns Road to four lanes to Illinois Route 59. (This has since happened.)

Considering the above, three alignment alternates are left for further review in Chapter Four of the Environmental Impact Statement (see Exhibit 3.3.-2). Two are variations of a Red Gate Road/Illinois Route 25/Stearns Road alignment and the other is the two lane Red Gate/Army Trail Road alignment. The viability of the Red Gate/Illinois Route 25/Stearns Road alignments is dependent upon the ability to widen Illinois Route 25 and Stearns Road to four lanes. If hydrogeology or other environmental studies for this Environmental Impact Statement indicate impacts in the CC&P/Stearns Road corridor that prohibit widening of Illinois Route 25, realignment of Stearns Road or some of the other construction, and if a two lane alignment then has lesser impacts, a two lane alignment with a connection to Illinois Route 25 may be considered.

North Alignment (Alignment A)

This alignment avoids forest preserve property by going north of both the Fox River Bluff East (a.k.a. Red Gate) and the Fox River Bluff West (a.k.a. Severson) Forest Preserves. The alignment connects to Illinois Route 25 and continues north to meet the CC&P/Stearns Road corridor. To accomplish this, one row of houses from a subdivision will be acquired.

Middle Alignment (Alignment B)

This alignment reduces the number of residential displacements by crossing through the northern edge of the Fox River Bluff East (a.k.a. Red Gate) and the Fox River Bluff West (a.k.a. Severson) Forest Preserves. The alignment then connects to Illinois Route 25 to continue north to the CC&P/Stearns Road corridor.

Red Gate Road/Army Trail Alignment (South Alignment) (Alignment C)

The alignment follows Red Gate Road, bisects the Fox River Bluff East (a.k.a. Red Gate) Forest Preserve, crosses the Fox River and connects to Army Trail Road at its connection with Illinois Route 25. Although no widening would take place after the Illinois Route 25/Army Trail Road intersection, pavement reconstruction along Army Trail Road and intersection improvements at the Army Trail Road/Dunham Road intersection may be necessary. Army Trail Road currently proceeds east through DuPage County to Illinois Route 59. The improvements necessary to accomplish this alignment are all contained within Kane County. Other improvements into DuPage County may enhance the project but are not essential to its implementation.

Further evaluation determined that Alignments A and B did not accomplish the goals for which it was developed. Since Army Trail Road was closer than Stearns Road, there was still pressure from traffic on the Oak Lawn Historic District. Since the publication of the *Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS)*, it has been determined that the Red Gate Road (Alignments A, B, and C) Corridor will not be carried forward as a viable alternative and has been dropped from consideration. In a letter to the Illinois Department of Transportation dated February 25, 1999, the Federal Highway Administration stated that "based on the latest year 2020 traffic projections, a four-lane facility would be required at this location. A four-lane facility in the Red Gate Road corridor would have unmitigatable significant impacts." As a result, the no-build alternative was selected. As a result of this finding, the evaluation in Chapter Four-Environmental Consequences of this corridor has not been updated, but for complete documentation and historical reasons will not be deleted either.

3.3.2.3 C&NW/Dean Street

The western terminus of the C&NW/Dean Street corridor is just west of Randall Road at Dean Street; from Randall Road Dean Street proceeds west to intersect with Illinois Route 64. An improvement extending west of Randall Road is not part of this project because traffic falls off at Randall Road and the area to the west contains sensitive natural areas (the Murray Prairie and the LeRoy Oakes Forest Preserve), as well as residential areas. From Randall Road, the corridor proceeds east on Dean Street, to the intersection with the Union Pacific (formerly C&NW) railroad tracks near 17th Street. The corridor then parallels the railroad tracks until they intersect with Illinois Route 64 at 11th Avenue, one kilometer (0.6 mile) east of the Fox River (see Exhibit 3.3-3).

This corridor has one viable alignment: a two-lane roadway north of the Union Pacific (UP) tracks with only limited local access and without direct connections to Illinois Route 25 or Illinois Route 31.

The provision of local access requires intersections with Illinois Route 31 on the west side of the Fox River and with Illinois Route 25 on the east side of river. Illinois Route 31 is approximately 6 meters (20 feet) below the existing railroad bridge. If an intersection was constructed at the existing ground level, the railroad bridge abutments would block the driver's view of Illinois Route 31 creating a blind intersection. In addition, the intersection approach grades on the new roadway would be too steep for safe stopping. Left turn lanes would be required for the intersection to function adequately. Without replacement of the UP structure over Illinois Route 31, the addition of left turn lanes on Illinois Route 31 would be impossible. The crossing with Illinois Route 25 has similar problems and requires the displacement of three homes near a potential historic district.

In the evaluation of the two lane and four lane options, a major consideration was the new roadway's eastern connection with Illinois Route 64 at 12th Avenue, east of the river. Traffic analysis indicates that the combination of four lanes on Illinois Route 64 and a new four lane C&NW/Dean Street roadway overloads Illinois Route 64 east of the connection. This would only worsen the congestion already present on Illinois Route 64. A two-lane C&NW/Dean Street would not degrade traffic operations on Illinois Route 64. Also, because the roadway is sandwiched between railroad tracks and developed land, the land area available is severely constrained.

The final consideration is the location of a new roadway. Splitting the new road to straddle each side of the railroad tracks requires the construction of two new bridges across the Fox River, each wide enough to accommodate stalled vehicles and maintenance of traffic. The cost of twin bridges makes this placement option imprudent.

The split option and a south only option involves two, at-grade crossings of the main track. In addition, any construction on the south of the tracks (by a split option or by a south only option) involves at-grade crossings of spur tracks at long, very gentle angles; a safety hazard and operationally difficult. It is generally the policy of railroads and public agencies to avoid new, at-grade crossings where possible due to safety and maintenance considerations.

Construction on the south side of the tracks would adversely affect the Andrew Weisel house and displace the two St. Charles power substations. Since the Weisel house is listed on the National Register of Historic Places, an avoidance alternative had to be considered if was prudent and feasible.

All of the above factors contributed to only the two-lane roadway north of the Union Pacific Tracks being considered in this corridor.

Subsequent discussions between Kane County and the St. Charles Park District have demonstrated that this corridor is not viable. The proposed alignment crosses through Pottawatomie Park. The park is a fully utilized 4(f) resources; there is no viable avoidance option for this corridor. The Park District has indicated that they have no intention of allowing a roadway to be developed across the park. Under the provisions of Section 4(f) of the Department of Transportation Act and recognizing laws regarding eminent domain, this corridor is not viable. As a result of this finding, the evaluation in Chapter Four-Environmental Consequences of this corridor has not been updated, but for complete documentation and historical reasons will not be deleted either.

3.4 SOUTH REGION

3.4.1 No-Build Alternative

With the No-Build Alternative, the existing roadway network will remain basically unchanged. No major highway improvements, such as add-lanes, grade separations, or major geometric modifications would be undertaken. The No-Build Alternative would include normal maintenance, pavement rehabilitation and intersection improvements including traffic signals for modernization and safety improvements.

Due to the continued growth in population, development and increased traffic demand, the No-Build alternative is not a viable solution to the transportation and planning needs of the region. The Chicago Area Transportation Study traffic projections show that the existing bridge crossings in the South Region would not be able to provide adequate capacity for the year 2010 and beyond. This would result in congestion and increased travel times. In addition, the lack of system continuity on Illinois Route 56 west of the river is contrary to this project's purpose and need.

According to the Village of North Aurora's Land Use Plan, the village is focusing development west of the Fox River along Orchard Road. This area is not well served by the Illinois Route 56 bridge which is offset from the mainline roadway and terminates on the west at Illinois Route 31. Illinois 56 then proceeds south along Illinois Route 31. The projected growth in traffic on this functionally substandard bridge will result in an increased accident rate. Considering the planned development and anticipated growth in population, the No-Build Alternative does not satisfy the purpose and need of the project.

3.4.2 Build Alternatives

3.4.2.1 Illinois Route 56/Oak Street Corridor

This corridor begins on the west at Randall Road and proceeds to just east of Kirk Road. The Build Alternative in the corridor consists of constructing a new bridge over the Fox River and either constructing four lane approach roadways or improving the existing highways to provide four lane approach roadways to the new bridge. At the initiation of studies, this corridor originally had two alignments: Illinois Route 56 to Oak Street and Mooseheart.

Illinois Route 56/Oak Street Alignment

The alignment originates with an intersection improvement at Orchard Road and proceeds easterly along existing Oak Street, intersecting Randall Road and Illinois Route 31 (Exhibit 3.4-1). East of Route 31, the alignment crosses over the Fox River (approximately 200 meters north of the existing Illinois Route 56 bridge) and the Fox Valley Park District bikepaths. The alignment then intersects the Burlington Northern Santa Fe (BNSF; formerly Burlington Northern) Railroad and Illinois Route 25 at-grade and continues along the existing Illinois Route 56 alignment. The improvement terminates at Kirk Road. The length of this improvement is approximately 8.3 kilometers (5.2 miles).

Kirk Road was selected as the eastern terminus because it is the approximate western limit of the Illinois Department of Transportation Strategic Regional Arterial planned improvement of Illinois Route 56 from two lanes to four lanes. The combined improvements to Illinois Route 56 would create a four lane principal arterial from Randall Road.

Mooseheart Alignment

The Mooseheart Alignment originates at Randall Road and follows existing Mooseheart Road easterly to an intersection with Illinois Route 31 (Exhibit 3.4-1). The alignment then crosses over the Fox River, the Red Oak Nature Center property, the BNRR and Illinois Route 25. East of Illinois Route 25, the alignment proceeds through what was a vacant lot south of the Fox Valley Country Club Public Golf Course and north of a residential area. Beyond Banbury Road, the alignment turns south to avoid bisecting the Pine Creek Subdivision, then veers north to minimize its impact on the Marmion Academy. The alignment continues easterly through the areas currently annexed by the City of Aurora to intersect with Kirk Road. East of Kirk Road, the alignment turns southeasterly and terminates at Illinois Route 56 approximately 545 meters (1800 feet) west of the Kane/DuPage County Line; this area is currently undergoing extensive residential development. What was vacant land at the beginning of this study is now in various stages of development.

While studying the two alignments' impacts to publicly owned park land as part of the environmental assessment process, the decision to drop the Mooseheart Alignment from further study was made by the Kane County Board under advisement from the Federal Highway Administration. Both the Mooseheart Alignment and the Illinois Route 56/Oak Street Alignment would require the use of publicly owned park land (from the Red Oak Nature Center and Highlands Park, respectively). However, the Fox Valley Park District, which owned both properties, informed Kane County in a letter dated October 3, 1995 that,

> "Improvements at the thirteen acre park [Highlands Park] were purposely set back from Oak Street in an anticipation of a future Road widening."

The Federal Highway Administration determined that this constituted co-planning of park and roadway and, therefore, the park is not subject to Section 4(f) of the Department of Transportation Act procedures as long as the taking is restricted to the area of the co-planning. Among other things the Section 4(f) procedures stipulate that in order to use property from a publicly owned park, it must be proven that there is no feasible and prudent alternative to its use. This determination on Highlands Park meant that the Illinois Route 56/Oak Street Alignment offered a prudent and feasible alternative to the Mooseheart Alignment which would have impacted the Red Oak Nature Center.

On July 9, 1996, the Kane County Board passed Resolution No. 96-194 to eliminate the Mooseheart Alignment from further study. Consequently, the Illinois Route 56/Oak Street is the only alignment under study in the South Region.

CHAPTER FOUR
ENVIRONMENTAL CONSEQUENCES

4.1 Overall Project

4.1.1 Socioeconomics

4.1.1.1Land Use

Kane County adopted the *2020 Land Resource Management Plan* (Plan) on June 11, 1996. The No-Build Alternative conflicts with the County Plan, which calls for new Fox River bridge crossings and capacity improvements to meet growth that is projected to continue in what is identified as the Urban Corridor (see Exhibit 1.1-5). The lack of east-west roadway continuity across the Fox River and increasing traffic congestion on the existing crossings will eventually constrain growth. As a result, new development will follow primary roadways which penetrate further west into the Critical Growth and Agricultural/Village Corridors identified in Kane County's *2020 Land Resource Management Plan*. Increased traffic congestion from projected growth would hamper redevelopment, downtown revitalization and infill development in many locations. The lack of new bridge crossings will perpetuate the existing difficulties of congestion and poor accessibility across the Fox River for a multitude of services and activities and will encourage "leap frog" development into less congested areas. As noted in the *Plan*, "In supporting the municipalities in the Urban Corridor, the 2020 Plan will also serve to contain suburban sprawl" (p.78).

The alignments within the Build Alternative are directly supportive of the transportation and land use strategy of the County Plan for the Urban Corridor. A specific policy is to "collaborate with local and regional officials in planning and construction of additional bridges across the Fox River" (p.37). The new crossings will serve the existing and planned land uses by providing new linkages between residential areas and the employment, shopping, institutional, educational and recreational opportunities along both sides of the Fox River.

The Build Alternatives will reduce, but not eliminate, congestion on bridges that cross the river and their approach roads compared to the No-Build Alternatives, provide alternative emergency routes, enhance development potential compatibly with the Kane County *2020 Land Resource Management Plan*, and reduce trip lengths and travel time for many trips across the river, particularly during non-peak hours.

Transportation improvements enhance development of undeveloped property due to improved accessibility and/or visibility. This enhancement is most evident within one-quarter mile of the transportation improvements. Such improvements also reduce the rate of congestion increase on the existing bridge crossings. While businesses want the exposure of traffic on a roadway, congestion can reach a point where it discourages customers from patronizing establishments due

to the difficulty of making left-hand turns or of returning to the flow of traffic after completing their business. In general, the alignments in the Build Alternative directly serve existing and planned land uses consistent with the official Kane County Plan. No change in the type or intensity of planned land use is anticipated as a result of the traffic increase or access enhancement resulting from the implementation of any part of the Build Alternative. Development of undeveloped parcels in proximity to the Build Alternative will be guided by adopted comprehensive plans and zoning ordinances. The bridge and roadway improvements of local communities will encourage the use of these parcels, which are in proximity to existing infrastructure and community services.

In a letter to the Illinois Department of Transportation, the Kane County Regional Planning Commission has stated that it views the proposed project as generally compatible with the land use strategy of the *2020 Plan* (see Appendix A - Coordination Documentation). The Red Gate Corridor, however, was noted as an exception. While the Village of Wayne is within the limits of the Urban Corridor, the Planning Commission views it as an agricultural village whose low density makes a major transportation project inappropriate. Combining this density with negative impacts on the two major historic districts in Wayne, the Regional Planning Commission concluded that the Red Gate Corridor is incompatible with the policies and objectives of the *2020 Plan*. Also, in keeping with the theme of neighborhood preservation, the Commission stated that the large number of homes displaced by the Red Gate Alignment A renders the alignment inconsistent with that component of the Land Use Plan.

The County declined comment on the C&NW/Dean Street corridor because it falls almost entirely within the corporate limits of the City of St. Charles and is therefore primarily a local improvement. The City of St. Charles has reviewed the C&NW/Dean Street Corridor for compatibility with the St. Charles Comprehensive Plan (see Appendix A). The city concluded that impacts to residences and to neighborhood character, as well as the lack of benefits to local traffic, make the corridor incompatible with the goals and objectives of the comprehensive plan. In addition, the negative impacts to businesses, the St. Charles Historic District, and public facilities were cited as inconsistent with the plan.

There are no other known public projects which when combined with the Build Alternative result in a significant cumulative negative impact.

4.1.1.2 Displacements

The number of structures displaced by construction of the alignments within the Build Alternative is shown in Table 4.1-1. The cumulative number of primary structural displacements (excluding accessory buildings such as sheds), depending upon the alternate selected for the CC&P/Stearns and Red Gate Corridors, ranges from a low of 36 to a high of 53 residential and from 7 to 9 non-residential primary structures. Details concerning the impact of these displacements are presented in the sections covering each corridor. The corridor level analysis indicates that there are adequate relocation opportunities to accommodate all residential displacements in proximity to their current location. Relocation assistance will be made available for non-residential uses.

Some localized impacts to specific properties are noted in the individual corridor discussions. These include encroachment on parking lots and displacement of some commercial signs. For those direct impacts related to right-of-way acquisition which cannot be avoided, mitigation measures will be prepared. These may include: relocation of structures, parking spaces or signs to other locations on the affected property if there is adequate land area; and relocation assistance.

Table 4.1-1
Total Displaced Primary Structures*

Build Alternatives	Residential	Non-Residential
North Region		
Bolz Road	9‡	0
Central Region		
CC&P/Stearns	7***	3
Red Gate:		
North Alternate (A)	27	6
Middle Alternate (B)	13	6
South Alternate (C-Two Lane)	6	0
C&NW/Dean Street	7	4**
South Region		
Illinois Route 56/Oak Street	5	0

‡ Since the beginning of this study, two of the houses slated for displacement have been purchased-one by the Kane County Division of Transportation for an improvement to Randall Road and the other by the Kane County Forest Preserve as an expansion of the Algonquin Shores Forest Preserve. Some analyses in this document may still refer to 11 displacements. The lower actual number means lesser impacts and will not affect any conclusions. Additional purchases by the Kane County Forest Preserve have since reduced this to 6.
*These figures are for primary structures and do not include accessory buildings. The CC&P/Stearns Road and Red Gate Corridors Alignments A and B follow the same alignment between the IC railroad and Stearns Road. Four residential displacements and two business displacement listed are included in this common area. Therefore, if both are constructed, there are four less residential displacements than the table totals.
**This figure does not include the abandoned Moline Foundry site. The Cedar Avenue Business Center was treated as one structure, although it contains multiple businesses.
*** This number has been increased to 14, primarily due to the extensive wetland and water resources mitigation plan.

Mitigation

The *Uniform Relocation Assistance and Real Property Acquisition Act of 1970*, as amended, applies to all federal or federally assisted activities that involve the acquisition of real property or the displacement of persons. Just compensation is provided for each property which must be acquired for right-of-way, as required by both the United States and Illinois Constitutions. Just compensation, or monetary payment, equivalent to the "fair market value" of the property, will be provided to each displaced person, family, or business owner. Fair market value is defined as "the highest price estimated in terms of money which the property will bring if exposed to sale on the open market with a reasonable time allowed to find a buyer, buying with the knowledge of all the uses to which it is adapted, and for which it is capable of being used."

Kane County as the lead agency will be responsible to determine the availability of adequate, decent, safe and sanitary housing in the area for relocatees before any federally-funded project can be approved. A "Relocation Plan" will be prepared to document the availability and cost of relocation sites, and planned remuneration. "Additional or unusual circumstances may warrant other mitigation measures on a case-by-case basis."

4.1.1.3 Community Cohesion

The No-Build Alternative results in a continuing increase in congestion on the existing bridges and the connecting roadways as quantified by the traffic projections of the Chicago Area Transportation Study (CATS). Even with construction of a build alignment in each of the five corridors, congestion on all bridges will still be severe. The new bridges will, however, reduce the degree of congestion compared to the No-Build case. The human dimension of this congestion is felt by every motorist delayed in traffic, waiting through multiple traffic signal changes to get through an intersection. The time and frustration associated with congestion have a negative effect on the quality of life for those trying to move on the crowded roadway and those who live or have businesses adjacent to it. Such congestion makes turning movements into adjacent properties time consuming and often dangerous. Congestion also interferes with pedestrian and bicycle movement. Congestion impedes the movement of school buses, police, fire and ambulance services and constrains social, recreational and cultural trips across the river during hours of congested operations.

The Build Alternative provides flexibility and alternate routes for the many activities requiring a crossing of the river. It also creates more direct access and a reduction in travel times to certain areas. Non-peak hour travel will be enhanced. For locations of various land uses and public facilities with reference to the proposed new bridge crossings, see the Existing Land Use and Socioeconomic Factors maps by region, Exhibit 2.2-1, (North Region), Exhibit 2.3-1 (Central Region), Exhibit 2.4-1 (South Region). The Fox River now divides 10 fire protection districts, 6 school districts, 6 park districts, and a several communities with their police departments and other services. The Fox River also divides persons residing on one side of the river from a multitude of other educational, institutional and recreational resources in Kane County on the opposite side.

The Build Alternative will enhance police and emergency response times, or provide additional flexibility and efficiencies in the provision of these services. The community cohesion resulting

from these shared services and facilities, as well as from social and personal trips, will be enhanced by implementation of new bridges in the five corridors.

Central business districts rely on a certain amount of vehicular traffic, which bring customers to the retail and service establishments. When the number of vehicles overwhelms the ability of the transportation systems to move traffic efficiently, congestion occurs. Congestion constrains vehicular and pedestrian movement within the downtown areas. This creates an environment that is not conducive to shopping, strolling, and socializing; all important functions desired for the downtowns. The proposed bridge crossings will reduce congestion by removing some of the through trips which have neither an origin nor destination within the downtown areas along the Fox River.

4.1.1.4 Community Finance and Infrastructure

The direct fiscal impacts of a decrease in the property tax revenue base of taxing jurisdictions caused by right-of-way acquisition was analyzed for the Build Alternative. The assessed value of potentially displaced structures was obtained from the Kane County Tax Department. The market value of displaced land, not including structures, was estimated on a square meter basis using typical prices for vacant land in Kane County for the same use as that which would be acquired. The estimated market value of land per square meter was then multiplied by the total land area needed to accommodate the proposed right-of-way. The market values of displaced vacant parcels were then used to estimate assessed value, which was used to calculate property tax impacts resulting from right-of-way acquisition.

In many cases, the assessed value of the affected property will not be reduced because it is based upon the location of the site and the principal use, which would not be changed by acquisition of a strip of land. In addition, applying a typical market value to a small portion of a larger parcel overstates the value of the strip of land being displaced. Therefore, the methodology used to estimate losses in property tax revenues produces conservatively high estimates.

Using the conservative and over-stated valuation method of displaced land, it was shown that no taxing district will experience a significant loss of property tax base. In the majority of the cases, the loss is less than one percent of the entire assessed value of the taxing jurisdiction. The cumulative impact on Kane County's tax base within the townships affected by the implementation of all five corridors will also be less than one percent. Therefore, the property tax reductions are not significant impacts affecting the fiscal operation or security of any taxing jurisdiction.

Property tax and other revenues (such as sales tax), fees generated from business activity, and new development enhanced by the proposed bridge and roadway improvements will help to offset even the nominal loss of real estate tax revenues. Reduced congestion and enhanced access will also help to stabilize and enhance the value of existing properties. The proposed transportation improvements will encourage development in areas that are planned and suited to accommodate growth due to proximity to existing infrastructure and services. The costs of providing facilities and services to new construction are typically shared by developer and through user fees.

4.1.1.5 Employment

Construction employment will occur over a period of years, depending upon the selected alternatives and the availability of funding. The aggregate and cumulative impact is projected as a function of construction cost. The Federal Highway Administration estimates that employment is generated by construction at a rate between 7.1 to 9.75 employment of one person for one year per million dollar of construction. Based upon the estimated cost of construction, employment will be generated at the following rates (While cost estimates will increase with time due to inflation and other reasons, since the scope of the proposed corridor improvements will remain substantially unchanged, so will the employment estimates):

Table 4.1-2
Construction Generated Employment

Corridor	Construction Cost Estimate ($Million)	Low Employment Estimate (7.1 person-year rate)	High Employment Estimate (9.5 person year rate)
Bolz Road	38	270	360
CC&P/Stearns Road	43	305	410
Red Gate (Alt. A or B)	62	440	590
Red Gate (Alt. C)	36	255	340
C&NW/Dean Street	21	150	200
IL 56/Oak Street	28	200	265

Spin-off economic activity related to suppliers of goods and services will produce an additional estimated amount equivalent to the cost of construction on the economy.

There will be some loss of employment associated with displaced businesses. For the most part, existing businesses will be expected to relocate. Some marginal businesses or those that are site dependent or sensitive may have a harder time relocating, instead chosing to close. Improved access to existing business areas and future employment areas will help create or maintain other employment opportunities that will reduce or negate the loss. Cumulatively, seven businesses employing up to approximately 500 people may relocate or choose to close.

4.1.1.6 Environmental Justice

Each of the preferred corridors in each region was analyzed using available census data, discussions with local officials, input by the public during public meetings and hearings, visual inspections and discussions with other locals, as appropriate, to determine if any of the alignments proposed caused disproportionate impacts to minority or low-income populations. These potential impacts included such things as displacement of residences, displacement of employment or businesses, proximity impacts (such as air or noise impacts), or reduction in public services, such as access to public places.

The business climate in Kane County as a whole is very vibrant, with many new businesses being initiated throughout Kane County, especially along the Randall Road Corridor. This climate of growth provides a variety of new employment opportunities in the county.

Only in the CC&P/Stearns Road Corridor is there a potential for a disproportionate impact to low-income or minority populations. This potential impact is the loss of employment by an identified Hispanic population. This impact is unavoidable. Mitigation is proposed (See Section 6.4.1.).

Detailed discussions on this conclusion are contained in each of the specific regional discussions (see Sections 4.2.1.6, 4.3.1.6 and 4.4.1.6)

4.1.2 Agriculture

4.1.2.1 Conversions and Other Impacts

There are two primary types of impacts to agriculture possible as a result of the proposed roadway improvements. The first type of impact is to properties, including land or buildings (including residences), that are involved in agriculture or are readily converted to agricultural productions (e.g., fallow fields). The second type of impact is to soil as a natural resource necessary for agricultural production. Even though the parcel may not be farmed, once the land is in roadway right-of-way and has been graded for roadway usage, the value of the soil for production is lost. Impacts to farm properties are summarized in Table 4.1-3.

Of the affected farm operations, two on the preferred CC&P/Stearns Road alignment are expected to no longer remain viable. With no remaining house and a 2 hectare (5 acres) parcel reduced to 1 hectare (2.5 acres), this parcel will be uneconomical. Another farm will be reduced from 2.7 hectares (6.7 acres) to 1.5 hectares (3.7 acres) and lose two buildings. This parcel will probably also be too small to be economical; this will probably cause the total purchase of the parcel. These losses are also common to build alignments A and B of the Red Gate corridor.

A horse farm on build Red Gate alignments A and B and a livestock transporter from shipment overseas on the preferred Bolz Road alignment will be split. At grade access across the new roads for the severed properties will be provided, resulting in no adverse travel.

The assessment of impacts to potential farmland soils as a resource for this project is based upon the typing provided by the National Resources Conservation Service to complement their *Soil Survey of Kane County, Illinois* (issued 1979) and their *Soil Survey of DuPage and Part of Cook Counties, Illinois* (issued 1979). This assessment of farmland includes the conversion of land that may not be in farm usage, but because it is still relatively undisturbed has the physical potential to be converted to farm usage. From a practical extent, agricultural usage of this property may be unlikely. Table 4.1-4 indicates the conversion of prime and state important soils to roadway right-of-way.

Table 4.1-3
Summary of Impacts to Farm Properties

Impact	Alignment							Total of All Alignments **
	Bolz Road	CC&P/ Stearns Road	Red Gate Alignments* A	Red Gate Alignments* B	Red Gate Alignments* C	C&NW / Dean Street	IL56/ Oak Street	
No. of Farms Parcels Affected***	5	5	2	2	0	0	9	19-21
No. of Farm Houses Displaced	0	1	0	0	0	0	0	1
No. of Other Farm Buildings Displaced	0	2	0	0	0	0	0	2
Land acquired from farm Parcels (hectares)	28.5	4.2	11.8	11.1	1.6	0	1.3	35.6-45.8
Est. Annual Potential Loss of Agricultural Production	$36,000	$5,000	$15,000	$14,000	$2,000	$0	$2,000	$45,000 - 58,000
Landlocked Parcels Created	0	0	0	0	0	0	0	0
Miles of Adverse Travel	0	0	0	0	0	0	0	0

* For Red Gate Alignments A and B, the impacts are for that portion of the alignments separate from the CC&P/Stearns Road Alignment. This allows the addition of impacts for the total project impacts.

** The totals have a range depending upon which Red Gate Alignment option is chosen.

*** Since the release of the DEIS additional farm properties have been converted to residential usage. This conversion decreases the significance of the project impact to Farm properties

Table 4.1-4
Summary of Impacts to Prime and State Important Farmland Soils

Soil Classification	Alignment							Total of All Alignments **
	Bolz Road	CC&P/ Stearns Road***	Red Gate Alignments* A	Red Gate Alignments* B	Red Gate Alignments* C	C&NW / Dean Street	IL56/ Oak Street	
Prime	28.5	24.5	10.9	10.9	3.0	0.3	4.1	60.4-68.3
State Important	0	10.6	3.5	3.5	0.3	0	0.5	11.4-14.6
Total	28.5	35.1	14.4	14.4	3.3	0.3	4.6	71.8-82.9

* For Red Gate Alignments A and B, the impacts are for that portion of the alignments separate from the CC&P/Stearns Road Alignment. This allows the addition of impacts for the total project impacts.
** The totals have a range depending upon which Red Gate Alignment option is chosen.
*** For CC&P 1.3 hectares of Prime and 0.4 hectares of State Important listed in the table are in DuPage County, rather than Kane County. The DuPage County portion is common to Red Gate Alignments A and B.

Besides the land within the proposed roadways noted in the above table, there are no proposed conversions of prime or state important farmland soils because of borrow areas or mitigation sites associated with this roadway. Additional conversions may occur as a result of the contractor negotiating storage, access, or borrow areas directly from a property owner.

4.1.2.2 Measures to Minimize Harm (Mitigation)

As agricultural resources are valuable, consideration to minimizing impacts to agriculture is part of this project. This project is designed to complement the *2020 Land Resource Management Plan* of Kane County that calls for focusing development in the eastern portion of the County and maintaining agriculture in the western portion. Most of the farm operations affected by this project are affected by requiring property from frontage along an existing road. For the two properties being split, access is proposed by at-grade driveways linking the agricultural properties. For the sites where buildings are being displaced, relocation on the property is not practical because those sites will cease to be farm operations (see above discussion for impacts of the CC&P/Stearns Road alignment).

The development of the alignments selected for the various roadways considered minimizing agricultural impacts. Most of the proposed roadways are along property lines, if not along an existing roadway right-of-way.

Drainage impacts to properties remaining will be minimal. Existing drainage patterns will be maintained. In the land acquisition phase, discussions will be held with the property owners to determine the location of subsurface drains. Where the possibility of interrupting tiles necessary for continued operation exists, the plans will call for exploratory trenching. Any interruption of drainage from subsurface drain tiles will be restored.

4.1.3 Special Lands

Impacts to special lands (i.e., public parks and other public recreational properties) are often localized issues. The Kane County Forest Preserve owns over 2,800 hectares (7,000 acres) throughout Kane County; many of the forest preserve's holdings are near the Fox River. As a result, forest preserve land will be used by more than one of the proposed Fox River crossings. The estimates of Kane County Forest Preserve property used for roadway improvements for this project ranges from 3.4 to 6.2 hectares (8.3-15.3 acres), depending upon which Red Gate Road alignment is selected. Impacts besides use of the property as roadway include the fragmenting properties, such as the Fox River Bluff West Forest Preserve by Red Gate Road Alignment C. No improvements to any of the forest preserve holdings will be affected.

Other special lands used include part of the Tri-County State Park, Pratt's Wayne Woods (a DuPage County Forest Preserve), and local parks belonging to Dundee Township, the Village of Wayne, St. Charles Park District, and Fox Valley Park District. Access is maintained for all trails crossed.

The issues involved are more fully discussed in the region analyses (Section 4.2.3, 4.3.3, and 4.4.3). Where applicable, discussion of avoidance, minimization, mitigation, and coordination are more fully described in Chapter 5 - Section 4(f) Evaluation.

4.1.4 Transportation

4.1.4.1 Roadway

The Chicago Area Transportation Study (CATS) generated traffic projections for the year 2020 as part of this project. These traffic volumes were adjusted to remove imbalances their modeling creates. Comparisons of the previously supplied year 2010 projections to the 2020 projections indicate traffic volumes will continue to grow; this is consistent with the ongoing growth of Kane County and the updated projections for growth. This growth will contribute to the projected congestion on the bridge crossings of the Fox River and on the approach roads to the crossings. It will also continue to place developments further from locations with direct access to river crossings.

Any of the proposed crossings will provide benefit to the traveling public. A new river crossing near an existing crossing will provide noticeable traffic reduction (i.e., congestion relief) for a nearby existing crossing relative to a no-build alternative. As the distance from a proposed crossing to an existing crossing increases, the traffic reduction diminishes. This reduction results because when automobile drivers are diverted to a new crossing from an existing crossing, other drivers divert from farther away to the existing crossing. The net effect can be little noticeable traffic and congestion relief on nearby crossings. The benefit, however, is a net reduction in travel time (albeit a difficult quantity to estimate) and more direct access to areas that were under served. Therefore, each of the proposed crossings has independent utility regardless of proximity to an existing crossing or even to other proposed crossings.

4.1.4.2 Transit

As part of the Congestion Management Systems Alternative discussed in Section 3.1.2, the operating transit agencies (i.e., Metra and Pace) did not anticipate that transit service would reduce the need for this project since the demand each serves is different. Provision of the bridges with new roadways will have minimal effect on the demand for the transit services. If Pace were to develop on-demand systems, new crossings will increase flexibility of operations.

Metra expressed concerns that any project not restrict the ability to double-track the Illinois Central (formerly the CC&P) line so as to not preclude possible provision of transit service along this line. No such impact will be part of this project. While no studies have been done to site a station for this extension, a location on Randall Road has been mentioned and would provide good access. The CC&P/Stearns Road alignment would provide additional access to this location from the Village of South Elgin.

Metra also expressed concern about preserving the possible expansion of transit service by the Union Pacific (formerly C&NW) line through St. Charles. Due to the low level of service that would be provided (if ever) and that the line ends shortly beyond St. Charles, this line in all likelihood would remain single track. The proposed C&NW/Dean Street crossing would not restrict single track operation; it does, however, limit the potential for development of a station because of the proximity of the roadway to the track. If a station could be developed where the C&NW/Dean Street is not immediately adjacent to the track, the road could enhance access to such a station. The comprehensive plan for the City of St. Charles makes no mention of station development. Regardless of the C&NW/Dean Street alignment, there is no apparent location for a station currently along the line.

Metra's final expressed concern was on the preservation of the EJ&E corridor for transit service. This corridor is east of all proposed corridor limits. Thus, none of the proposed roadways will have an effect limiting the development of the corridor. Depending upon the location of stations, the proposed roadways may increase access potential by bus or car to any potential stations.

Pace service in Kane County is currently focused on Geneva, Aurora and Elgin. The new roadways will also have no detrimental impacts on the provision of transit services, nor will they enhance service. On the other hand, Pace views the new roadways as providing the opportunity for greater route flexibility. Pace would like to see that the roadway improvements incorporate features that would potentially enhance transit (e.g., appropriate geometry, and bus priority potential at signalized intersections). Prior to design of any new roadway, Pace will be consulted for review of the plans for conformance and applicability of this request.

4.1.4.3 Non-motorized Transportation

The proposed roadways will cross a number of non-motorized paths, including the Prairie Path and the Fox River Trail. All trails will be maintained. If they are currently grade-separated, they will be maintained or replaced as grade-separated. The new road crossings will enhance the non-motorized paths by providing new paths in their right-of-way, where feasible. All the new bridges

will be designed with a three meter (10 foot) mixed use path either on the structure or attached. A more complete discussion of impacts is found in Chapter Five - Section 4(f) Evaluation.

4.1.4.4 Other Modes

The proposed roadways will have no impact on aviation.

The impacts to railroads are limited to the location of the individual crossings. Crossings are found in the CC&P/Stearns Road corridor, the C&NW/Dean Street corridor, and the Illinois Route 56/Oak Street corridor. No railroad will have its operation restricted as a result of the proposed project. In the case of existing crossings, existing clearances will be maintained. For the C&NW/Dean Street corridor, this results in maintaining substandard clearances. In the case of new crossings, standard clearances will be provided. The CC&P/Stearns Road corridor, along with Red Gate Road Alignments A and B, require that the existing two lane crossing of the Illinois Central tracks at Illinois Route 25 be widened to four lanes. The railroad has objected to a wider, busier crossing. The Illinois Route 56/Oak Street corridor will replace the two lane crossing of the BNSF railroad with a four lane crossing; the BNSF has stated no objections.

4.1.5 Cultural Resources

4.1.5.1 Standing Structures

Initial evaluation and review by the Illinois State Historic Preservation Officer (SHPO) of photographic and documentary data concerning the 106 potentially significant architectural structures or complexes recorded in the corridors has resulted in the determination that 83 will be avoided by the alignments developed. Further adjustments in the proposed rights-of-way have led to the avoidance of most of the remaining 23 structures or complexes. Of these, several will not be impacted because of their location on the Red Gate corridor, which is not being recommended for advancement as an alternative. More detailed historical research and evaluation has been conducted for the properties for which total avoidance may not be feasible nor prudent Additional coordination has also been conducted with the SHPO required to determine the appropriate mitigation measures. The only potentially impacted standing structure in the project of potential significant historic significance is the Perry-Lathrop property in the Bolz Road corridor. Only frontage will be required from this property. Due to this limited impact, SHPO has indicated that mitigation development could proceed with the plan development.

4.1.5.2 Archaeology

As discussed in Section 2.1.5, cultural resources surveys in the corridors have located a number of prehistoric and historic period sites. Of the 54 sites located, 36 are light scatters of artifacts with no potential for significant subsurface integrity. Many of these sites have been heavily impacted by 19th-20th century farming and private construction projects. The remaining 18 sites consist of 3 with 19th century components, 2 with prehistoric components, and 13 with mixed historic period and prehistoric components. All of the prehistoric sites represent the remains of habitation localities - mostly small encampments located in favorable areas which were often revisited. No archaeological sites associated with Federally recognized Native American tribes were found in the study corridors. No prehistoric mounds or cemeteries are located in the areas of project impact.

No archaeological sites subject to Section 4(f) of the National Transportation Act are located in the project area.

Of the 18 potentially significant sites, those which cannot be avoided will require further evaluation, including subsurface testing, to assess the probability for intact subsurface features and other cultural deposits. The results of these investigations will be evaluated for a determination of eligibility (DOE) for the National Register of Historic Places. A formal DOE will be submitted to the Illinois State Historic Preservation Officer (SHPO) for concurrence. Should any of these sites be determined eligible, a data recovery plan and a Memorandum of Agreement (MOA) will be submitted for SHPO review. This documentation will then be transmitted to the Federal Highway Administration for approval and forwarding to the Advisory Council on Historic Preservation as required. The SHPO has concurred (see letter of December 2, 1997 and March 5, 2001 email in Volume 3 - Historic Preservation) that in-site preservation is not necessary and that data recovery will be sufficient.

4.1.6 Geology

The potential impacts related to geology involve soils, mineral resources, and groundwater resources. These are separately discussed in the following sections.

4.1.6.1 Bedrock and Structural Geology

No impacts to bedrock are anticipated beyond potential impacts to bedrock mining discussed under Mineral Resources Section 4.1.6.3.

4.1.6.2 Surface Geology and Topography

Impacts to surface geologic materials will include excavation, grading and filling over the near-surface deposits during construction. Changes in the hydraulic conductivity and erosional resistance is expected as surface materials are disturbed. Hydraulic conductivity will be decreased through soil compaction, erosion resistance will be decreased through disruption of cover vegetation. These changes will affect the surface of the glacial drift and the soils in the construction zone. Erosional resistance will be restored through appropriate revegetation and grading.

4.1.6.3 Mineral Resources

Existing sources for clay deposits for manufacture of Chicago common brick, structural and building tile or for use by art pottery are not considered to be impacted by the proposed project.

Mineral resources, specifically sand and gravel and stone, will be impacted by development of the proposed project by precluding mining beneath the roadway alignment and limiting mining to outside the required setbacks, where mining is adjacent to the roadway. While local zoning (CC&P/Stearns Road and Bolz Road corridors) allows for mining on lands proposed for roadway construction, no expansion plans into the proposed right-of-way were identified in this study, indicating no direct impact to commercial development of mine lands. A positive commercial impact of the development on mining is the increased demand for construction materials (sand,

gravel and stone).

Two quarries in the vicinity of the proposed roadways produce stone: since abandoned), Fox Valley Stone (near the CC&P/Stearns Road corridor), and Conco Western Stone (near the C&NW/Dean Street corridor). Constraints on these operations are similar to those on the sand and gravel pits, and will limit mining adjacent to or beneath the roadway. The ISGS identified no other active quarries within 16 kilometers (10 miles) of these quarries (Masters, ISGS, IM 117, 1997). The thick glacial overburden over most of the area precludes readily developing other quarries. Fox Valley Stone is within the CC&P alignment. Impacts to the quarry are anticipated, primarily in the area of over-burden storage.

Secondary and Cumulative Impacts

The construction of the proposed roadways and bridges proposed will, in the short term, increase the demand for construction aggregate in the immediate area of the corridors selected for construction. Therefore, quarry operators near the corridors under consideration may experience some increased demand.

The northern portion of the study area, specifically Bolz Road to CC&P/Stearns Road, includes minable deposits of sand and gravel of the Batavia Member of the Henry Formation. In addition to the pits which are adjacent to the proposed alignments, more than 6 other sand and gravel operations are mapped within 13 kilometers (8 miles) of the Bolz Road corridor, and at least 5 other pits are mapped within 8 kilometers (5 miles) of the CC&P/Stearns Road corridor. There is also evidence of numerous other former pits in the vicinity (ISGS, IM 117, 1999).

The remaining alignment corridors cross other sand and gravel deposits mapped along the valley train deposits of the Fox River Valley or in Otter Creek Valley (C&NW/Dean Street, west end). The materials excluded from future mining will not impact the availability or cost of these commodities due to the presence of numerous additional and readily accessible pits in the vicinity of the proposed alignments.

Improved access across the Fox River will encourage general urban development on both sides of the river, but will probably have more impact on the less developed west side. This encouragement of development will also increase demand for construction aggregate for use in roads, parking lots, and buildings, and encourage mining of currently undeveloped sand, gravel and stone resources.

The expanding urban development which may result from the improved access may preclude mining of deposits which underlie those areas of growth. In that event, the cost of the commodity will rise with diminished supply and possibly longer transport distances.

4.1.6.4 Groundwater Resources

Impacts to groundwater caused by construction of the proposed Fox River crossings could include changes to groundwater recharge, diversions or blockage of groundwater, and water supply well relocations. In most cases, the roadway corridors that infringe on the aquifers result in a loss of recharge area that is small in comparison to that of the entire aquifer's recharge area. Construction

of impervious pavement will reduce recharge. However, in most cases the new roadway surfaces are less than one percent of the total recharge area. The impervious area comprises less than one percent of the upstream watershed in most cases, and likely includes both recharge and non-recharge areas.

Detention locations and designs will be used as appropriate to separate stormwater discharges from groundwater to reduce the potential for contamination from chlorides and other road related pollutants.

The majority of the groundwater supply wells, approximately 96%, are completed in the confined aquifer which is several meters (10's of feet) below the depth of proposed construction. Therefore, the road corridors are not expected to have long term impacts to groundwater flow direction nor affect quantity in the aquifers that are resources for water supplies in the region.

There are private water supply wells located along and adjacent to each proposed corridor. Wells located within the right-of-way of the proposed road corridor will be relocated outside the right-of-way prior to construction initiation or an alternate water supply will be provided. The existing wells in the proposed right-of-way will be properly abandoned per Illinois Department of Public Health regulations, and therefore, there will be no long term impacts due to construction. Since the water survey location data is approximate, the actual number of wells impacted or potentially impacted is not known at this time, but will be identified during the design phase of the project.

Impacts to wells remaining near the road, but not in the right-of-way, are unlikely due to the distance from the proposed road, controlled drainage patterns, and dilution of the runoff. However, wells within close proximity to the road (within 60 meters (200 feet)) which are shallow, improperly cased, or directly hydraulically-connected to road runoff could show increased levels of deicing chemicals, such as chloride.

Potential groundwater impacts are most likely limited to corridors with shallow unconfined aquifers or where the corridors require relocation of a well. With the exception of construction on the Bolz Road corridor, on the CC&P/Stearns Road corridor on the east side of the Fox River where the grading may intersect shallow water table conditions, and at the river crossing on each corridor, the road corridors are expected to cause negligible groundwater impacts. Those areas of potential impacts are underlain by shallow sand and gravel zones. Characterization of the corridor alignments using the ISGS map "The Potential for Contamination of Shallow Aquifers," (ISGS, 1984) shown on Exhibit 4.1-1, documents this low risk.

Besides construction, highway traffic and maintenance operations can introduce pollutants into groundwater. Potential groundwater pollution problems associated with highway traffic include refined oil or grease, spillage resulting from accidents, refuse or litter, herbicides and fertilizers, bacteria, and salt applications for ice control. Oil and grease from motor vehicles are relatively insoluble. They are typically suspended in runoff with a small portion trapped in the top several inches of the soil, and with time will biodegrade.

In any construction project, there is the potential for pollutant spills such as diesel fuel and lubricants. Requirements for limiting volumes of fuel stored at any staging area, containment requirements around above-ground storage tanks and petroleum products, and appropriate management of waste oil and maintenance supplies will minimize potential releases. With the contractor responsible for maintenance and cleanup of the work area, impacts to groundwater can be avoided or minimized.

One corridor where existing contamination might be encountered is the CC&P/Stearns Road corridor. There are several existing landfills on the east side of the river, north of the proposed corridor. Although some groundwater quality degradation has been documented in wells near the Tri-County Landfill, soil and groundwater contamination is not expected to exist at the proposed location for road construction. The construction contractor will be required to follow a normal standard of care in this area or other areas with potential for subsurface contamination. Any contamination identified during construction will be addressed according to IDOT's Standard Specification for Unexpected Regulated Substances.

Salt that is applied to the highway surface during winter conditions is dissolved in melting snow and ice. The deicing salts utilized include a mixture of sodium chloride and calcium chloride. Most of the salts applied for deicing are conveyed in drainage systems adjacent to the roadway. Chloride ions can percolate through the soil to the unconfined groundwater aquifer, and in sufficient concentration could degrade the groundwater resource.

Modeling of chloride impacts to the surface waters (discussed under the Surface Water Quality Section) which may recharge the groundwater in drainages along the roadway, indicate that the anticipated total and increased concentrations of chloride in the worst case scenario are equal to or less than existing groundwater quality concentrations in the aquifers above bedrock. No long term impact upon groundwater quality is expected from road operations. The one possible exception is the shallow aquifer that supplies water to the wetlands on the east side of the Fox River for the CC&P/Stearns Road corridor. Modeling of the CC&P/Stearns Road Corridor indicated that groundwater in the upper sand and gravel aquifer discharges to the South Elgin Sedge Meadow and the Brewster Creek Fen. Shallow groundwater flow in the Brewster Creek Watershed converges toward thick deposits of highly permeable sand and gravel that underlies the South Elgin Sedge Meadow and Brewster Creek Fen. Modeling the proposed stormwater detention and chloride mitigation plan identified in the Stearns Road *Technical Memorandum* predicted minimal impacts via groundwater discharge to the South Elgin Sedge Meadow and Brewster Creek Fen from roadway runoff. A concept stormwater management plan that addresses potential stormwater impacts is discussed in the regional impacts sections of this EIS.

Most of the communities and many private properties along the proposed road corridors obtain their water supply from groundwater. The majority of wells in this region are completed within confined sand and gravel aquifers located on top of the bedrock surface. These aquifers are generally from 15 to 45 meters (50 to 150 feet) below the ground surface. In most of the study area, a relatively impermeable aquitard exists between the confined aquifer and the ground surface providing natural protection from contamination. The unconfined aquifers are used only to a limited extent (less than

5 percent of the wells inventoried) in this region. and they also will not be affected since no impacts to flow direction or quality are expected from the roadway construction.

Secondary and Cumulative

Other than the CC&P/Stearns Road corridor, each corridor will have long term groundwater impacts that are in proportion to the construction area, length and width of active construction, and the increase in lane miles and traffic on the new roadways. As traffic flow improves access and development, increasing groundwater demands may result in lowering the potentiometric head within the confined aquifer, in the same way that historic groundwater development has lowered water levels in the bedrock aquifers. These impacts could result in removing some shallow wells from service, changes in groundwater flow directions and changes in water quality as recharge areas impact different portions of aquifers. Lowering water levels may result in some confined aquifers becoming unconfined or water table conditions which can change the water quality as aquifer materials potentially oxidize.

Additional development may also cause increased concentrations of pollutants in groundwater. However, future developments comprise a small percent of the groundwater recharge area and so impacts are expected to be minimal.

4.1.7 Water Quality and Water Resources

Surface water impacts result from both construction and operation of a roadway. The five corridor areas involve the crossing of the Fox River and six tributaries: Brewster Creek (CC&P/Stearns Road and Red Gate Road Corridors), the North Arm of Brewster Creek and Brewster Creek Tributary [also referred to as the East Branch of Brewster Creek] (CC&P/Stearns Road Corridor), State Street Creek and Seventh Avenue Creek (C&NW/Dean Street Corridor), and Indian Creek (Illinois Route 56/Oak Street Corridor).

4.1.7.1 Construction Impacts to Surface Waters

Typical construction activities associated with bridges, culverts, and roadway approaches involve grading, filling, and excavation for pier placement, bank shaping, culvert installation, and haul roads. All of these activities increase the erosion potential due to the reduction in vegetative cover and increased impervious areas resulting from compaction of soils by heavy equipment. Structure placement in the streams may cause temporary increases in turbidity and sedimentation and temporarily alter downstream hydraulics and substrate conditions. These changes may temporarily impact downstream aquatic systems.

The potential result of increased sedimentation during construction is the covering of natural substrate thereby eliminating necessary habitat conditions for some species of fish, mussels or macroinvertebrates. The magnitude of the impact will vary according to site specific conditions, such as the type of crossing structure and stream substrate. Table 4.1-5 summarizes the specific method used to cross each stream and the area of river bottom that may be used for piers.

Bridge crossings of the Fox River will result in permanent loss of river bottom in four of the five

corridor crossings. Piers will be placed in the river for all crossings except the Bolz Road Corridor. Table 4.1-5 lists the number of piers and associated loss of river bottom due to construction. The area permanently removed by piers is compared to the total area spanned by the bridge and expressed on a percentage basis. The construction of piers will result in a permanent loss of 1.5% to 5% of the river bottom area and a 2% to 10% temporary loss of river bottom depending upon the number and size of the piers, as well as construction method utilized.

The proposed bridge over the Fox River for the Bolz Road Corridor will span the entire channel with no piers placed in the river. There will be no permanent construction impacts to surface water quality, related biological resources, or recreational activities in this corridor.

Construction impacts to the Fox River in the CC&P/Stearns Road Corridor include increased turbidity caused by pier and access road construction, and the direct loss of substrate due to pier placement. The temporary loss of roughly 10 percent of the river bottom within the proposed right-of-way is attributed to the need for the placement of a temporary access road to construct the piers in the river. Once pier construction is completed, the temporary access road will be removed.

Pier construction in the Fox River for the Red Gate Road, C&NW/Dean Street, and Illinois Route 56/Oak Street Corridors will be completed using a barge, where river depths allow. River bottom disturbance will therefore be limited to the area of permanent loss due to pier placement, and from erosion of adjoining river banks. Pier construction will include the placement of sheet pile to form coffer dams for construction within a controlled perimeter to minimize impacts. Therefore, temporary substrate loss during construction will be the same as the permanent loss. Increased turbidity caused by pier construction will be temporary.

The state threatened river redhorse and state endangered greater redhorse fish species are known to occur upstream of the Illinois Route 56/Oak Street Corridor (Taylor, et al, 1995) and have the potential to occur in all corridors except Bolz Road. Sediments stirred up during construction are expected to settle out behind the dams located upstream of the areas known to be inhabited by these fish. These two species were not identified north of the Geneva dam during recent surveys. The presence of dams hinders the movement upstream of these species to the other corridors. In addition, the last sighting of a river redhorse near Carpentersville was in 1958. Therefore, construction of the CC&P/Stearns Road, Red Gate Road, and the C&NW/Dean Street Corridors are not anticipated to impact either redhorse species. As no records exist for either redhorse species to occur in the Bolz Road Corridor, no impacts to these fish are expected to occur from this corridor. Furthermore, no in-stream piers are to be constructed for the Bolz Road Corridor, reducing the potential for temporary increases of sedimentation and turbidity.

The river redhorse and greater redhorse are intolerant of turbid waters and silty bottoms. These species of fish feed on mollusks, which are also intolerant of pollution and degradation of water quality. These fish spawn in gravel beds and riffles in May and June (Harris, et al, 1993). For all corridors, except Bolz Road (because of the intervening dams and distance from the sightings of these fish), instream work, and work that would impact the Fox River, will be limited to the dates of June 8 through February 29 of the project year, the non-spawning period. Strict adherence to erosion control measures coordinated with the IDNR and will follow, at a minimum, the more

restrictive of IDOT requirements or Kane County Stormwater Management Ordinance Requirements for all on-shore activities will reduce erosion and thereby reduce the amount of sediment entering the Fox River. Construction in the river will be limited to the exact area needed to erect the temporary cofferdams and construct the piers. This area is roughly 2 percent of the total area within the proposed bridge right-of-way across the river. Limiting the construction to this small area will reduce the amount of sediment stirred up in the river. Construction of these piers will be from barges where water depths allow, for Red Gate Road, C&NW/Dean Street and Illinois Route 56/Oak Street Corridors. Therefore, the impacts in this section of the Fox River should not reduce habitat requirements for the river redhorse and greater redhorse fish species.

Mussel surveys within the five corridors turned up relatively few live individuals, none of which were federal or state listed threatened or endangered species. Dead shells of the state threatened spike and the state endangered slippershell (Brewster Creek) were collected during recent surveys. However, no live species were collected and the conditions of the dead shells indicates that these species have most likely been extirpated from the study area. Due to the lack of active mussel beds within the project study area and the fact that no live federal or state listed species of mussels were found, no impacts to mussels are expected to occur as a result of construction of any of the five corridors. The implementation of erosion control measures will minimize sediment entering the river.

Bridges, rather than culverts, will be utilized to minimize disturbance of the channel bottoms in Brewster Creek, the North Arm of Brewster Creek, and the Brewster Creek Tributary [East Branch]. Table 4.1-5 describes the type of construction by stream and corridor.

A bridge will be constructed for crossing of the North Arm of Brewster Creek in the CC&P/Stearns Road Corridor. As the bridge will span the floodway of the creek, minimal riparian habitat loss is expected to occur due to the North Arm of Brewster Creek ~~culvert/~~bridge installation. Downstream impacts during construction (i.e., temporary increases of turbidity and sedimentation) will be minimal as the bridge will span the channel. Erosion control measures will minimize impacts downstream during construction.

A bridge will be utilized for the crossing of Brewster Creek Tributary [East Branch] in the CC&P/Stearns Road Corridor. The bridge will span the channel, thereby minimizing stream disturbance. The stream, however, will be disturbed by the removal of the existing culvert. The long term result will be increased natural channel bottom.

[As the Red Gate Corridor and the C&NW Corridors have been deleted from further consideration, the following discussion is here only for historical reference to the DEIS]
The crossing of Brewster Creek in the Red Gate Road Corridor will be accomplished with a culvert. The installation of the culvert will require some in-stream work. Temporary impacts expected to occur as a result will be increased sedimentation. Erosion control measures will be implemented to reduce impacts during construction.

State Street Creek and Seventh Avenue Creek watersheds are less than 260 hectares (one square mile). Due to the small size, both crossings will be accomplished with culverts. Both streams are

currently conveyed through culvert enclosures in the crossing locations. The structures will be upgraded with similar structures. As these channels are intermittent and dry for long periods, no in-stream work is anticipated.

The Indian Creek crossing will be accomplished via a culvert extension of the existing Indian Creek culvert. Installation of this structure will require some in-stream work. Downstream impacts will be temporary increases of turbidity and sedimentation during construction. Erosion control measures will be implemented for all in-stream work to minimize erosion and sedimentation.

Table 4.1-5
Summary of Crossing Structure and Loss of Substrate Area

Corridor/Stream	Type of Crossing Structure	No. of Piers in Waterway	Loss of River Bottom, d/	
			Permanent	Temporary
Bolz Road				
Fox River	Bridge a/	-0-	-0-	-0-
CC&P/Stearns Road				
Fox River	Bridge	2	3	10
North Arm of Brewster Creek	[text deleted] Bridge	-0-	-0-	-0-
Brewster Creek	" " " " "	-0-	-0-	-0-
Brewster Cr. Tributary [East Branch]	" " " " "	-0-	-0-	-0-
Red Gate Road				
Fox River				
Alternate A	Bridge	1	1.5	1.5
Alternate B	Bridge	1	1.5	1.5
Alternate C	Bridge	1	1.5	1.5
Brewster Creek				
Alternatives A, B	Culvert a/	-0-	-0-	-0-
C&NW/Dean Street				
Fox River	Bridge	2	3-5	3-5
State Street Creek	Culvert a/	-0-	-0-	-0-
Seventh Ave. Creek	Culvert a/	-0-	-0-	-0-
Illinois Route 56/Oak Street				
Fox River	Bridge	3	2	2
Indian Creek	Culvert c/	-	-	-

a/ Will span channel banks
b/ Bridge spanning channel banks
c/ Extension of existing culvert
d/ Area estimated at immediate crossing area as % of area crossed

4.1.7.2 Operational Impacts to Surface Water

Pollutants accumulate on roadway surfaces and adjoining right-of-ways as a result of motor vehicle operations on the roadway. These pollutants include solids, heavy metals (lead, zinc, and copper),

and oil and grease, which are generated by the wear of vehicles parts and tires. De-icing chemicals introduce chlorides and solids (if sand mixtures used) and nutrients can be generated by fertilizer usage along the roadside. The concentrations of these pollutants in roadway runoff are highly variable by site and are affected by numerous factors, such as traffic characteristics (volume and speed), climate, maintenance activities, and adjacent land uses.

Roadway runoff may affect water quality of receiving waters through the temporary increase in loadings during storm events and through chronic effects from long term heavy metal accumulation within the receiving waters. Pollutant loadings from roadways is related to the average daily traffic (ADT) and typically does not become problematic to water quality when the ADT is 30,000 or less (Young, 1996). Potential impacts are generally short-term, localized acute loadings from temporary water quality degradation with few, if any, chronic effects. The CC&P/Stearns Road and the Illinois Route 56/Oak Street bridge would each carry approximately 34,000 vehicles daily and the Red Gate Road crossing approximately 32,000. The ADT's for the Bolz Road and C&NW/Dean Street crossings are projected at less than 30,000 ADT. All the corridors have segments leading to the crossings that are projected to exceed 30,000 ADT (see traffic Exhibits 4.2-2, 4.3-2, 4.3-3a, 4.3-3b, and 4.4-2).

A regression method developed by the U.S. Geological Survey (Driver, 1990) and the statistical technique developed for the Federal Highway Administration (Driscoll, 1990) provided additional information regarding projected pollutant loadings for the heavy metals and for Total Suspended Solids. Estimated pollutant concentrations will be within Illinois General Use Water Quality Standards.

4.1.7.3 Maintenance (Deicing Chemicals) Impacts

Deicing salt (sodium chloride), and plowing are the main tools used during the winter months for controlling ice and snow on roadway surfaces. In some areas, sanding is used alone or in mixtures with other de-icing chemicals to provide skid free road surfaces during snow events. Deicing salt maintains public mobility and safe roadways by rapidly and reliably controlling ice buildup on road surfaces during the winter months.

Road salt moves through the environment as runoff, splash and spray. As the snow or ice melts, the salt is carried by the melt water runoff to the roadway drainage swales, ditches or storm sewers until it enters a stream or other water body as runoff. Salt may also percolate into the soil profile. Salt is also transported by splash or spray generated by moving vehicles coming in contact with brine, slush or dried residue. Studies (Frost, et al., 1981); Diment, et al., 1973; Lipka and Aulenbach, 1976; Sucoff, 1975) indicate that 60 to 80 percent of salt is carried by surface runoff into the water bodies, 15 to 35 percent occurs as splash, and up to 3 percent occurs as spray.

The Kane County Division of Transportation (KDOT) uses a mixture of sodium chloride, sand, and calcium chloride for deicing. The application rates for each snow event is equivalent to 0.065 kg/m^2 (0.12 lbs/sq.yd.) of chloride or 0.4 tons of chloride per lane mile per maintenance cycle. The amount of salt entering the environment depends on the number of storms per season (usually November through March) and the number of salting events per storm. KDOT indicates that there are an average of 17 applications per year, or 1.105 kg/m^2 (2.04 lbs/sq.yd.) of chloride. This is

the expected average annual rate of deicing salt use for all corridors.

Stormwater runoff from the proposed roadways and adjacent right-of-ways will be directed to the drainage systems before outfalling into area streams. In the five corridors, a combination of vegetated swales and storm sewers with detention basins will be utilized for stormwater runoff. In the CC&P/Stearns Road Corridor detention basins will be designed to protect water quality within the Brewster Creek watershed.

In Illinois, the General Use Water Quality Standard for chloride is 500 mg/ℓ. There is no established standard for sodium. Surface water chloride concentrations were estimated for each corridor using the average number of salt applications per year and the amount of new impervious surface to be constructed in each corridor. These loadings were converted to concentrations in the streams using two scenarios: average stream flow conditions and storm flow conditions. A description of each model, procedures used, and results are included in the Water Quality and Water Resources Technical Report. In the worst case scenario for any of the five corridors, stream chloride concentrations were projected to be in the range of 50 to 118 mg/ℓ (STS, 1998). Concentrations were highest in the smaller tributaries. Nevertheless, expected chloride levels in these tributaries would be within the Illinois General Use Water Quality Standards of 500 mg/L.

Studies on the effects of salt on aquatic biota, including acute and chronic toxicity, indicate that salt does not have significant deleterious impacts on aquatic biota (fish, invertebrates, aquatic plants) in large or flowing bodies of water where dilution takes place quickly (Jones and Jeffrey, 1992). This is applicable to the Fox River, where dilution rates are rapid for all the corridors. The chloride concentrations in the tributaries within the project study areas are expected to increase; however, the anticipated levels of chloride would not impact known fish, benthic, or mussel populations. In some instances, these streams are already receiving chlorides from road salt due to their proximity to major highways (Illinois Route 25, Stearns Road, Dunham Road, Illinois Route 31, and Illinois Route 56). The impacts to tributaries adjacent to these roadways would be from the added lane miles created by widening the nearby roadways.

4.1.7.4 Measures to Minimize Harm

Design, construction, and operational features have been developed to minimize highway runoff on receiving streams. These include the use of vegetated drainage ditches, a detention basin, erosion control features, and management of road deicing procedures.

With the exception of a small portion of the Bolz Road Corridor near the western terminus, all roadway and bridge runoff will eventually drain into the Fox River, either through the use of enclosed storm sewers or drainage ditches. The small segment of the western portion of the Bolz Road Corridor will drain into the Kishwaukee Creek watershed, a tributary to the Rock River. Although the operation of the roads will not cause impacts to surface water which would affect water quality, pollutants, such as chlorides, nutrients, metals, and sediment, will be added to the environment. The additional levels of these pollutants will be minimized to some extent by the measures described in the following paragraphs.

Vegetative ditches have been shown to remove a portion of metals, oil and grease, and particulates

transported in stormwater runoff. Vegetated ditches will be provided at the following locations:

- Bolz Road - West end of corridor to 200 meters (660 feet) west of the Fox River.
- CC&P/Stearns Road - West end of corridor to Illinois Route 31.
- Illinois Route 56/Oak Street - 1.5 kilometers (0.9 miles) east of Illinois Route 25 to east end of corridor.

Vegetated swales will not be feasible in the more urbanized sections of Bolz Road in Carpentersville and Algonquin, C&NW/Dean Street in St. Charles, and Illinois Route 56/Oak Street in North Aurora. Curb and gutter with storm sewers will be provided in these sections and in all other segments not listed above. Due to stormwater management practices, alternatives to vegetative ditches may be required throughout all corridors.

The sensitivity of nearby fens to chlorides found in deicing salts requires that all runoff from new pavement in the CC&P/Stearns Road Corridor east of the Fox River, i.e., in the Brewster Creek Watershed, be collected in a closed drainage system and conveyed to stormwater management ponds in locations dictated by the roadway profile, local topography and proximity to natural areas. These ponds will be lined to diminish interaction with the groundwater table. Ponds are designed to promote sedimentation and, where feasible, to extend residence time to promote dilution of accumulated chlorides and heavy metals associated with roadway runoff in the spring release. The concept locations of ponds are illustrated on Exhibit 4.3-5. This pond system will remove a portion of metals, oil and grease, and particulates from stormwater runoff before it is discharged to the Brewster Creek Surface Tributaries. These ponds will also serve to maintain existing flows in the creek, and to attenuate runoff flows into Brewster Creek from storm events. Additional riparian corridor protection will be implemented on existing developed lands, further reducing existing impacts. This stormwater management system will reduce potential flooding and water quality impacts to this sensitive stream, the nearby Brewster Creek Fen Nature Preserve, and the South Elgin Sedge Meadow.

4.1.7.5 Secondary and Cumulative Impacts to Water Resources and Water Quality

Secondary Impacts

Secondary (or indirect) impacts are those impacts that will result from reasonably foreseeable non-highway actions, which accompany or occur after the completion of a highway project and which are assumed to be induced by the project. Future development is expected to occur as described in Kane County's *2020 Land Resource Management Plan* for the identified Urban Corridor. It is anticipated that development will occur in the County regardless of the completion of any of the Fox River Crossings. Any incremental changes to land use as a result of this project are likely to be small compared to ongoing development and difficult to identify. Thus, while secondary impacts may occur as a result of for any of the five corridors or the project in total, they are expected to be small and impossible to quantify.

The project may have the potential to influence land use outside of the Urban Corridor. Induced growth outside the Urban Corridor may contribute a larger relative impact to water quality and resource issues because of the lower relative density. These impacts could include changes to

hydrology (due to changes in impervious areas and drainage patterns) and to water chemistry (due to salt and other urban runoff). Increased development also changes in the demand for water resources, including potable water, and increased wastewater. Given the difficulty in estimating the potential for changes in development, actual impacts are difficult to estimate. Enforcement of the *2020 Land Resource Management Plan* by Kane County with the cooperation of the affected communities may have the potential to mitigate some of the inducement to growth.

Cumulative Impacts

Kane County's *2020 Land Resource Management Plan* indicates that the county population has grown over 85 percent in the period between 1950 and 1980. Population continued to increase from 1980 to 1990 by 14 percent. The Central Region has seen a higher than average growth rate at nearly 25 percent between 1980 and 1990. Most of the growth has occurred in the Urban Corridor as defined by the *2020 Plan*. Based on projections, this trend should continue through 2020, which will place additional demands on surface water and ground water resources in the county.

Populations within other regions of the Fox River Watershed have also grown. Urban development within the upper part of the watershed in Lake and McHenry Counties is expected to continue similar to Kane County development. In addition, much of western DuPage County, portions of which lie within the Fox River watershed, are also developing. These other nearby counties and communities all contribute to the current water quality within the Fox River.

Despite the increased population within the Fox River watershed, water quality improvements have been achieved. In 1988 to 1991, only 55 per cent of the Fox River main stem miles were rated as fully supporting aquatic life use (IEPA, 1990 and IEPA, 1992) and the stream reach from McHenry to Aurora was rated as partial support/minor impairment. The percentage of the Fox River rated as fully-supporting aquatic life use in 1992 to 1993 increased to 85 per cent (IEPA, 1994). The stream reach from Carpentersville to Batavia is the only section of the original McHenry to Aurora stream reach that has not been upgraded to fully supporting aquatic life use.

Increased investment in wastewater treatment and storm water management have contributed to achievement of the General Use Water Quality Standards. Exceptions include cadmium and fecal coliform levels that have exceeded the General Use Water Quality Standards at various stations in 1994-1995.

Mean chloride concentrations have increased in the Fox River at monitoring stations with time and in a downstream direction. In the North Region the mean chloride concentration between 1976 and 1985 was 49 mg/ℓ. This mean value increased to 68 mg/ℓ for the period 1986 to 1995. At a distance of 57.4 kilometers (35.7 miles) downstream, the mean chloride concentration was 59 mg/ℓ for between 1976 and 1985. This increased to 86 mg/ℓ for the period 1986 to 1995. These increased values are associated with development as de-icing salt usage has increased, but mean chloride concentrations remain below the General Use Water Quality Standard of 500 mg/ℓ.

There is no water quality standard for total suspended solids (TSS) but TSS does provide additional information on water quality. When the mean concentration of TSS was compared for

two time periods (1976 to 1985 and 1986 to 1995), the mean value appeared to decrease. Therefore, development and population growth have not adversely affected TSS levels. Water quality in the Fox River is expected to be maintained as both point sources and non-point sources are regulated. Chloride concentrations may continue to increase as future development occurs; however, water quality will be maintained.

Historical water quality conditions in the Fox River can be described by both chemical and biological data. The Illinois Department of Natural Resources (formerly IDOC, now IDNR) assessed the presence, diversity, and biotic integrity of the Fox River between 1978 and 1990 at four sampling stations. Fish collections near the study area indicate a variety of species have been present in the Fox River since 1975. The following table compares species collected from previous sampling efforts on the Fox River.

Table 4.1-6
Fox River Fish Sampling

Period	No. of Samples	No. of Fish Species	Reference
1975-1976	20	52	IDOC (1976)
1981	12	47	Bertrand (1982)
1978-1990	34	61	IDOC (1992)

The 1992 IDOC study concludes that "no clear temporal trends were evident in AIBI (Alternate Index of Biotic Integrity), evenness, or species richness within the four stations" (Day, et al., 1992). The river continues to support several sport fish species (Day, et al., 1992). The 1994 fish collection included the observance of the state threatened river redhorse near the Illinois Route 56/Oak Street Corridor (Taylor, et al., 1995). Maintenance of species diversity and abundance is indicative of good water quality conditions.

Cumulative impacts on water quality appear to be limited to increasing chloride concentrations. These increases will not affect overall water quality use or aquatic habitat.

Water Supplies and Usage

Secondary and cumulative impacts to water usage will occur as a result of increased development. Industrial, commercial, and residential demands for water will continue to increase. Currently, communities in the area utilize groundwater as a water supply source. Elgin and Aurora supplement the groundwater supply with Fox River water. The groundwater is largely drawn from relatively deep confined aquifers. Additional volumes of water will be withdrawn from deeper aquifers with no impacts to the shallow aquifers. The shallow aquifers feed most of the area wetlands, including the identified fens and seeps in the CC&P/Stearns Road Corridor.

Increased development as projected by the *2020 Plan*, which is complemented by the proposed river crossings, will increase the amount of impervious surfaces in the region. This increase is a result of buildings, roads and parking lots as well as by compacted yards and change in

vegetation to lawns from more natural vegetation. This increased impervious surface not only impacts the amount and speed of stormwater runoff, but also impacts groundwater recharge areas. While the proposed roadways are only a small percentage of total impervious surfaces, this, in conjunction with projected development, will increase total impervious surfaces within the watershed.

4.1.7.6 Permits

The Fox River is defined by the Chicago District of the United States Army Corp of Engineers as navigable throughout its course, including the Chain-of-Lakes (Corps of Engineers, Public Notice, April 22, 1983). As a result of this designation, any work below the ordinary high water line, including the construction of piers, will require authorization from the Corps of Engineers under Section 10 of the River and Harbors Act of 1899. Therefore, Section 10 Authorization will be required for construction of the CC&P/Stearns Road, Red Gate Road, C&NW/Dean Street, and Illinois Route 56/Oak Street corridors. The Bolz Road crossing is exempt as no in-river work is proposed.

Any fill activities or other construction (e.g., pier or cofferdam construction) below the normal water elevation of the Fox River will be subject to requirements of the U.S. Army Corps of Engineers Section 404 permit, with accompanying Section 401 water quality certification from the Illinois Environmental Protection Agency.

The U.S. Coast Guard does not exercise jurisdiction over the Fox River in Kane County (phone conversation of 4/30/98) and therefore has no permitting requirement for this project.

All of the proposed bridge corridors must cross the Fox River floodway and floodway fringe. Alignments A or B for the Red Gate Road corridor and the CC&P/Stearns Road crossing will cross the floodway of Brewster Creek and its tributaries. The floodway is defined as that portion of the floodplain that must be maintained to avoid a significant increase in elevation or velocity for the flood event with a 1 percent chance of exceedance in a year. The flood fringe is that area outside of the floodway that will be inundated by the flood event with a 1 percent of exceedance in a year. In Northeastern Illinois, the placement of fill and structures within the floodway falls under the jurisdiction of the Illinois Department of Natural Resources - Office of Water Resources (IDNR-OWR) (615 ILCS 5/18g and implemented as Section 3700) and the Federal Emergency Management Agency (FEMA). Section 3700 rules require that no fill be placed in the floodway without effective replacement. This prevents significant increases in water surface elevations, flows, or water velocity.

Water quality is additionally protected under the requirement of the National Pollution Discharge Elimination System (NPDES). An NPDES permit must be issued under Section 402(p) of the Clean Water Act whenever construction disturbs 2 hectares (5 acres) or more. The permit requires suitable erosion and sediment control measures will be used during construction. All five corridors will individually exceed 2 hectares (5 acres) of construction area. Therefore, an NPDES permit will be required for each corridor.

Permit coverage for the project will be obtained either under the IEPA General Permit for

Stormwater Discharges from Construction Site Activities (NPDES Permit No. ILR100000), or under an individual NPDES permit. Requirements applicable to such a permit will be followed, including the preparation of a Stormwater Pollution Prevention Plan. Such a plan will identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site and will describe and ensure the implementation of practices which will be used to reduce the pollutants in discharges associated with construction site activity and to assure compliance with the terms of the permit.

4.1.7.7 Floodplains

All of the crossings of streams with floodways will be in accordance with the permitting requirements for floodways in Northeastern Illinois (see section 4.1.7.6); this compliance includes only pier construction in the floodway below the 100 year flood elevation. Compliance with floodway permitting requirements ensures that there will be no significant impact to the flood elevation or velocity for those streams with a designated floodway.

For streams without a designated floodway, all floodplain encroachments will be transverse and all culverts or bridges will be designed to prevent any significant increase in flood elevations or velocity. In addition, the more stringent requirements for new construction in floodways and floodplains found in the Kane County Stormwater Ordinance will be followed.

4.1.8 Wetlands

Direct wetland impacts are often defined as the filling, draining or excavation/clearing of wetlands. Secondary or indirect impacts may include loss of buffer area surrounding the wetland, alteration of hydrology (including increased runoff due to paving, increased sediment transport, interruption of groundwater), and changed chemistry of the water (especially increased salt due to roadway deicing). All of these can affect the flora associated with a wetland. In general, the alignments selected were developed to avoid wetlands where practicable.

The direct wetland impacts for the three remaining corridors are: Bolz Road - none; CC&P/Stearns Road -0.93 hectare (2.3 acres); and Illinois 56/Oak Street - 0.02 hectare (0.05 acre). Table 4.1-7 summarizes estimates of construction impacts to wetlands for all five corridors. Some of the remaining wetlands in these corridors may receive indirect impacts from construction operations of these roadways. Local benefits of smaller wetlands, such as flood retention, will be mitigated within the watershed. While a local loss may occur to smaller wetlands, the benefits of creating larger wetland complexes serving to mitigate these impacts will appear to outweigh the local loss. In all, approximately 1.0 hectare (2.46 acres) of wetlands will be directly impacted by construction.

Due to the sensitive types of wetlands in the CC&P/Stearns Road corridor, a *Wetland Technical Report* and a *Technical Memorandum* have been prepared which details construction, operational, indirect and cumulative impacts to wetlands in this corridor. The technical report also includes a detailed functional assessment, measures to minimize harm and potential mitigation options.

Section 4.3.8 presents the highlights of the report.

Prior to the issuance of the Record of Decision for this project, the wetland impacts will be evaluated for compliance with Executive Order 11990, Protection of Wetlands to determine a "Wetland Practical Alternative Finding." This finding indicates that there is no practical alternative to the construction of the project to avoid impacts to wetlands.

4.1.8.1 Construction Impacts to Wetlands

During construction, the impact to each wetland is either the result of placement of fill to reach a required grade or elevation, placement of bridge piers, or culvert installation associated with crossing of streams/rivers. The potential direct construction impact was determined for each wetland based on: (1) the proposed activity, (2) the extent of the wetland area impacted, (3) the status of the remnant wetland after the proposed activity is in place (i.e., for bisected wetlands), and (4) the effect on wetland function. The limit of disturbance/impact for each wetland due to roadway construction was considered to be all of the wetland area within the proposed right-of-way. Detailed discussions of impacts are provided in the regional summaries that follow.

Table 4.1-7
Summary of Wetland Construction Impacts

Corridor	Watershed	NWI Classification	Wetland Site No.	Total Wetland Area (ha)	Estimated Area Directly Impacted (ha)
Bolz Road	Fox River	POWHX	5[d]		
CC&P/Stearns Road[e]	Brewster Creek	PUBGx	4	0.45	0.16
		-	15	0.93	0.21
	North Arm and Brewster Creek	PEMC	13	0.66*	0.20
	East Branch of Brewster Creek	-	16	0.46*	0.24
	Unnamed trib. of Fox R. watershed east of McLean Blvd	-	21	0.07	0.07
		-	22	0.06	0.06
Red Gate Road (Alignment A)	Fox River	PUBG	4	0.24	0.08
		PEMC	5	0.28	0.08
	Brewster Creek	Not identified	6	0.08	0.04
		Not identified	8	0.06	0.012
		PEMA	5[b]	0.28	0.11
		PEM	13[b]	0.74	0.05
Red Gate Road (Alignment B)	Fox River	PUBG	4	0.24	0.08
		PEMC	5	0.28	0.08
	Brewster Creek	Not identified	6	0.08	0.04
		Not identified	8	0.06	0.012
		PEMA	5[b]	0.28	0.11
		PEM	13[b]	0.74	0.05
Red Gate Road (Alignment C)	Fox River	PUBG	3	0.27	0.08[c]
C & NW / Dean Street	0	N/A	0	0	0
IL Rte 56/Oak Street	Indian Creek	Not identified	14	und.	0.02

* Total area described and noted is based upon delineation of that part of the wetland adjacent to the corridor

[b] = Wetland Nos. 5 and 13 from the CC&P/Stearns Road Corridor will be impacted by proposed construction

[c] = Shading of 0.1 ha

[d] = No longer considered a wetland. Has been modified to a suburban detention pond. Therefore, there is no wetland impact and no necessary mitigation.

[e] = Wetland definitions and impacts for the CC&P/Stearns Road Corridor have been revisited since the DEIS

und. - undetermined, outside of watershed

4.1.8.2 Operational Impacts to Wetlands

During roadway operation, there are potential impacts to water quality as a result of pollutants and toxicants from vehicles or deicing chemicals entering wetlands. Highway operations can also potentially influence wetland functions by changing water volumes reaching wetlands. Highway runoff drainage systems may direct additional waters into a wetland system or reduce drainage areas tributary to a wetland. For special wetland systems, such as fens which are found in the CC&P/Stearns Road corridor, groundwater recharge would be an additional consideration.

Sodium chloride (salt) applied to roads for ice control is considered to be the primary long term water quality issue and has the potential to affect the growth and health of wetland vegetation by direct runoff into wetlands, splash, and aerosol spray. Studies indicate that 60 to 80 percent of deicing salt runs off into the surface water or wetlands, 15 to 30 percent occurs as splash, and up to 3 percent occurs as spray (Frost et al., 1981; Diment et al., 1973; Lipka and Aulenbach, 1976, Sucoff, 1975). Depending upon the wetland proximity to the highway system, the proposed drainage systems, and soil conditions, these three mechanisms will vary in importance. The proposed drainage system and potential operational impacts are discussed in detail by region.

The quality of stormwater runoff which may drain into wetlands is affected by traffic volumes, maintenance procedures, drainage methods, and deicing procedures which affect the chloride levels monitored in runoff.

The following table summarizes anticipated operational impacts to wetlands for each corridor. These impacts are discussed in the regional summaries in Sections 4.2.8.2, 4.3.8.2 and 4.4.8.2.

Table 4.1-8 Operational Impacts to Wetlands			
Corridor	**Watershed**	**NWI Class.**	**Wetland No. (a)**
Bolz Road	Kishwaukee River	PEMC	1
CC&P/Stearns Road	North Arm Brewster Creek	PUBGx and PEMF	3
	Brewster Creek	PUBGx	4
	North Arm Brewster Creek	PFO1C	11
	North Arm Brewster Creek and East Branch of Brewster Creek	PEMC	13
	Brewster Creek	-	15
	Brewster Creek	-	15'
	East Branch Brewster Creek	-	16
	Day's Fen Drainage	-	17
	Unnamed Trib of Fox R. West of McLean Blvd	-	18
	Unnamed Trib of Fox R. West of McLean Blvd	PUBGx	23
	Brewster Creek	-	28
Red Gate Road*	Brewster Creek	PEMC	5
	Brewster Creek	Not identified	6
	Brewster Creek	Not identified	8
	Fox River	PUBG	4
	Fox River	PUBG	3
C&NW/Dean Street	None	N/A	N/A
IL Rte 56/Oak Street	Fox River	Not identified	2
	Fox River	PEMC	4
	Fox River	Not identified	5
	Indian Creek	Not identified	14

(a) Wetland number is associated with wetland number assigned in corridor study.

* Also to Wetlands No. 5 and 13 from the CC&P/Stearns Road for Alignments A and B

4.1.8.3 Secondary and Cumulative Impacts to Wetlands

Secondary Impacts

Secondary (or indirect) impacts are those impacts to wetlands that will result from reasonably foreseeable non-highway actions, which accompany or occur after the completion of a highway project and which are assumed to be induced by the project. Future development is expected to occur as described in the *2020 Land Use Plan* for this urban corridor. It is anticipated that development will occur in the County regardless of completion of any of the proposed Fox River Crossings. No secondary roadway improvements or development are known or foreseeable other than that planned for in the *2020 Land Use Plan*. Therefore, there are no identified secondary impacts for any of the five corridors.

Cumulative Impacts

The *2020 Land Use Plan* indicated that Kane County has grown over 85 percent in the period between 1950 and 1980. Population continued to increase from 1980 to 1990 by 14 percent. The Central Region has seen a higher than average growth rate at nearly 25 percent between 1980 and 1990. Most of the growth has occurred in the Urban Corridor as defined by the 2020 Plan. Based

on projections, this trend should continue through 2020, which will increase development pressure on wetlands in Kane County and the Fox River watershed. Infrastructure, road improvements, and conversion of land are associated with continued suburban development in Kane County. This urban development is expected to continue regardless of whether this project is implemented.

Wetlands once covered more than 23 percent of Illinois. An estimated 90 percent of these wetlands have been destroyed by human modification of the environment. In 1800, Kane County contained roughly 34,300 hectares (85,900 acres) of wetlands (Byers, 1982). This total decreased to 4,100 hectares (10,144 acres) by 1987, a reduction of 88 percent within the County. Agriculture and urban development contributed to this decrease. A summary of wetland descriptions and sizes associated with each corridor is contained in Section 2.1.8.

It is expected that the continued net reduction in wetland acreage in the County will slow or even be eliminated in the future. This is due to the protection granted wetlands under Section 404 of the Clean Water Act. Under new mitigation guidelines, impacts to wetlands greater than one-quarter acre (0.25 hectare) must now be mitigated at ratios of 1.5:1. Arguably, more wetlands may be created than destroyed by an individual project (i.e., the acreage may appear greater, but the long-term viability of the new wetlands has not been proven). In addition, in-kind replacement is strived for, which minimizes the chances of changing the composition of wetlands in the County. This mitigation requirement is applicable to all private as well as public projects. Mitigation ratios can be higher depending upon the type and quality of wetlands impacted. The Illinois Interagency Wetland Policy Act of 1989 (applicable to state or state funded projects only) also provides protection to wetlands and requires mitigation for all impacts regardless of size.

The potential impacts which are not regulated are those that may affect groundwater flow. This is particularly important to those wetlands which are dependent on groundwater discharge, such as fens and seeps. The most serious threat to groundwater flow in the project area is sand and gravel pit operations. The corridors with the highest amount of gravel operations are the CC&P/Stearns Road corridor, and the northern portion of the Red Gate Road corridor. The CC&P/Stearns Road corridor also contains three seep/fen communities, which are most susceptible to groundwater flow impacts. It is these fen and seep communities which harbor a majority of the state listed threatened and endangered species which were identified during biological surveys. While existing gravel operations near the corridor are slowing, potential new operations west of the Fox River may pose threats. These operations are identified in the *2020 Land Use Plan* and will most likely occur regardless of whether any of the bridge crossings are constructed.

Wetlands in the corridors are already under development pressure. On going development in this corridor west of the Fox River and north of the IC Railroad tracks has altered wetlands and drainage patterns as houses, roadways and detention facilities are constructed. The conversion of these former agricultural lands to suburban developments is expected to continue into the future and are planned for in the 2020 Land Use Plan for the county. Farmland west of the Fox River along Oak Street in the South Region is currently being altered to residential subdivisions west of Randall Road, which increases potential impacts to wetlands identified for this project within both the Mooseheart and Illinois Route 56/Oak Street corridors. Continued development is expected to increase in this corridor into the future.

Most of the significant wetlands identified for this project are located in the CC&P/Stearns Road corridor. To some extent, these significant wetlands, identified as fens and seeps, are protected by the designation of Nature Preserve status (Brewster Creek Fen), or Illinois Natural Areas Inventory sites (South Elgin Sedge Meadow and DeSantos Brewster Creek/Red Gate Road corridor) or by location within a County Forest Preserve (Day's Fen) or within a State Park (within Tri-County State Park).

4.1.8.4 Avoidance Alternatives

The only corridor which avoids impacts to wetlands is the C&NW/Dean Street corridor, which extends through the highly urbanized City of St. Charles. Avoidance alternatives for all other corridors are detailed in the regional discussions to follow. In general, the locating of the proposed corridors along existing transportation routes and the proximity of wetlands to these routes has made complete avoidance of wetlands not feasible. Discussion of the No-Build alternatives has been presented in Section 3.1.

4.1.8.5 Measures to Minimize Harm

Minimization alternatives include techniques that minimize construction impacts and techniques that minimize operational impacts. Examples of techniques to minimize construction impacts are alignment shifts, roadway geometry, bridge and culvert specifications, and construction management practices. The minimization technique that was utilized for all five corridors studied was locating the proposed roadways as close to existing transportation corridors as possible. This confines impacts to wetlands that have most likely been previously impacted by construction and operation of the existing facility, and avoids wetlands that have received minimal previous impacts. Minimization techniques specific to corridors are discussed in the regional sections on wetlands.

During construction, the IDOT Special Provision for Erosion Control and Erosion Control Plan and Kane County's Erosion control practices will be enforced to reduce erosion and the resultant sedimentation in wetland areas. Construction equipment and activities will be restricted to the proposed right-of-way or construction easements to avoid accidental or unnecessary intrusions into adjacent wetlands.

The use of bridges spanning the channel and some bank for smaller stream crossings will minimize impacts to some wetlands adjacent to existing streams.

The CCP/Stearns Road Corridor is included within the Brewster Creek Greenway Corridor plan illustrated on Exhibit 4.3-5. The plan includes a number a measures to minimize harm to the sensitive natural areas within this corridor. These measures include land acquisition of critical recharge and buffer zones, removal of point sources of chlorides, strategic plantings to reduce windborn chlorides, and a stormwater management system to collect and treat or dilute pollutants before release to sensitive wetlands.

4.1.8.6 Compensation

IWPA Compensation

Based on the 1989 Interagency Wetland Policy Act (IWPA), mitigation for wetland impacts is required for all state or state pass-through funding construction activities. Mitigation ratios have been established which must be met. Ratios will increase if mitigation is conducted off-site (more than 1.6 kilometers (1 mile) from the impacted wetland or outside the boundaries of the watershed). Mitigation ratios are as follows:

Table 4.1-9
Mitigation Ratios by Location of Replacement Wetland

Degree of Adverse Impact	On-Site	Off-Site	Out-of-Basin
Minimal Alteration	1.0:1 * 1.5:1 **	1.5:1	2.0:1
Significant Alteration	1.5:1	2.0:1	3.0:1
Destruction	2.5:1	4.0:1	5.5:1

The following explanations are provided for the abbreviations used in the above table:

* The 1.0:1 ratio applies to all other types of wetland vegetation, substrate, or wetland type except those wetlands that have woody vegetation, subject to Corps of Engineers approval.

** This ratio applies if the vegetation of the adversely impacted wetland is woody.

Alteration or destruction of wetlands which contain a state or federally listed threatened or endangered species, wetlands which contain essential habitat for state or federally listed species, presence of an INAI site, or a wetland with an FQI of 20 or more or a mean C value of 4.0 or more, will require wetland compensation of 5.5:1. These regulations are more stringent than those established by the U.S. Army Corps of Engineers, and therefore, these will be the ratios to be met.

COE Requirements

As wetlands are impacted and filled, a Section 404 Permit will be required from the U.S. Army Corps of Engineers (COE), in addition to any other state or federal permits which are required. The expected mitigation ratio is a minimum of 1.5:1 for impacts over 0.10 hectare (0.25 of an acre). Both the IWPA and COE ratios for this project are based on the assumption that all mitigation will occur on-site and within the watershed.

On-Site Mitigation

Based on guidelines established in the IWPA, on-site mitigation is compensation for wetland impacts within 1.6 kilometers (1 mile) of the project. Lower mitigation ratios apply to projects in which mitigation is constructed within the 1.6 kilometers (1 mile) limit. Wetland impacts that are unavoidable must be mitigated for, and the first option for siting mitigation is on-site. If on-site mitigation is not feasible, then other location options will be considered such as off-site

mitigation or wetland mitigation banking.

Off-Site Mitigation

Based on guidelines established in the IWPA, off-site mitigation is compensation for wetland impacts that are beyond 1.6 kilometers (1 mile) of the project. Higher mitigation ratios apply in these instances. All possible on-site options must be reviewed and rejected before approval of off-site mitigation is allowed. Within these guidelines, mitigation ratios are established for off-site mitigation when the location is located either within or outside the watershed boundary. Table 4.1-9 summarizes these ratios.

Mitigation which occurs off-site, but within the watershed, has higher ratios than on-site mitigation, from 1.5:1 to 4:1 depending on type and quality of wetlands impacted. Off-site mitigation developed outside the watershed will have the highest mitigation ratios; 2:1 to 5.5:1. On-site mitigation depends upon available open land in the vicinity of the affected corridors; this is generally the current situation. However, based on projected growth in the vicinity of the corridors in relation to when the projects may be implemented, on-site mitigation locations may no longer be available. Therefore, off-site mitigation may be considered. Off-site mitigation options include the potential of cooperative efforts to create high quality wetland sites within state, county or local parks and forest preserve districts. Larger wetlands with higher functional values can be created in this manner with a built-in system for future management.

Wetland Banking

Wetland banking is an option for providing mitigation for wetland impacts when on-site mitigation is not feasible. Two approved wetland banks are located in Kane County. These banks are identified as Ferson Creek and Otter Creek, both tributaries of the Fox River. The IDNR will not approve the use of a mitigation bank if available on-site locations are feasible. These banks are in the vicinity of the C&NW/Dean Street corridor. However, these two mitigation banks are greater than one mile from the other four corridors, and therefore, would be considered off-site mitigation.

Based on the time of operation of these banks, plus the amount of mitigation being required for private and public projects, it is not certain if credits will be available at these sites when this project is constructed.

An advantage to wetland mitigation banking is that large, contiguous, relatively high quality wetlands are created and maintained. Larger wetlands allow for higher wildlife habitat quality and diversity. Based on the total wetland impacts per corridor (see Table 4.1-7) mitigation on-site, if not connected to larger wetland complexes, will create small isolated wetlands with minimal wildlife habitat potential and difficulty in future maintenance.

Because impacts have been minimized to a great extent, it will be beneficial to mitigate the small amounts necessary at larger banks. With the potential for more wetland banks being created, it is expected that there will be available credits when the corridors are built, regardless of whether Ferson and Otter Creek sites are full.

Other Mitigation Options
Creation of new wetlands is the desired mitigation option by IDNR and the U.S. Army Corps of Engineers. However, in some circumstances, enhancement of existing wetlands can be a viable solution for mitigation. Enhancement does not create new wetlands to replace those areas filled and therefore, if approved, the ratios can be much higher than those outlined in Table 4.1-9.

Wetland Restoration
Restoration of prior wetland sites can be incorporated into a mitigation plan; this excludes the restoration of farmed wetlands. These wetlands would require monitoring and management to determine the success of the project. Development of a detailed mitigation plan would be required. Areas currently farmed or vacant which contain hydric soils and are not considered farmed wetlands generally are sites where restoration is typically successful. Removing the instrument used to drain these areas (tiles, ditching/channeling) is the most important feature for this type of project. The potential for this is limited by development occurring in the area surrounding the corridor.

Land Protection/Acquisition
In some instances, IDNR will approve the use of land protection/acquisition of sensitive areas or buffer zones to serve as mitigation. This could be approved under Section 1090.50 - 1.c.9 of the IWPA which allows for wetland creation to be waved in lieu of "acquisition of high quality wetlands and associated buffer." Once acquired, this land could be deeded to the Kane County Forest Preserve District or other like agency for future management. The acquisition and development plan must be approved by the IDNR. Before this option is selected, approval will also need to be granted by the U.S. Army Corps of Engineers. Potential areas exist for protection within the CC&P/Stearns Road corridor. These include buffer zones around or outright acquisition of the McLean Boulevard [Day's] Fen and the South Elgin Sedge Meadow site

In general, the U.S. Army Corps of Engineers only credits 25 percent of mitigation ratios to enhancement, restoration or land protection/acquisition mitigation options.

4.1.8.7 Permits
Any fill or other construction activities (e.g., pier or cofferdam construction) within waters of the U.S. including jurisdictional wetlands, will be subject to requirements of the U.S. Army Corps of Engineers Section 404 permit, with accompanying Section 401 water quality certification from the Illinois Environmental Protection Agency. Impacts to wetlands in the CC&P/Stearns Road corridor are somewhat more significant. The need for an Individual Permit for this corridor will need to be defined by the Chicago District U.S. Army Corps of Engineers.

The Interagency Wetlands Policy Act (IWPA) of 1989 requires approval for any construction, land management, or other activity performed by, or for which financial assistance is administered, or provided by an Illinois agency that will result in an adverse impact to a wetland. The IWPA requires that the state or local agency proposing an activity must submit a Wetland Action Report (WAR) which includes a wetland impact determination to the Illinois Department of Natural Resources.

In addition to the WAR, a Wetland Compensation Plan is required if the wetland impact determination finds that the activity is likely to have an adverse impact on a state jurisdictional wetland. The IWPA also requires varying compensation rates depending on whether the alteration is "minimum", "significant", or destroyed.

Because of the exceptional abundance of high quality wetlands in proximity to other valuable water resources within the CC&P/Stearns Road Corridor, the permitting and mitigation requirements for this corridor are being handled differently. The proposed mitigation includes additional protection and compensation for streams, vegetated stream banks and nonvegetated stream banks.

4.1.9 Biology

4.1.9.1 Vegetation and Cover Types

Construction Impacts

Construction of the bridge crossings and associated roadway improvements will result in loss, degradation, and modification of terrestrial habitat. Table 4.1-10 represents the cover type loss, excluding agricultural and developed lands, within the proposed right-of-way by corridor. The cover type loss from construction of all five crossings is less than 0.1 per cent of the total township (Dundee, Elgin, St. Charles, Geneva/Batavia, and Aurora) areas. The terrestrial habitat losses affect wildlife movement and movement within each corridor as well as on an overall basis.

Table 4.1-10
Summary of Cover Type Loss, hectares

Cover Type	Bolz Road	CC&P/ Stearns Rd..	Red Gate			C&NW/ Dean Street	IL Rte.. 56/ Oak Street	Total for Five Crossings b/
			A a/	B a/	C			
Forested Lands								
Upland Forest	9.8	1.1	0.3	0.6	1.2	-	3.2 f/	15.3
Floodplain Forest	-	1.6	-	-	-	-	-	1.6
Shrublands c/	1.4	3.8	0.1	0.1	0.1	4.8	0.2	10.3
Forbland/grassland d/	0.5	2.4	2.9	6.7	2.6	-	3.1	14.5
Marsh Lands e/	0.04	-	0.2	0.1	0.04	-	0.1	0.34
Open Water Communities								
Pond	-	-	0.04	0.04	0.08	0.4	-	0.48
Lake	-	-	-	-	-	-	-	-
Total Cover Type Loss	11.7	8.9	3.5	7.6	4.0	5.2	6.6	42.5
Total Corridor Loss	57	47	36	36	28	42	49	231

a/ Red Gate Alignments A and B will utilize improvements at Stearns Road/Dunham Road/Illinois Route 25. The total cover type for Alignments A and B do not include the areas common to CC&P/Stearns Road Corridor.
b/ Total represents the worst case or largest value of either Red Gate Road Alignment A, B, or C.
c/ Shrublands include shrubland, shrubland/non-native grassland, and shrubland/forbland.

d/ Forbland/Grasslands include forbland and non-native grassland.
e/ Marsh Lands include marsh, marsh/wet shrubland, wet shrubland, wet meadow, and sedge meadow/wet meadow/marsh.
f/ Excludes commercial tree plantation.

Cover type losses in the Bolz Road Corridor consist primarily of upland forest and shrubland. Upland forest from 11 parcels will be taken, with a loss of approximately 20 per cent of the total area in these forested parcels.

Potentially, one upland forest greater than 15 hectares (38 acres) will be bisected by the Fox River bridge at the Bolz Road location. This upland forest (B2, Site 2) runs along the west bank of the Fox River north and south of the bridge.

Old agricultural fields have succeeded to forbland, shrubland, or non-native grassland in the Bolz Road Corridor. Up to 4.7 hectares (11.6 acres) of these three communities will be taken.

The wetland complexes in the CC&P/Stearns Road Corridor are its most important habitat feature. One Illinois Nature Preserve, one Illinois Natural Areas Inventory (INAI) site, and three other non-designated sites are considered high quality natural areas. Four of these five high quality areas in close proximity to the corridor are wetlands. None of these areas are directly impacted by roadway construction.

Other cover types, such as upland forest and floodplain forest, are limited in extent in the CC&P/Stearns Road Corridor, and only 2.7 hectares (6.7 acres) will be removed. Large portions of this corridor extend through landscaping and nursery operations and a large gravel pit. Edges of forbland and grassland areas interspersed in this highly developed corridor will be taken during roadway construction.

The three alignments of the Red Gate Road Corridor result in the loss of 0.6 to 1.2 hectares (1.5 to 3 acres) of upland forest and 1.2 to 8.5 hectares (3 to 21 acres) of forbland/grass communities. These two cover types represent 92 to 96 per cent of the total corridor area conversion, excluding developed and agricultural lands. One INAI site is located within the corridor, adjacent to Illinois Route 25 on the east side, near the crossing of Brewster Creek for Alignments A and B. This area will be avoided and there will be no direct impacts to this site. The cover type losses for the Red Gate Road Corridor do not include the areas in common with the Stearns Road improvements. These cover type losses are discussed exclusively with the CC&P/Stearns Road Corridor.

The C&NW/Dean Street Corridor is located in the most developed area along existing road and railroad right-of-way within the City of St. Charles. Only existing edges of shrubland communities along the railroad tracks will be taken. Tracts of this shrubland will remain available for habitat purposes.

The Illinois Route 56/Oak Street Corridor is also located in a developed area along existing right-of-way. Edges of previously fragmented upland forest tracts will be removed. Approximately 3.2

hectares (8 acres) of upland forest will be taken from tracts totaling 14.2 hectares (35.5 acres).

Operational Impacts

Roadway operational impacts are affected by the control of highway runoff, splash, and spray. Because runoff will be collected in paved and unpaved right-of-way, salt splash and spray are the only direct effects. Splash will be minimized by grass swales in the right-of-way for the corridors not utilizing storm sewers and curbs and gutters.

Upland forest is common to all five bridge crossings. The potential impact upon these areas is determined by the tolerance of individual woody species to salt spray and the extent of salt spray. Traffic volume and speed are two important factors in determining the distance of potential impact of salt spray. Sucoff (1975) evaluated probable damage from salt spray as a function of traffic volume, distance, and salt tolerance of woody plant species. Distances from pavement were used in Sucoff's assessment, and the unpaved area of the right-of-way was considered to extend approximately 15 meters (50 feet) from pavement. Sucoff's methods of assessment were used to determine the potential effects of the salt spray on the woody plants in each corridor.

Upland forest in the Bolz Road Corridor was considered low quality, although white oak and bur oak were dominant. Other upland forest communities also contained bur oak and black walnut. These species are salt tolerant and only minimal damage would be expected for species in close proximity to the right-of-way.

The upland forest and floodplain forests are limited in extent in the CC&P/Stearns Road Corridor. Edges of two upland forests and one floodplain forest will be taken. These forest communities are also dominated by salt tolerant species, and only low amounts of damage will occur in the new edge areas.

The Red Gate Corridor Alignments A and B take low quality upland forest areas dominated by oaks, a salt tolerant species. Damage to these areas will be minimal and limited to those trees in close proximity to the roadway. Two high quality upland forest tracts are associated with Alignment C. Salt sensitive species are present in these two tracts and medium high to high amounts of damage may occur up to 46 meters (150 feet) from pavement.

Shrubland is the only cover type in the C&NW/Dean Street Corridor. This cover type also occurs in each corridor and includes juvenile woody species. Juvenile woody species are more sensitive to salt spray than adults. Therefore, impacts to juvenile woody species are anticipated in these degraded communities.

The Illinois Route 56/Oak Street Corridor does not contain any plant communities of high natural quality. The seven upland forest areas are dominated by oaks (white, red, bur), elms, sugar maples, ashes, black cherry, and hackberry, located within 46 meters (150 feet) of the pavement. Salt splash/spray will impact the less tolerant species especially the sugar maples and the hackberry. The composition of the forested tracts will most likely change, favoring the more tolerant species of trees.

Wetland communities within the project corridors are also potentially subject to salt spray.

Sections 4.2.7, 4.3.7, and 4.4.7 describe the specific effects of salt spray upon the wetlands in each corridor.

Grasslands/forblands were present in all corridors, except the C&NW/Dean Street corridor. Grasses and some legumes (including clovers) have moderate to good salt tolerance. However, some common clover species have poor salt tolerance.(Carpenter, 1970). In areas where sodium and/or chloride splash or runoff accumulate in the soil, vegetation could potentially be affected. In general, impacts will be limited to salt sensitive species in close proximity to the roadways.

4.1.9.2 Wildlife

Wildlife can be impacted by reductions in cover type or in fragmentation of existing habitat. Project impacts could also constrict wildlife movement via elimination or obstruction of corridor pathways. All three potential impacts were considered according to species type.

Birds

Birds utilize habitat areas for breeding and foraging activities. The Fox River bridge crossings should not impact any migratory corridors. The developed nature of the Fox River's banks currently limits foraging opportunities in this area and no breeding sites for species of special concern are known in any of the corridors.

Foraging activities requiring either upland forest or wetland areas will not be affected since there are available alternative areas.

Mammals

Small mammals are the only species observed in the study area. These species have a local range that could be reduced by new alignment through fields, especially in the Bolz Road Corridor and the western portion of the Red Gate Corridor, Alignments A and B. Here new pavement might inhibit movement across fields or upland forest. Alternative routes for movement still exist near the Fox River since bridges will span adjacent forested areas.

Reptiles and Amphibians

Wetlands and ponds are limited in all corridors except for CC&P/Stearns Road. The Fox River, Brewster Creek, and Indian Creek are the primary habitat areas and corridors available for reptile and amphibian movement. The use of bridges or culverts maintains access for these species. The large wetland complexes, such as South Elgin Fen, in the CC&P/Stearns Road Corridor will not be disturbed and remain available as habitat.

4.1.9.3 Threatened and Endangered Species

The federal and state listed threatened and endangered species expected to occur in the five project corridors were discussed in Section 2.1.9.3. The following discussion is limited to the potential for impacts to these species. Detailed discussion of impacts per corridor are presented in the Biology Sections for each corridor. Exhibits 2.2-7, 2.3-13, 2.3-14, 2.3-15 and 2.4-7 depict the general location on the threatened and endangered species in the project corridor.

Federal Listed Species
The proposed project corridors will not impact any federal threatened and endangered species.

State Listed Species
The proposed project corridor will indirectly impact four plant species. These are the slender bog arrow grass, bog bedstraw, false asphodel and spotted coral root (south Elgin sedge meadow). These species will be subjected to salt spray from roadway de-icing in winter. The implementation of the Brewster Creek Greenway Corridor Plan will lessen the impacts to these three plant species.

The Illinois Department of Natural Resources has closed endangered species consultation on the three selected alignments (letter dated February 6, 2001). This closure is based on the implementation of the Brewster Creek Greenway Corridor Plan.

Secondary Impacts
The study area was evaluated for reasonably foreseeable impacts not directly associated with the bridge crossing construction. Cover type conversion occurs with land development for infrastructure needs or residential/commercial purposes. With development proceeding in Kane County in accordance with the *2020 Plan* and local planning, no necessary access for development will be provided as a result of this project - only enhancements of access. And at the rate development is proceeding, it is not anticipated that total growth in Kane County will increase as a result of this project. No ancillary roadway improvements or developments are known as foreseeable.

Cumulative Impacts
Vegetation in Kane County prior to settlement was a mixture of prairie and forested land. In 1800, areas forested with oak, maple, elm, ash, hickory, and walnut comprised 40,800 hectares (100,740 acres) or 30.5 per cent of Kane County (Kane County, 1995). Settlement resulted in clearing, and these forested areas in Kane County were reduced to 8,100 hectares (20,000 acres) by 1980. A 1985 estimate of 7,900 hectares (19,507 acres) showed further reduction in the county to less than 6 per cent of the total county area.

Development has continued in the five river townships (Aurora, Batavia/Geneva, Dundee, Elgin, and St. Charles) and is indicated by increases in population and employment in the last 30 years, as discussed in Section 2.1. This trend will continue through 2020, according to planning projections (Kane County, 1997). Land use has changed in the area to accommodate the need for housing and commercial facilities as the population has expanded. In 1990, the river townships (Aurora, Batavia/Geneva, Dundee, Elgin, and St. Charles) represented approximately 33 per cent of the land area of Kane County and contained 89 per cent of the county population.

Cover types, such as upland forest, shrubland, forblands, and wetlands, have typically been included in the category of vacant land, public lands, or open space in Kane County's land use inventory. These land uses designated "vacant" and "public/semipublic" accounted for 8,830 hectares (21,800 acres) or 20 per cent of the five river township area in 1960. By 1980 this area declined by 14 per cent to 7,570 hectares (18,700 acres) of "open space" and "vacant" land.

Agricultural areas in the five townships declined by 27 per cent for the same time period (Kane County, 1960 to 1989).

Continued loss of shrubland, forbland, forest, and prairie is anticipated as part of the ongoing development of this Urban Corridor. In 1985, the five river townships contained 4,416 hectares (10,903 acres) of forested areas, which is approximately 10 per cent of the total land area in these townships. This includes 1,187 hectares (2,931 acres) of forest preserve in the five townships. The forest preserve areas in these townships comprise 27 per cent of all wooded area and will be protected from conversion pressure. Some upland forest tracts are also included in park areas and will remain protected.

Impacts to other upland forest tracts will continue as this Urban Corridor is developed. The total upland forest loss associated with all five river crossings is 27.2 hectares or 0.6 per cent of the woodlands in the five townships.

The savanna areas of Kane County were reduced as land was converted to agriculture. In 1980, only 162 hectares (400 acres) of prairie remained in Kane County. The two prairie remnants, totaling less than 1.2 hectares (3 acres), identified in the project corridor are currently being managed, are protected, and will not be taken as a direct, secondary, or cumulative impact.

The proposed bridge improvements facilitate east to west movement in this Urban Corridor. Development will occur regardless of the bridge improvements, and certain cover types will be converted to residential or commercial land uses. Historically, agricultural lands have been converted at a higher rate than woodlands or other cover type. The bridge placement may affect the distribution or location of cover type losses but is not expected to change the magnitude of these losses.

4.1.10 Air Quality

4.1.10.1 Conformity

This project is included in the FY 2001-06 Transportation Improvement Program (TIP), endorsed by the Policy Committee of the Chicago Area Transportation Study (CATS), the Metropolitan Planning Organization (MPO) for the region in which the project is located. Projects in the TIP are considered to be consistent with the 2020 regional transportation plan endorsed by CATS.

On November 2, 2000, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) determined that the 2000 edition of the Regional Transportation Plan conforms to the State Implementation Plan (SIP) and the transportation-related requirements of the 1990 Clean Air Act Amendments. On November 2, 2000, the FHWA and the FTA determined that the TIP also conforms with the SIP and Clean Air Act Amendments. These findings were in accordance with 40 CFR Part 93, "Criteria and Procedures for Determining to State of Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act.

The project's design concept and scope are consistent with the project information used for the TIP conformity analysis. The TIP number is 01-94-0020. Therefore, this project conforms to the existing State Implementation Plan and the transportation-related requirements of the 1990 Clean Air Act Amendments.

4.1.10.2 Micro-scale Analysis

The air quality effects of the proposed project were analyzed using the Illinois Carbon Monoxide Screen for Intersection Modeling (COSIM). The "worst case" analysis provided by the COSIM model indicated that the undertaking does not have the potential for contributing to a violation of the National Ambient Air Quality Standard for CO.

For the Bolz Road (Longmeadow Parkway) Corridor the "worst case" was at the intersection with Randall Road (see Exhibit 3.2-1). The results are as follows:
Existing (year 2000) - 4.7 ppm; Build -Time of Completion (TOC -year 2005) - 7.2 ppm, TOC +10 years (year 2015) - 7.8 ppm, and the Design Year (year 2020)- 8.3 ppm. The No Action alternative was not modeled since there would be no signalized intersection to model without the project.

The "worst case" for the Illinois Route 56/Oak Street Corridor was at the intersection of Illinois Route 31 and Oak St. (see Exhibit 3.4-1).
CO concentrations for the worst case receptor were as follows:
Existing (year 2000) - 4.7 ppm; Build -Time of Completion (TOC -year 2005) - 6.2 ppm, TOC +10 years (year 2015) - 7.1 ppm, and the Design Year (year 2020)- 7.5 ppm; No Action - 5.8 ppm for year 2005, 6.3 ppm in 2015 and 6.6 ppm in year 2020.

For the CC&P/Stearns Road Corridor the "worst case" location is the intersection of Dunham Road and Stearns Road/Illinois Route 25 (see Exhibit 3.3-1). The No Action alternative has a different intersection configuration and therefore the results are reported at a slightly different location. The results of the COSIM analysis are as follows:
Existing (year 2000) - 5.2 ppm; Build -Time of Completion (TOC -year 2005) - 4.4 ppm, TOC +10 years (year 2015) - 5.0 ppm, and the Design Year (year 2020)- 6.0 ppm; No Action - 6.1 ppm on year 2005, 6.4 ppm in 2015 and 6.7 ppm in year 2020.

The results from these roadway improvements indicate the concentrations are below the 8-hour National Ambient Air Quality Standard of 9 ppm, which is necessary to protect the public health and welfare.

[Table 4.1-11 deleted]

Measures to Minimize Impacts

The calculated levels of carbon monoxide are well below the National Ambient Air Quality Standards. There is no impact as defined by the NAAQS. No measures to minimize harm from air quality impacts from the new roads are necessary. Methods of minimizing air quality impacts from construction activities will be specified in the design.

4.1.11 Noise

The Federal Highway Administration standards for mitigating highway traffic noise impacts were established in the U.S. Code of Federal Regulations Part 772 (23 CFR 772). The regulations require the following during the planning and design of a highway project:

1. Identification of traffic noise impacts;
2. Examination of potential mitigation measures;
3. The incorporation of reasonable and feasible noise mitigation measures into the highway project; and
4. Coordination with local officials to provide helpful information on compatible land use planning and control.

The year 2020 traffic-generated design-hour levels for this project were predicted using the traffic noise prediction model, Stamina 2.0/Optima 3.0, which is an FHWA approved model. Predicted values are based upon such considerations as roadway configuration, design-hourly traffic volumes, average traffic speeds, traffic composition, and terrain. Existing noise levels (ambient) were field measured and checked against the model predictions for existing conditions. For year 2020 predictions the traffic characteristics used are those which will yield the worst hourly traffic noise impact on a regular basis for the design year (i.e., 2020). Both the recommended action and the no-build alternatives were analyzed. The calculated noise levels are summarized in a "Noise Sensitive Area (NSA) Impact Summary" table presented for each of the study corridors. These values (existing, recommended action, and no action) were used to evaluate whether noise impacts would result from the project.

"Noise level" refers to a measured quantity of sound (i.e., fluctuations of pressure in the air). The unit of measure is the decibel (dB). In evaluating highway traffic noise for purposes of applying the FHWA noise abatement criteria, the measurement of decibels is weighted to focus on the frequencies that correlate well with the range of human hearing [i.e., 1,000 to 4,000 Hertz (cycles per second)]. This is referred to as "A-weighting" and the A-weighted unit of measure is abbreviated as dBA.

In Table 4.1-12, the term, "Leq," means the equivalent steady-state sound level, which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same period. "Leq(h)" refers to the hourly equivalents, which is the common measure for traffic noise. For purposes of measuring or predicting noise levels, a receptor is assumed to be at ear height, located 1.5 meters (5 feet) above ground surface.

A noise impact occurs when (1) the projected highway noise levels *approach, meet, or exceed* the noise abatement criteria in 23 CFR 772 (see Table 4.1-7) or (2) when the projected highway noise levels *substantially exceed* existing noise levels in an area. The Federal Highway Administration has required that the individual states define the terms *approach, substantially exceed,* and *substantial reduction.* The Illinois Department of Transportation defines "*approach*" as being within one (1) dBA of the FHWA noise abatement criteria and defines "*substantial increase*" in noise levels as an increase of more than 14 dBA over existing levels. *"Substantial reduction"* is

presently defined by IDOT as striving for a 8 dBA reduction. A 5 dBA reduction is noticeable and considered benefitted.

Table 4.1-12
FHWA Noise Abatement Criteria
Hourly A-Weighted Sound Level in Decibels (dBA)

Activity Category	Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Noise Abatement and Measures to Mitigate Impacts

Traffic noise abatement must be considered when there is an impact as defined above. It should be noted that the levels listed are the absolute levels where abatement must be considered, not design goals for noise barrier construction. Noise abatement must be designed to achieve a substantial, reasonable, and feasible noise reduction. There are three possible ways to abate traffic noise at existing receptors: change the source, change the receptor, or change the noise path between the source and the receptor. Noise abatement measures normally considered and evaluated are:

(1) traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive land designations),
(2) alteration of horizontal and vertical alignments,
(3) acquisition of property rights (either in fee or lesser interest) for construction of noise barriers,
(4) construction of noise barriers (including landscaping for aesthetic purposes) whether within or outside the highway right-of-way,

(5) acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise, and

(6) noise insulation of public use or nonprofit institutional structures.

Noise from vehicles is subject to control by regulatory authorities such as the U.S. EPA for engine and tire noise and local law enforcement for horn and muffler noise. Traffic management measures most effective in reducing noise levels include prohibition of heavy trucks and use of lower speed limits. The prohibition of heavy trucks along these routes would not be practical. Lowering the speed limit would reduce the level of service provided by the highway and thereby increase delays, air pollutant emissions, and the overall cost of transporting goods and services. Also, this would create an enforcement problem and, in light of the minor noise benefits, is not practical or reasonable.

Alteration of the receptor, such as by moving or replacing it, is not normally an economically justifiable option for noise abatement.

The remaining options all deal with changing the noise path, essentially the line-of-sight, between the source and the receptor. This can be done by lengthening the noise path, interrupting it, or a combination of both.

The river crossings are generally located in gently rolling terrain with a definitive river channel between bluffs of varying slopes. Due to the gentle, diverse topography of the project areas, it will be difficult to use natural terrain features as noise barriers. Deliberately depressing the roadway may be effective in reducing the sound levels by at least 5 dB(A) if the line of sight to the receivers is broken. This option was considered in alignment development, but it is limited by the topography, the need to make connections to existing roads, and the need to provide adequate clearance over the any river crossings, especially the Fox River with its recreational clearance requirements.

Doubling the distance between the source and the receptor will decrease sound levels by only 3 dB(A). Shifting the horizontal alignment can contribute attenuation at a specific site, but requires major shifts to create a perceptible change in traffic noise levels. However, this shift could create additional or adverse impacts to other locations in a variety of ways.

Dense woods or landscaping provide a visually pleasant noise screen and can provide up to 5 dB(A) attenuation of each 30 meter (100 feet) of width, provided it is 5.5 to 6 meters (18-20 feet) high. However, the additional right-of-way costs often prohibit the use of wooded noise screens. A single row of sparsely arranged trees provides no noise attenuation. Where heavily forested areas exist, local authorities or residents could maintain and supplement the landscape and the resulting out-of-sight situation.

Noise walls or berms, or a combination of the two, placed adjacent to the roadway will attenuate traffic related noise. These barriers are the most practical and commonly used measures. The slope of berms is generally limited to a maximum 3 (horizontal) to 1 (vertical) ratio due to the requirements of roadway maintenance. Therefore, as height increases, the width of the base

increases and this may interfere with the roadway drainage patterns or conflict with the physical constraints of the site. Also, additional right-of-way may need to be purchased. Retaining walls may provide the attenuation desired and not conflict with the drainage or spatial constraints. Every reasonable opportunity will be taken to incorporate earthen berms and noise walls as the traffic noise abatement options for the Fox River crossing roadways where they are feasible, effective and economically reasonable.

While noise abatement measures are considered for each impacted site, there are noise impacts for which no prudent solution is available. Criteria in this determination include the physical constraints of the area, the reduction (in dBA) of the traffic noise levels, and reasonable and feasible economic factors. One common physical constraint to noise abatement effectiveness is interruptions in the barrier for driveways or cross-streets; any break in the barrier will compromise barrier effectiveness. Another constraint to effectiveness to a project noise abatement is if the noise originates from another source; shielding from the new project is ineffective if an adjoining source contributes enough noise to still have an impact. If during final design the conditions of the impact site or project substantially change, the abatement measures will be reevaluated. A final decision on the installation of abatement measure(s) will be made upon completion of the project design for each river crossing corridor separately.

The key elements of the highway traffic noise study for each corridor in sections 4.2.11, 4.3.11, and 4.4.11 are as follows:

- Identification of noise-sensitive land uses
- Existing noise levels
- Future traffic noise levels for study alternatives
- Traffic noise impacts for study alternatives
- Abatement
- Construction noise
- Coordination with local government officials

The Draft Environment Impact Statement served as part of the coordination with local officials.

4.1.12 Special Waste

The results of the environmental site assessments for the corridor areas are discussed separately in the regional sections of this Environmental Impact Statement (EIS). Potential risk sites are documented in the project area. Therefore, sites of concern should not be incorporated into the design or acquired until the risks and liability of such acquisition are known and acceptable through proper investigation and sample analysis. Where contaminated sites without No Further Remediation letters (NFRs) from the IEPA are included in the right-of-way, the owner will be asked to clean up any contamination before the right-of-way is purchased or the cost of cleanup will be deducted from the value of the property.

Since all known and potential waste sites have been identified and appropriate measures to minimize or avoid a release will be conducted, no impacts to human health and the environment

in the vicinity of the project are anticipated. Construction workers, however, may be exposed to remaining or unknown contamination and should be properly trained.

No adverse impacts to the project environment are anticipated since all contaminated soils, tanks and any potential hazardous materials, including asbestos or other regulated substances discovered during construction will be removed and properly disposed in accordance with the Illinois Department of Transportation's (IDOT) Standard Specifications and Special Provisions. Increased project costs are possible if disposal of impacted soils is needed in the development of the roadways. Soils from areas near landfills, gun club shooting ranges, former tank locations, leaking underground storage tank sites and other special waste sites, especially as identified in Chapter Two, will be characterized prior to removal from the area. In order to reduce costs, construction excavation may need to be minimized in these areas.

Hazardous material contamination is also a concern for the operational use of the proposed roadways. The improved means of travel may draw more transporters of hazardous materials through the area. If an accidental spill were to occur, IDOT and the Illinois Environmental Protection Agency (IEPA) share the responsibility to contain and remove the contaminant. The central receiving agency is the Illinois Emergency Services and Disaster Agency (ESDA). If a hazardous material spill were to occur, the emergency response unit of the IEPA will work within the state response system of ESDA to provide primary assistance.

4.1.13 Visual Resources

The No-Build alternate will represent no impact to the visual resources in the area, especially the Fox River. As to areas away from the Fox River, there is an ongoing conversion of farms into suburban developments, except where the land has been protected in forest preserves or other parks.

Any new bridge crossing of the Fox River will represent a visual intrusion into that resource. The intrusion will be limited to an extended area around the crossing since there are other crossings and dams up and downstream from each new crossing. Also, in areas where there is an interruption to the Fox River, such as a bridge or dam, the net impact will be less. During the design phase, the bridges will be designed in an attempt to conform to the surrounding aesthetic sense of the area.

As for the visual resources away from the Fox River, as noted above, the area is either urbanized or undergoing conversion. The net visual effect of the new roads will in general be conformance to the suburban setting.

4.1.14 Utilities

The No-Build Alternate for the project will have no impact on existing utilities. While there will be utility relocations and adjustments as a result of the proposed crossings, none of these impacts is expected to be of such magnitude as to represent a major impact or issue for the project.

4.1.15 Secondary and Cumulative Impacts

Secondary impacts are defined as those which are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8). Cumulative impacts are those which "result from the incremental consequences of an action when added to other past and reasonable foreseeable future actions" (40 CFR 1508.7).

A primary source of secondary and cumulative impacts is land use changes. Land use changes are a function of many elements including: market forces (the demand for development and potential return); local government actions (zoning and planning activities); the availability of land for development; and access (a function of transportation). Improved access affects land use changes regarding the spatial distribution, density, and timing of development.

Common secondary and cumulative impacts from potential increased development include strain placed on community infrastructure (schools, recreation, water and sewer), loss of open space and habitat, loss of agricultural land and operations, and degradation or loss of water resources, including wetlands. Some of these impacts are discussed further in the appropriate sections of this document.

As discussed in Sections 2.1.1 and 4.1.1, Kane County is undergoing a rapid growth period, resulting in conditions favorable for development. Much of this development is taking place within the area defined in the *2020 Land Resource Management Plan* (the officially adopted land use plan of Kane County) as the Urban Corridor. Recognizing this occurrence, the Kane County Regional Planning Commission viewed a strategy of focused development as an approach to dealing with the impacts of that development on the amenities and resources within the County. The goals stated in the *Plan* (pages 3 and 10) stipulate the preservation of open space, agriculture, historic and cultural resources, and water resources. Designating land use appropriate to the resource was part of the response developed in the *Plan*. Based upon existing land use, existing resources, and existing infrastructure, the Urban Corridor was defined in the eastern portion of the County (Exhibit 1.1-5) as the area appropriate for higher-density, compact development. The Agricultural/Village Area in the western part of the County was designated as the area for low-density development, including the maintenance of agriculture as a viable activity. The buffer between these two areas was designated the Critical Growth Area.

The Urban Corridor has the infrastructure in place or which can be readily extended to support development. The trend toward development is expected to continue in this region. Agricultural activity is diminishing in the face of existing urbanization; open space is preserved primarily through public ownership such as forest preserves and parks, especially the extensive holdings along the Fox River; and plant and animal habitats are being lost in the continued process of urbanization. Ongoing development will impact habitats on privately owned lands. Population, as well as fragmentation of areas through development pressures, will adversely affect remaining habitat areas. Water resources in the Urban Corridor have not been adversely affected in the approximate 20-year period reviewed in Section 4.1.7, apparently due to improved stormwater and erosion practices, and increased investment in wastewater treatment. However, this condition may not continue; while regulations can limit water resource impacts including the loss of wetland area,

increased urbanization can result in the degradation of sensitive wetlands and other water resources due to altered hydrology and water chemistry.

The existing trends of construction and planned development indicate that major changes in the type and density of development are likely to occur in the County, regardless of the alignments under consideration. Therefore, if the alignments help focus development in the Urban Corridor rather than other regions, they will be viewed by the *Plan* as desirable.

The *Plan* recognizes transportation as a component of the planning process -- transportation improvements are to be compatible with land use. Enhanced access within the Urban Corridor versus other areas of the County is a basic assumption of the *Plan*. Thus, increased density of land use and the associated secondary and cumulative impacts of additional development pressure, resulting from enhanced access within the Urban Corridor, can be interpreted as desirable and compatible with the *Plan*.

In their June 18, 1997 letter (see Appendix A - Land Use Plan Consistency), the Kane County Regional Plan Commission stated that as the alternatives under study supported higher-density development in the Urban Corridor, they complement the *Plan*. Some concerns about direct impacts were expressed (as discussed in Section 4.1.1.1). As for the indirect impacts, the Red Gate Alignment C was noted as inconsistent because the Village of Wayne, in the eastern portion of the County, is a rural estate area. The letter also expressed concern that the Illinois 56/Oak Street improvement not extend west of Orchard Road.

The alternatives considered are consistent with the *Plan* as they provide appropriate access. They are non-expressway facilities with no planned improvement outside of the Urban Corridor. However, as they provide easy access west of the Urban Corridor by connecting to the existing roadway network, or induce pressure to improve roads farther west, they have the potential to influence land use in a manner not consistent with the *Plan*. By enhancing access within the Urban Corridor *and* connecting to roads extending beyond, the alignments under consideration could enhance access to the Critical Growth and Agricultural/Village areas. Thus, the potential exists for changes in land use, and secondary and cumulative impacts.

There is no known methodology to predict land use changes, and there is debate on the significance of access changes under differing circumstances. Enforcement of the *Plan* by the County would mitigate some development pressure from increased access. However, local authorities exercise planning and zoning within their planning jurisdictions. To deal with this, the County has established Planning Partnership Areas (PPAs) to provide the framework for "cooperative planning between the county, cities, and villages for the wise management of our common land and water resources and the achievement of widely shared values and common goals" (page 9).

4.1.16 Material Resources

The material resources required for the construction of Fox River bridge crossings consist of standard construction materials. They include concrete, steel, aggregate and petroleum-based products. None of these materials is in short supply.

Roadway construction may require borrow material to construct the roadway. Goals for the selection, design and construction of roadway borrow source include:

- Compatibility with existing comprehensive plans and zoning restrictions.
- Use of less productive agricultural soils within economical haul distances.
- Use of landlocked, inaccessible parcels and severed tracts.
- Avoidance of wetland impacts.
- Coordination with local soil and water conservation district offices.
- Excavation of borrow areas to as great a depth as practicable (within design criteria) to reduce the amount of surface area and number of borrow areas required for the estimate of acres required.
- Incorporation of shallow areas for wetland development.
- Incorporation of temporary and permanent erosion control measures.
- Maintenance of existing drainage.
- Enhancement of natural topographic features and aesthetics.

The Contractor shall furnish and pay for all borrow sites or other sources of borrow and obtain from the property owners the necessary agreements for the removal of the material. However, borrow excavation shall not be placed in an embankment until the site location, excavation plan and material have been approved by the Engineer in writing.

4.1.17 Energy Resources

The construction-related energy requirements of the Build Alternatives are greater than the energy requirements of the No-Build Alternatives. However, the construction of the Build Alternative will reduce commuter travel times and distance because of the increase in accessibility with the project area. The result will be less vehicle miles of circuitous travel and possibly less vehicle operating energy required for the Build Alternatives than for the No-Build Alternatives.

4.1.18 Construction Impacts

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized in several ways. Water can be applied to unpaved road surfaces with a water sprinkler truck. The effectiveness of watering for fugitive dust control depends on the frequency of application. It is estimated that twice daily watering over the entire area would reduce dust emissions by up to 50 percent. On roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water to further impede the suspension of particulates. The resident engineer(s) supervising the construction activities will have the authority to require watering for fugitive dust control should a problem be identified.

Most of the residents living along the preferred alignment will experience construction noise that may, at times, be noticeable. These noise levels will vary with the phase of construction. For the Fox River bridge crossings, construction noise would be controlled by Article 107.35 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction. This requires mufflers to be installed and maintained on construction equipment and limits the construction to daylight hours near receptors such as residences and hospitals. Requests to modify or deviate from these requirements must be submitted in writing by the Contractor for approval by the Engineer.

Sedimentation and soil erosion impacts will be greatest during the construction phase. To minimize harm, options in *Procedures and Standard for Urban Soil Erosion and Sedimentation Control in Illinois* will be considered and practices as specified by the Illinois Department of Transportation will be used. Construction traffic in flowing streams will be avoided whenever practicable. Measures to limit impacts upon sensitive habitats may be taken, i.e., define construction limits along the length of the project and define and post signs at areas not to be disturbed during construction by installing physical barriers at each of the sensitive areas. The appropriate National Pollutant Discharge Elimination System (NPDES) permits for roadway construction will be obtained prior to construction. Any abandoned groundwater wells would be sealed per Department of Public Health regulations.

To minimize any inconvenience and financial loss to local property owners as a result of construction activity, access to properties will be maintained by means of staged construction, temporary access roads, or other appropriate measures.

4.1.19 Short-Term Use and Long-Term Productivity Relationship

The relationship of the Fox River bridge crossings' local short-term impacts and use of resources to the maintenance and enhancement of long-term productivity is generally positive. Construction of the project will involve the short-term use of resources such as labor and construction materials. The project will also contribute to the maintenance and enhancement of long-term productivity for the communities in the project area and for the regional transportation network by being consistent with local planning. By improving access within the region, the Fox River bridge crossings will result in higher gross regional productivity.

Transportation improvements are based on regional and local planning which consider the need for present and future traffic requirements within the context of present and future land use development.

4.1.20 Irreversible and Irretrievable Commitments of Resources

Implementation of the proposed action involves a commitment of a range of natural, physical, human and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed,

the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor and highway construction materials such as cement, aggregate and bituminous material will be expended. Additionally, large amounts of labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are generally not retrievable; however, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources. Any construction will also require a substantial one-time expenditure of both state and federal funds which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area of a corridor and in the county will benefit by the improved quality of the transportation system. These benefits will consist of improved accessibility and safety, savings in time and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

4.1.21 Summary of Mitigation Measures

Displacements

Because of the general availability of homes in the area and the residential growth, finding comparable homes for the people displaced will be possible. Displacements will be governed by the *Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended.* Before acquiring property, it will be appraised on the basis of comparable sales and land use values in the area. Owners of property will be offered and paid fair market value for their property rights. A slightly different process is followed if only a portion of a property is to be acquired. The assessment will include a component for damages to the remainder after the purchase reduces the total parcel size. Financial assistance is provided for eligible relocatees to assist in moving.

Owners of commercial properties or long term leases will also be compensated at market value. Businesses are eligible for assistance for relocation. Relocation assistance, if desired by the business, will be decided prior to demolition. Business relocation will be more complex than residential relocation, depending upon the size of the business and nature of business. Office and light manufacturing properties are readily available in the area. Those businesses that are difficult to relocate because of site specific requirements, including those not desired by their neighbors (e.g., a waste hauler) may be compensated for the loss of their business if relocation is not possible.

The impact of loss of parking will also be evaluated as part of the land acquisition process for businesses. Loss of parking causes a damage to the value of the remainder of the business. Fair market value for the damage to remainder of the parcel will be provided, or relocation will be offered if the damage is too large. If uneconomical remnants of parcels are created next to a parcel that loses parking, these remnants may be considered as part of the mitigation.

Parklands

The Section 4(f) evaluation of use of public parklands is structured by avoidance, minimization and then mitigation; avoidance means that there must be no prudent and feasible alternative to using a Section 4(f) resource. The Section 4(f) evaluation documents that there is no feasible and prudent alternative. Reasonable minimization measures are also developed. Finally, mitigation will be pursued to the extent that it is feasible. The actual mitigation will be the product of coordination with the agency having jurisdiction over the property.

In general, arrangements have been pursued with the involved park districts, forest preserves, and the Illinois Department of Natural Resources for valuing and replacing any park resources. In particular, the Hickory Hills site was purchased by the Dundee Township Park District using Land and Water Conservation (LAWCON)Fund monies, classifying it as a Section 6(f) property. The property purchased for highway right-of-way must be replaced with property of at least comparable value and function. An agreement with the Dundee Township Park District satisfying the LAWCON requirements has been reached (see Coordination documentation). The Illinois Department of Natural Resources has indicated that when the execution of the land transfer is imminent that will review the final package for approval and forwarding of their finding to the Department of the Interior.

Cultural Resources

Coordination with the SHPO (see Letter of December 2, 1997 and email of March 5, 2001 in Volume 3 - Historic Preservation) has indicated concurrence with the preliminary finding that archaeological resources do not need to be preserved in-place. Prior to construction, a data recovery plan will be developed that is acceptable to the SHPO.

SHPO has completed the evaluation of all historic structures that may be affected by the project. The only site of remaining concern is the Perry-Lathrop site in the Bolz Road Corridor. Consultation will be required with the SHPO prior to plan approval.

Water Resources

Water wells that are within proposed right-of-way will be properly abandoned in conformance with the permit requirements of the Illinois Department of Public Health. Pumps and cables will be removed, the well filled with concrete or grout and the casing cut off three feet below ground surface. Most well losses will be mitigated by connecting to a nearby municipal water supply. Where this is impractical, supplementary wells will be developed.

Where practical and effective, detention will be constructed as part of any build alternatives to provide flood storage and to control potentially salt laden water from entering sensitive water resources. Ditches will also be used where possible to take advantage of the natural filtering characteristics of grass ditches. In actuality, this will be constrained by right-of-way and the suburban nature of some of the corridors.

The addition of silt and sediment loads in stormwater runoff, with associated impacts on aquatic life during construction, will be minimized by adhering to Illinois Department of Transportation guidelines on soil erosion and sedimentation control. As part of the erosion control plans, the areas to be denuded will be minimized. Denuded areas will be stabilized within 15 days of achieving final grade. Other denuded areas as well as stockpiled topsoil that will remain undisturbed for more than 60 days will be stabilized within 15 days.

Wetlands

For wetlands the evaluation sequencing is avoidance, minimization and then mitigation. As additional avoidance and minimization are not possible, mitigation is necessary.

In conformance with the U.S. Army Corps of Engineers Section 404 permit requirements and the Illinois Interagency Wetlands Policy Act, mitigation will be required for any wetland impact that is unavoidable. While specific mitigation has not been developed, it is expected that mitigation will be provided either by a joint development with the Kane County Forest Preserve or that credits will be purchased in a wetlands bank. Once the replacement ratios are established, this will be more fully pursued. Also, as many of the takes are small or from smaller wetlands, the mitigation plan will consolidated into larger, more viable wetlands. Banking will be pursued as the option of last resort only after on- or near-site opportunities for compensation have been investigated and ruled out.

The Illinois Department of Natural Resources (IDNR) has indicated that banking is an acceptable option in the Illinois 56/Oak Street corridor and the Bolz Road corridor (though in this corridor it appears that there is no wetland fill proposed). The CC&P/Stearns corridor has developed its own on-site extensive wetland mitigation plan that has been reviewed by IDNR and other agencies as part of the NEPA/404 Concurrence process.

Biology

All land areas disturbed by construction will be restored to turf cover or other cover, as appropriate. Landscaping will be coordinated with local officials. Replacement trees will be provided, as well as additional landscaping. Native grasses and wildflowers will be planted, where practical.

Bridges over the Fox River will be designed with open end spans. This will assist in maintaining an option for any migratory animals that may cross along the banks.

In order to protect aquatic resources found in the Fox River system, no in-stream work, or work that would contribute to stream degradation, will be done in the Fox River in the March 1 through June 7, the spawning season of the river and greater redhorse in any corridor, except the Bolz Road Corridor which is upstream of any potential habitat area. Erosion control will be in place and functioning properly throughout the construction of the bridges.

Prior to construction, a survey of the Fox River at the crossing locations will be performed. In the event that live specimens of the elktoe mussel *(Alasmidonta marginata)*, or live specimens of other non-invasive freshwater species, are found in the crossing location, a mussel relocation program will be developed in consultation with the Illinois Department of Natural Resources.

Noise

To minimize noise impacts from normal roadway operations, noise walls will be constructed where they are determined to be effective, reasonable, and feasible. Potential noise walls are being considered for the Bolz Road corridor, Red Gate Road Corridor and the C&NW/Dean Street corridor. Sections 4.2.11 and 4.3.11 contain more information on the locations. The evaluations have indicated that noise walls will not be used. Adjoining residential areas, berming and landscaping will be used where they fit within the corridors, though these measures will not be effective noise mitigation.

4.2 North Region

4.2.1 Socioeconomics

4.2.1.1 Land Use

The existing land use pattern and development trends for the Bolz Road Corridor have been described in Section 2.2.1 (see Exhibits 2.2-1 and 2.2-2). The primary future growth areas of both Algonquin and Carpentersville are west of the Fox River. Recent annexations and new development projects are focused on the western boundaries of these two communities. Even without transportation improvements, this development is forecast to continue because of the availability of large tracts of land, proximity to municipal services and utilities, and market demand.

As congestion increases on the existing bridges in the downtown areas of Algonquin and Carpentersville, automobile and pedestrian movements will be impeded, affecting the viability of these commercial areas.

The Build Alternatives will be primarily constructed on new right-of-way that will serve the existing and planned residential and non-residential land uses in proximity to the bridge and roadway improvements. These improvements will provide a major transportation link from residences to employment, shopping, and recreational opportunities.

Transportation improvements typically stimulate development of undeveloped property due to improved accessibility and/or visibility (increased traffic). This stimulus is most strongly felt within one-quarter mile of the transportation improvements. Market pressures for development are already evident by the rate of residential construction within the corridor. However, the improved access associated with the Build Alternative will enhance the market potential of these areas.

Consistency with Plans

Improved accessibility across the Fox River and the associated projected traffic increases will enhance the planned development potential of the undeveloped parcels of the Bolz Road Corridor. Growth in these areas is consistent with the policies of local governmental units as reflected in their Comprehensive Plans and Zoning Ordinances (see Section 2.2.1.1). In addition, these improvements would facilitate realization of the planned reclamation of the Meyer Material quarry by providing the access to complement the reclamation.

The Village of Algonquin's *Comprehensive Plan* includes two new proposed bridge crossings of the Fox River. One bridge crossing is shown as an extension of Bolz Road west of the river. The alignment west of the river follows a course north of the proposed improvements being evaluated in this document. However, Village officials indicated they support the proposed alignment and bridge crossing. Developers of properties adjacent to the corridor are being asked by municipal officials to set aside land for the right-of-way to accommodate the roadway improvements. The

Comprehensive Plan indicates this bridge crossing will provide an east-west transportation route for the existing and proposed land uses in the southern portion of the Village.

The second proposed bridge crossing is referred to as the Algonquin By-pass. This bypass bridge and transportation corridor is seen as the primary improvement necessary to provide congestion relief in the downtown. A *Congestion Mitigation Feasibility Study*, initiated in 1996, is intended to resolve the best alternative for mitigating congestion on the existing Illinois Route 62 at Illinois Route 31, which passes through the center of the Village. The recommendation of the Advisory Committee for the study is construction of a western by-pass. That study recognizes that additional roadway capacity in the form of the Bolz Road corridor would probably be necessary; this Algonquin study is outside the scope of this project.

The Village of Carpentersville's *Comprehensive Plan* identifies the Lake Marian Road-Miller Road Corridors for a new bridge crossing of the Fox River. This bridge location was chosen to provide east-west continuity between the primary north-south routes in Dundee Township, and to serve new growth anticipated west of the river. The Comprehensive Plan does not specifically address a Bolz Road bridge corridor, but much of the developing areas west of the Fox River will be served by the Bolz Road Corridor. Carpentersville has supported the Bolz Road alignment after studies showed serious environmental and hazardous waste constraints for the Lake Marian/Miller Road alignment.

4.2.1.2 Displacements

The No-Build Alternative will not displace any residential or non-residential structures. The Build-Alternative displaces 11 single-family residential structures to accommodate the proposed bridge and roadway improvements (since reduced to 6 since others purchased by Kane County Forest Preserve District as part of their on-going program to buy properties adjoining the Fox River floodplain). However, one of these is being used as a temporary office for Meyer Material, the company that quarried the area west of Illinois Route 25 and north of the alignment. Since this quarry is no longer active and there is an approved reclamation plan for its reuse, this is not being considered a displacement. Storage buildings on the adjacent property are being similarly treated. There are no other non-residential uses displaced as a result of the transportation improvements. The project will displace a large shed on a residential lot on Autumn Trail in Barrington Hills, north of the proposed alignment. There appears to be adequate room on this minimum two-hectare (five-acre) lot to relocate the shed.

Eight of the single-family homes displaced are located on the east bank of the Fox River, in unincorporated Kane County. The two other residences are also in unincorporated Kane County, west of the Fox River.

It does not appear feasible to relocate the eight residences along the Fox River to other portions of their existing lots. The direct impacts require too much land area from the small lots. The two residences west of the Fox River appear to have adequate lot area to relocate the structures on the existing properties. Opportunities for relocation will be discussed with the affected property owners during the land acquisition phase of this project.

The Bolz Road Corridor is located within Dundee Township, which includes Carpentersville, East and West Dundee, and Sleepy Hollow. It also includes small portions of Algonquin, Barrington Hills and Elgin. The Multiple Listing Service of Northern Illinois, Inc. reported that within the last year, an average of 89 single-family homes were listed for sale during any month (*Source: Multiple Listing Service of Northern Illinois for a period of November 1995 to October 1996*- additional homes were probably available but not on the listing). Of this number, an average of 25 homes were priced less than $100,000; 43 homes were priced between $100,000 and $199,999; and 22 homes were priced greater than $199,999. New growth occurring near the Bolz Road Corridor, west of the Fox River, and surrounding communities in proximity to the corridor provide other nearby sources of available relocation housing.

Based on property tax records, it is estimated that approximately half of the homes to be displaced are renter occupied. Within the municipal limits of Carpentersville and Algonquin, there were a minimum of 134 housing units for rent in 1990. Rental relocation housing is also available in the surrounding communities in Dundee Township and unincorporated portions of Kane County. For a discussion of displacement mitigation procedures, please see Section 4.1.1.2.

4.2.1.3 Community Cohesion

Neighborhoods

The proposed bridge improvements would displace eight (of the eleven total) single-family homes along the east bank of the Fox River (on Angelina Place). Several homes would remain following these improvements. Several of these homes are rented. There are no signs that the area has an established cohesiveness that would be disrupted by the proposed displacements.

Central Business Districts

Central business districts rely on a certain amount of vehicular traffic, which results from customers frequenting the retail and service establishments. However, when the number of vehicles far exceeds the capacity of the roadway, the resulting congestion constrains left hand turns and entering and existing movements to and from these businesses. Congestion also constrains pedestrian movement within downtown areas. It creates an environment that is not conducive to shopping, strolling, and socializing, all important functions desired for the downtowns. The proposed bridge crossing would reduce congestion compared with the No-Build Alternative and remove some through trips that have neither an origin nor destination in the downtown areas of Carpentersville and Algonquin.

Institutions/Governmental

School Districts
Dundee School District #300 will benefit from improved bus access within its service area as a result of constructing the bridge and roadway improvements in the Bolz Road Corridor as District #300 serves both sides of the Fox River. This currently requires buses to use the Illinois Route

62 bridge in downtown Algonquin and the Main Street Bridge in the historic town center of Carpentersville. District officials indicated that the Bolz Road crossing will improve service by reducing the need to use these congested crossings. Located midway between these existing crossings, the Bolz Road Corridor would also reduce required travel distances.

Police Protection
The Algonquin and Carpentersville Police Departments will both benefit from improved response times as a result of implementing the proposed bridge and roadway improvements. This will be especially true when a squad unit requires backup assistance from another squad on the opposite side of the river.

Fire Protection/Health Emergencies
The Algonquin Fire Protection District and the Carpentersville Fire Department both serve areas east and west of the Fox River. Officials from both fire departments indicate that response times will be improved if the Bolz Road bridge and transportation improvements result in less congestion in their respective downtown areas.

Park Districts/Recreation Areas
There are many park and recreational opportunities within the North Region as shown on Exhibit 2.2-1. These facilities are located on both the east and west sides of the Fox River. Providing an alternative bridge crossing between the two existing crossings in Algonquin and Carpentersville will improve access for many residents in both of these communities, adjacent communities, and unincorporated Kane County. Pedestrian and bicycle linkages within the Region will be improved by the proposed connection of the Fox River Trail to a trail within the corridor, including over the bridge. This trail and river crossing will provide an important linkage to existing and proposed trails within the surrounding communities.

The Dundee Township Park District owns and operates the Hickory Hill Site Park, which is utilized by students of Woodhill School, located immediately south. Existing Bolz Road does not extend this far east, but the alignment under consideration separates the park and school. Methods for providing safe and convenient pedestrian access to the school have been investigated. A pedestrian overpass or actuated signal with crossing guard is one option. Relocation of the road to the north edge of the park away from the school is also being investigated. School officials would prefer to keep the park easily accessible. Minimization and mitigation measures are still being discussed. A resolution satisfactory to the park district and school will be reached before a Record of Decision is issued for this project. Additional discussion of this is found in Section 4.2.3.

4.2.1.4 Government Finance

Table 4.2-1 provides a summary of the direct fiscal property tax impacts resulting from decreases in the revenue base of taxing jurisdictions affected by the project (some taxing jurisdictions were not included because the impacts were minimal). The right-of-way acquisition would total approximately 55 hectares (136 acres). Acquisition costs are influenced by negotiations and appraisals after final right-of-way limits are established in final design. Based on area wide land costs, the assessed value is estimated to be $4,000,000 (see Section 4.1.3.4 for discussion of methodology).

The total assessed value of all structures amounts to approximately $227,000. The final column in the Table 4.2-1 indicates the estimated property tax loss by taxing jurisdiction directly attributable to right-of-way acquisition (using the conservative approach which overstates the impact). Although Barrington Hills shows the highest apparent loss, this only represents the total displaced tax base as a percentage of Village tax base within Kane County. The displaced value as a percentage of total Village tax base is significantly lower. The second highest tax impact is shown to be the Spring Lake and Countryside Fire Protection Districts. There are no significant impacts on the assessed valuation tax base of any of the taxing jurisdictions.

Property taxes and other revenues (sales tax) and fees generated from business activity and new development enhanced by the proposed bridge and roadway improvements will help offset these estimated reductions. The costs of providing facilities and services to new construction are typically shared by developer and user fees. The proposed transportation improvements would encourage development in areas that are planned and suited to accommodate growth due to proximity to existing infrastructure and services. The property tax reductions are not significant impacts affecting the fiscal operation or security of any taxing jurisdictions.

Table 4.2-1
Fiscal Impacts on Taxing Districts, Bolz Road
PROPERTY TAX REVENUE LOSS ANALYSIS

Taxing Unit	Addition ROW* (hectares)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes† ($)	Percent Tax Loss
Kane County	55	4,120,611	227,408	0.4988	21,688	26,405,241	0.08%
Kane County Forest Preserve	55	4,120,611	227,408	0.1204	5,235	6,373,679	0.08%
Dundee Township	55	4,120,611	227,408	0.0815	3,544	544,645	0.65%
Dundee Township Road District	55	4,120,611	227,408	0.1057	4,596	706,368	0.65%
Dundee Township Library	55	4,120,611	227,408	0.1676	7,287	1,069,927	0.68%
Algonquin Fire District ††	25	1,595,538	98,900	0.3319	5,624	188,802	2.98%
Spring Lake & Countryside Fire District	30	2,525,073	91,387	0.5711	14,943	246,322	6.07%
Village of Algonquin ††	5	$278,255	0	0.4876	1,357	278,169	0.49%
Village of Barrington Hills ††	7	463,270	0	0.7846	3,635	47,051	7.73%
Village of Carpentersville ‡	4	310,822	0	1.3798	4,289	3,019,342	0.14%
Dundee Park District ††	55	4,120,611	227,408	0.5443	23,666	3,637,428	0.65%
Barrington School District #220††	7	463,270	0	3.1759	14,713	1,153,377	1.28%
Dundee School District #300 ††	48	3,657,341	227,408	3.6811	143,001	28,327,734	0.50%

Sources: Kane County Clerk's Office, Tax Department; 1995 Kane County Abstract of Taxes

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the EIS). During further refinement in design phases, these estimates may be adjusted because of varying right-of-way takings and median widths. The conclusions are not expected to change.

** $98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).

†Based only on tax base within Kane County. Some jurisdictions extend into other counties.

††Jurisdiction's boundary extends outside Kane County.

‡Includes Village of Carpentersville Fire Protection District.

4.2.1.5 Employment

Within the overall context of the North Region, the proposed bridge and roadway improvements help focus new employment opportunities within the Urban Development Corridor as planned by Kane County and local municipalities. Businesses that are currently located in this developed corridor will also benefit from the improved access to major transportation routes, business districts, customer bases, and public services. These factors can improve the viability of a business and, therefore, influence its decision to stay in the established communities along the Fox River.

Possible concerns have been raised about the viability of the livestock export center since the road will split the parcel and isolate some of the grazing land. While employment at the center is estimated at ten, no job loss is expected as a result of the project. No other potential losses of employment were identified.

4.2.1.6 Environmental Justice

The preferred Bolz Road alignment with its improvement is located in census tract #8501.00(see exhibit 2.2-3a). Reviewing and evaluating the available data regarding this census tract indicates that there are no disproportionate impacts on the low-income and minority population. The Village of Carpentersville was identified as having a higher level of minority and low-income population than Kane County as a whole. The preferred alignment with improvements stays north of census tracts #8502.01 and #8503.01 and avoids displacements within Carpentersville, resulting in no disproportionate impacts on these two census tracts with its higher minority population.

The rental apartment community (Fox View), which is located in adjacent census tract #8503.01, is located approximately a distance of 700 feet from the preferred alignment. There will not be any disproportionate impacts on Fox View Apartments.

The preferred Bolz Road alignment was realigned further north and away from adjacent census tract #8502.01, as a result of public input from residents during the public hearing, as well as coordination with local leaders. This realignment will provide continued direct access to a playground and park area for the residents of census tracts #8502.01. The local population will also experience no loss in roadway access. (See exhibit 2.2-3a)

4.2.2 Agriculture

A summary of impacts to farm operations for the Bolz Road alignment are presented in Table 4.1-3. Impacts to prime and state important farmland soils by conversion to roadway right-of-way are shown in Table 4.1-4.

The Lathrop Livestock Transportation - Chicago-O'Hare USDA Export Center will be crossed by the proposed road. The total property is 10.7 hectares (26.4 acres), of which 9.7 hectares (23.9 acres) is used for pasture or row crops to supplement the feeding operation while the animals are waiting to be shipped. From the pasture, 0.7 hectares (1.8 acres) will be acquired for the proposed roadway. Of the remaining 10.0 hectares (24.6 acres), 2.1 hectares (5.3 acres) will be south of the proposed road. This represents an impact to the operation. Driveways will be provided to maintain access to the pasture south of the proposed road.

For the Bolz Road corridor the alignment selection included consideration of minimizing impacts to farmland properties (see Exhibits 2.2-2 and 3.1-1). On the west side of the Fox River, the alignment corresponds to the corridor designated for roadway development by the Village of Algonquin. This alignment is also along a section line, which commonly forms a property boundary. Proceeding along a boundary minimizes the effect of land acquisition. The Lathrop Livestock Transportation Center, however, straddles this section line. On the east side of the Fox River, the alignment selected is immediately north of the existing Bolz Road to avoid houses. This also avoids any farm operations on the east bank. To connect between the east bank and the west bank, three alignments were evaluated. The alignment selected has the least agricultural impacts. One of the three alignments displaced the buildings on the Lathrop site. The other alignment avoided the building, but not the site, by crossing several parcels on a diagonal, requiring far more farm land. Total avoidance was not an option without compromising the safety of the design or causing additional residential displacements (approximately 20 homes).

4.2.3 Special Lands

The preferred Bolz Road alignment will use 0.86 hectare (2.12 acres) from the Algonquin Shores and Fox River Shores Forest Preserves of Kane County. The Fox River Trail crosses through the forest preserves at this location. However, it will be spanned by a bridge, resulting in no interruption of access for the Trail.

The preferred Bolz Road alignment will use 2.69 hectares (6.64 acres) along the northern boundary of the Hickory Hills Park out of a total of 8.3 hectares (20.6 acres). The area is park grass land and is unimproved.

Kane County will provide replacement property exceeding the assessed market value and the functional value of the property to be acquired. In exchange for the property to be acquired, the Dundee Township Park District will receive: 4.01 acres of adjoining property west of the park; 5.40 acres of adjoining property east of Hickory Hills Park; a 3,000 square foot residence and 10.14 acres along Illinois Route 31 west of the Fox River.

The conversion the Land and Water Conservation Funds property was accepted via a 32 point agreement dated June 21, 2000 (see Volume 3 - Coordination Documentation) between the Dundee Township Park District and Kane County. A public hearing was conducted on this issue by the Dundee Township Park District on May 24, 2000. A March 1, 2001 conversation and review by the Illinois Department of Natural Resources as the administrator of the Land and Water Conservation Fund in Illinois (see Volume 3 - Coordination Documentation) indicated that, based upon the above, when the conversion is imminent it would be acceptable to them.

4.2.4 Transportation

4.2.4.1 Roadway

The new Bolz Road crossing roadway will provide a Fox River crossing approximately halfway between existing crossings at Illinois Route 62 and at Main Street in Carpentersville, a distance of approximately 6.4 kilometers (4 miles) (Exhibit 1.2-1). The Bolz Road bridge crossing is projected to carry approximately 28,000 vehicles per day in the year 2020 (see Exhibits 4.2.-1 and Exhibit 4.2-2

for existing and projected traffic). The volumes will vary slightly over the rest of the corridor. The closer to the Fox River crossing by Illinois Route 62, the more crossing will reduce traffic on Illinois Route 62 (by approximately 6,000 vehicles). While Huntley Road and generally the north-south roads will experience a traffic reduction, the reductions are not large. The only noticeable predicted increase in traffic as a result of the new crossing is on Illinois Route 25, between Bolz Road and Illinois Route 62. There will be an increase in traffic on Illinois Route 25 as a result of the proposal.

The proposed Bolz Road crossing will enhance system linkage by alleviating the necessity to travel either north to Illinois Route 62 or south to Main Street in Carpentersville to cross to the opposite side of the Fox River (a one way 3 kilometer [2 miles] savings). This travel savings also translates into improved access for properties near the proposed road.

A new bridge crossing in the Bolz Road corridor will have little impact to local access to the existing roadway system. Residents living in Carpentersville near the southwest corner of existing Bolz Road and Illinois Route 25 will no longer have direct access to Illinois Route 25. Residents will have full access to Illinois Route 25 by driving to a signalized intersection where existing Bolz Road and new Bolz Road will connect. The diversion of traffic will be less than 1.6 kilometers (1 mile).

4.2.4.2 Transit

The Build Alternative will have no noticeable impact on transit service in this region. It will neither complement nor detract from any operations: current or proposed. It does allow more flexibility in future bus service operations.

4.2.4.3 Non-motorized Transportation

The Build Alternative will be grade-separated over the Fox River Trail, causing no net impact. The provision of a mixed use path along the bridge and the road will increase potential usage of non-motorized paths.

4.2.4.4 Other Modes

There are no other identified impacts to other modes of transportation.

4.2.5 Cultural Resources

4.2.5.1 Standing Structures

The Perry-Lathrop property along the east side of Illinois Route 31 at 19N 045 Illinois Route 31 (see Exhibit 2.2-4a for location) has been deemed eligible for inclusion on the National Register of Historic Places by the State Historic Preservation Officer (SHPO). Frontage from this property (0.09 hectares or 0.23 acres) will be needed to widen the north leg of Illinois Route 31 at the preferred intersection with Bolz Road. Though the structure will be 11 meters (35 feet) from the right-of-way line, this widening has been deemed to have an adverse effect on the property because the grounds around the house contribute to the historical nature of the property.

Avoidance is not reasonable since shifting the centerline of Bolz Road to the south of or Illinois Route 31 to the west would displace either three (3) homes or the Lathrop Livestock Transportation-Chicago O'Hare USDA Export Center. Furthermore, alignment shifts of the Bolz Road would bisect recently constructed residential subdivisions of Algonquin. (Additional discussion of this property and impacts

is found in the Section 4(f) discussion in Section 5.9) As the plans are developed, consultation will occur with the SHPO concerning this property with recommendations to minimize adverse impacts. A Memorandum of Agreement (MOA) will be prepared.

4.2.5.2 Archaeology

The sites identified in the area were such that if they were impacted, documentation of the site will be sufficient to capture the historical value. Please see section 4.1.5.2 for more on the process.

4.2.6 Geology

4.2.6.1 Bedrock and Surface Geology

Impacts to the bedrock are not expected. Except near the Fox River bridge, changes to the surface geology are expected to be minor. Many areas of this corridor have near-surface deposits of granular material. Therefore, there is the potential for contaminants spilled or leaked during construction or roadway operation to migrate into the subsoil.

4.2.6.2 Mineral Resource

The negative impact of the roadway on mineral resources will be the exclusion of mining for sand and gravel within and adjacent to the right-of-way. This is especially the case east of the Fox River where there is an existing sand and gravel pit. This impact is considered minor because mining has already been limited by the presence of Bolz Road and the required 60.9 meter (200 foot) setback. Since mining has already encroached upon the proposed right-of-way, construction of the roadway will necessitate backfilling to establish a road subbase. The positive impact of a bridge in this corridor will be shorter hauling distances from Meyer Material (and any other potential future sand and gravel pits in vicinity deposits on the east side of the Fox River) to locations west of the Fox River.

4.2.6.3 Groundwater Resources

Groundwater Supply

Roadway excavation will not penetrate either of the aquifers above bedrock which are supplying water wells in the vicinity of the corridor. The area of new impervious roadway pavement, estimated at 0.10 square kilometer (0.04 square mile) is a fraction of a percent of the several square kilometer (mile) groundwater recharge areas that supply the Elburn Aquiformation and Valparaiso aquifer. No impedance to the groundwater flow toward the Fox River is anticipated considering the roadway section and alignment proposed.

Eleven private wells are located within 150 meters (500 feet) of the corridor centerline, and some will need to be properly abandoned and relocated. No public wells were noted within 450 meters (1,500 feet) of the corridor.

Groundwater Quality

Groundwater quality data from the ISWS database for the Bolz Road corridor indicate only iron, apparently resulting from natural causes, was detected above the potable water supply standards. The potential to impact the shallow aquifer east of the river is high given the absence of an aquitard over the sand and gravel deposits. Calculation of chloride loading and the relatively large size of the

recharge area indicate that chloride levels will not increase over those currently in the aquifers. No adverse impact is anticipated to the groundwater resource. In areas of near surface granular materials, drainage ditch lining shall be used to reduce potential for infiltration of other run-off contaminants.

4.2.7 Water Quality and Water Resources

4.2.7.1 Construction Impacts to Surface Water

Construction impacts to water resources in this corridor occur at the bridge crossing of the Fox River. All other drainage ways crossed are intermittent and generally have watersheds that are less than 259 hectares (one square mile). Culverts of various sizes will be used for these crossings.

The proposed bridge over the Fox River will span the entire floodway with no piers placed in the river. Preliminary bridge designs indicate two piers located at the eastern and western edge of the river bank. One pier is also planned in the floodplain forest on the west bank of the Fox River. This placement minimizes any direct impact on the Fox River's water quality and related biological resources, or recreational activities. Removal of a portion of the floodplain forest area on the west bank during construction will be mitigated by erosion control practices and revegetation.

Construction activities will cause short term elevated turbidity which will dissipate as suspended solids settle from the river water. The upstream velocities will keep particles in suspension while increased sedimentation will occur as flow velocities are decreased by the presence of the Carpentersville dam located 3.2 kilometers (2.0 miles) downstream. The extent of sedimentation impacts will be limited by the change in velocity and dam location. The mussel and macroinvertebrate community is already limited in this area because of silty conditions. Habitat conditions in this reach are not favorable to the two redhorse species known to occur in the Fox River downstream and, therefore, these species are not expected to be present or to be impacted.

4.2.7.2 Operational Impacts to Surface Water

The only stream receiving roadway runoff in the Bolz Road corridor is the Fox River. Runoff from the bridge and most of the proposed roadway is directed to the Fox River via drainage ditches or enclosed storm sewers. A small portion of the west side of the proposed corridor drains to the Kishwaukee River, part of the Rock River basin.

On the east side of the Fox River, the corridor is on a drainage divide and does not intercept or intermingle drainage with adjacent areas. Stormwater runoff on this side of the Fox River will be conveyed directly to the Fox River through an enclosed drainage system designed specifically for this road. On the west side of the Fox River, this corridor intercepts three minor drainage swales, two of which drain to the Fox River and one (western-most) which drains to the Kishwaukee River. Runoff from the new road corridor will be directed to each of these swales in general accordance with existing drainage patterns.

Illinois General Use Water Quality Standards were achieved for concentrations of pollutants such as lead and chlorides. The incremental changes associated with this crossing will not impact existing fish, benthic, or mussel populations based upon these standards.

4.2.7.3 Measures to Minimize Harm

Minimization techniques include design features, such as pier placement (none in the Fox River) and road location near the ridge line of this area. In addition, soil erosion and sediment control practices will be employed to minimize sediment transport into the Fox River. The Fox River banks that are disturbed by construction will be revegetated following construction. Vegetated ditches will be constructed for the majority of the corridor located on the west side of the Fox River. Curb and gutter with storm sewers will be used on the relatively urbanized areas east of the river. River outfalls will be protected with appropriate erosion protection facilities, such as energy dissipaters or rip rap. No other special design features are proposed for this corridor.

This project will require an NPDES permit as specified under Section 402(p) of the Clean Water Act since more that 2 hectares (5 acres) of ground will be disturbed. The permit coverage will probably be under the IEPA General Permit for Stormwater Discharges from Construction Site Activities (NPDES Permit No. ILR100000). The permit requires suitable erosion and sediment control measures will be used during construction. Requirements of the permit include the preparation of a Stormwater Pollution Prevention Plan.

4.2.7.4 Floodplains

The proposed Bolz Road corridor has a transverse crossing of the Fox River floodplain. There is a designated floodplain of an unnamed tributary south of the alignment that is not affected (see Exhibit 2.2-5). The proposed bridge will span the entire designated floodway of the Fox River with no piers in the floodway and no construction below the 100 year flood elevation. Therefore, there will be no significant impact to flood elevations or flood flow velocities.

4.2.8 Wetlands

4.2.8.1 Construction Impacts to Wetlands

The only wetland (see Exhibit 2.2-6) that will be directly affected by construction of the Build Alternative is Wetland No. 5.

Wetland No. 5

Since the DEIS was issued, this wetland has been converted to a suburban detention pond and contains no natural vegetation and very limited habitat value.

4.2.8.2 Operational Impacts to Wetlands

Wetland Nos. 1 and 5 are expected to receive operational impacts as a result of construction of the Bolz Road corridor.

Wetland No. 1

Wetland No. 1 will receive runoff, splash and spray from the proposed roadway. Due to its proximity to existing roadways, this wetland is already receiving runoff. The additional runoff into this wetland will result in minimal impacts and will not affect functional values of the wetland. This is an isolated wetland which falls within the Kishwaukee River watershed.

Wetland No. 5
As noted above, this site is no longer considered a wetland. Therefore, no discussion of avoidance, measures to minimize harm or compensation are relevant.

4.2.9 Biology

4.2.9.1 Vegetation and Cover Types

Construction Impacts
The Bolz Road Corridor primarily consists of agricultural areas west of the Fox River and developed lands, parks, and upland forest east of the river within the Village of Carpentersville. The alignment follows existing Bolz Road right-of-way from east of Williams Street to Illinois Route 25. The remaining portions of the proposed road will be on new alignment. Many of the plant communities east of the Fox River are generally remnants of large communities that have already been impacted by existing roadways, residential development, and sand/gravel pit operations. West of the river, construction of the Bolz Road extension would primarily impact cropland (see Exhibit 2.2-6).

Table 4.2-2 indicates the area of vegetation communities adjacent to the proposed right-of-way. The vegetation communities are depicted on Exhibit 2.2-6. The direct environmental impacts to the vegetation communities include the taking of existing vegetation edges adjacent to the existing road right-of-way, reducing the overall size of these remnant parcels, and segmentation of parcels west of the Fox River. Approximately 11.7 hectares (29 acres) of vegetation communities (not including wetlands) will be converted to permanent right-of-way immediately along existing Bolz Road and on new right-of-way. Impacts related to roadway construction include conversion of land for pavement, embankments, drainage ditches and the clearing of vegetation during construction and maintenance of the roadway.

Approximately 9.8 hectares (24.2 acres) of upland forest will be taken from 11 parcels within the preferred corridor study area. In addition, 1.8 hectares (4.4 acres) is used in a temporary construction easement. Potentially, one forested community will be bisected by the Fox River bridge (Community type B2 and Site 2, Exhibit 2.2-6). This community is identified as an upland forest immediately along the west bank of the Fox River. Although this forest is rated as low floristic quality, mature oaks in excess of 100 years old dominate the overstory. This forest has mixed areas of wetlands north and south of the corridor incorporated into one large natural community. This forest tract is greater than 15 hectares (38 acres) in size as it continues north and south along the bank of the Fox River. Fragmented by removal of up to 0.8 hectares (2 acres), this upland forest will be permanently converted by bridge construction. The proposed roadway will bridge this upland forest and wetland complex. At this time, it is not known how many trees of each species and how many total trees would be removed.

TABLE 4.2-2 Cover Type Loss in Bolz Road Corridor (within proposed right-of-way)	
Cover Type	**Hectares**
Upland Forest	9.8
Shrubland	1.4
Non-native Grassland	0.5
Pond	0.04

Shading will be an impact to areas in the vicinity of the new bridge after construction is complete. As the bridge will be in an east-west orientation, vegetation communities immediately north of the bridge will not receive the same amount of sunlight as before. This potentially impacts areas on both sides of the river, depending upon the height of the structure and the point of bridge touch down. Shading on the north side of the bridge may limit the growth of new woody vegetation or alter its composition to more shade tolerant species.

Ten other areas of upland forest, differentiated into two upland forest communities types, will be taken as right-of-way. Two of these parcels, identified as upland forests (B1 and B3 on Exhibit 2.2-6), will also be bisected. These parcels are located west of Illinois Route 31 and are 2.8 hectares (6.9 acres) and 4.2 hectares (10.3 acres), respectively. Approximately 0.5 hectares (1.2 acres) will be directly impacted by the project, leaving 2.3 hectares (5.6 acres) of forest (B1) remaining in two parcels north and south of the proposed road. The southern portion may serve to provide minimal wildlife habitat as it will remain connected to an area that is lightly developed, with many trees remaining. The northern parcel will be isolated by the roadway and the existing farm fields around it.

The upland forest (B3) immediately west of the livestock farm buildings on Illinois Route 31 will lose approximately 0.5 hectares (1.2 acres) of trees as a direct impact from the construction of the roadway. Currently, roads serve as north and south borders to this forest. The Bolz Road extension will bisect this parcel, creating two separate pieces totaling 2.7 hectares (6.7 acres). The remaining tracts will provide minimal wildlife habitat due to the presence of roads, creating numerous edges. The southern tract is currently separated from a large 15.5 hectare (38 acres) forested area with a community type of B1. This larger parcel will only have minor impacts (0.53 hectares/1.3 acres) to the northeast corner and will continue to provide habitat for forest dwelling wildlife.

Three other large forested parcels will be impacted by the proposed project. The first of these parcels is located just east of the Fox River. The total forested area at this location is approximately 33.9 hectares (83.8 acres) which has been fragmented into smaller parcels by the construction of Bolz Road and Williams Road. Residential subdivisions in Carpentersville and Algonquin Shores somewhat isolate these tracts from other forests. The proposed project will impact up to 3.7 hectares (9.2 acres) of edges and fragments of this forested area (B1) and will not bisect or further isolate parcels. This forested area is identified as community type B1. The degraded bur oak savannah (Site 4 and B1) located at the intersection of Bolz Road and Illinois Route 25 has been bisected north to south by Illinois Route 25. The total impact to this forested tract is approximately 2.3 hectares (5.7 acres) of existing edges along Bolz Road and Illinois Route 25.

The last large parcel of forested area impacted by this project is located at the eastern terminus along Illinois Route 62. The total size of the forested tract, identified as community type B1, is approximately 28.5 hectares (70.4 acres). This tract has been fragmented on the western edge by the construction of Illinois Route 62. The proposed project would impact 1.1 hectares (2.7 acres) of existing fragments and edges along Illinois Route 62. The remaining portions of this forest in Barrington Hills will not be impacted.

The remaining fragments of upland forest which will be impacted are a mix of B1 and B3 community types. For the most part, these remnants will be impacted are small parcels of forested areas which were previously fragmented or isolated by road construction, farming and gravel mining.

Approximately 1.4 hectares (3.5 acres) of mixed shrubland and shrubland/forbland in two separate areas fall within the proposed right-of-way. In general, these shrublands are of poor to very poor natural quality. These areas have been created by previous disturbance and all appear to have been old agricultural fields in the past. The large shrubland community (identified as C1) east of Illinois Route 62, is currently being developed for residences in the Village of Barrington Hills. The remainder of this community is owned and managed by the Dundee Township Park District. This project will impact approximately 1.0 hectares (2.4 acres) along the southern and eastern edges of this shrubland. Another shrubland is adjacent to the upland forest community between Williams Road and the Fox River. Up to 0.4 hectares (1.0 acres) along the southern edge will be impacted. This project will not impact shrublands of high quality.

Impacts to the wetlands, pond and lakes are described in more detail in Section 4.2.8, Wetlands.

Operational Impacts

Operational impacts to the vegetation communities will be increases in salt spray/splash and the periodic mowing of the unpaved portions of the right-of-way. Therefore, splash and spray are the main direct impacts to be considered. Also, salt splash/spray will be introduced into areas previously not affected by roadway operation. The potential impact to upland forests is determined by the tolerance of the woody species and the magnitude and extent of salt spray. Upland forest communities may see some change in composition or moderate damage to sensitive species up to 46 meters (150 feet) from pavement. More salt tolerant species will not be affected 9 meters (30 feet) beyond pavement (Sucoff, 1975).

The forest community (B2) along the west bank of the Fox River has not been previously exposed to salt spray or splash. This community contains 100+ year old bur oaks, box elder, and green ash. These dominant species are generally tolerant of salt effects. Less dominant understory vegetation are tolerant to moderately tolerant. Therefore, salt spray damage will be limited in this community to areas less than 30 feet from pavement.

Forest communities identified as B1 contain similar overstory as the B2 community, including white oaks. The salt tolerance of juvenile white oaks is rated poor while mature trees are salt tolerant. These juvenile trees located within 46 meters (150 feet) of pavement are likely to incur moderately high to high amounts of damage.

Forest community B3 is predominantly bur oaks and black walnut. Black walnuts have a lower

tolerance to salt solutions reaching in the roots, but are tolerant of salt spray (Dirr, 1976). As long as highway runoff is controlled, the black walnut species should be minimally impacted.

Due to the proximity of some of the vegetation communities to existing high volume roads (Illinois Route 25, Illinois Route 31, Illinois Route 62, Randall Road and Huntley Road) and lesser roads such as Boyer, Sleepy Hollow and Williams Roads in the corridor, these plant communities are already subject to salt splash/spray. The communities which have evolved consist generally of plants that are tolerant of salt. No additional impacts are anticipated.

The shrublands remaining after construction may be subjected to additional salt spray, which may result in a composition change in the shrublands, favoring species which are more tolerant to salt. The white mulberry may eventually be replaced by the other dominants, such as box elder, cottonwoods, and green ash, which are more tolerant. As these areas are very low quality, impacts are minimal to the overall community.

Continued maintenance of the unpaved portions of the right-of-way during operation will prevent new growth of trees and shrubs, thereby permanently converting some upland forests and shrublands to grasses and forbs. If grasses are planted, they will be periodically mowed. The grasslands in the corridor will not be impacted by the project. Grasses have moderate to good salt tolerance (Carpenter, 1970). Maintained areas adjacent to the existing and proposed roadway, including residential yards along existing Bolz Road, should not be impacted.

4.2.9.2 Wildlife

Wildlife habitat in the Bolz Road corridor has been limited by agriculture, suburban development, and gravel mining operations. The species normally present in this type of setting are edge adapted species and those adapted to close proximity to human activity. These species can be impacted if alternative habitat is not readily available or if fragmentation results in an advantage to a competing species. Section 4.1.9 describes the fragmentation and reduction in size of various types of habitat.
The only large (greater than 8 hectares/20 acres) area of contiguous upland forest within the corridor is located along the Fox River. This large forested area is somewhat linear in nature and will not provide adequate forest interior habitat within the corridor. There will be a permanent loss of woodland habitat of approximately 1.1 hectares (2.7 acres) in this area. This area, in conjunction with the adjacent Fox River, most likely serves as a corridor for wildlife movement. Different classes of species utilize and depend on corridors to different degrees, so the following discussion focuses on habitat according to species type.

Birds

Forest dwelling birds present in upland forest within the corridor are adapted to proximity to humans, therefore minimal impacts to these species will occur. Upland tracts are currently fragmented with the exception of the area (Site 2) on the west bank of the Fox River. As mentioned previously, the linear nature of this tract does not provide adequate forest interior. Foraging areas for birds, such as the brown creeper, are slightly reduced; however, many large tracts remain available.

Colonial birds, such as the great egret, are known to forage along the Fox River. The bridge will not impact this species' ability to forage in the vicinity of the river, as there are many areas north and south of the proposed road which provide foraging habitat. The bridge will not inhibit the movement

of most birds flying up and down the river including the sharp-shinned hawk which was observed as a fly-by.

The construction of the bridge may provide additional nesting sites for certain varieties of birds, increasing potential habitat. In general, the species which nest on bridges are more urban adapted species such as the rock dove. These birds, which were not recorded in thecorridor could be attracted to it by the structure and the suburban surroundings. This could increase competition among existing birds present for food and nesting sites.

Mammals
Several types of communities within the corridor, including agricultural land, provide suitable habitat for a variety of mammals. This corridor contains large areas of fragmented upland forest, shrublands, and wetlands that can be used by small mammals.

The addition of a new road on new alignment can disrupt wildlife corridors. Small mammals may be inhibited from crossing multi-lane pavement in areas west of the Fox River. The bridge height on the west bank of the Fox River can accommodate deer and small mammals. If the bridge is elevated, then all wildlife can pass under. This is more prevalent west of the Fox River, which currently is not as developed as the east side of the river.

Reptiles and Amphibians
The only large corridor that reptiles and amphibians might use is the area adjacent to the Fox River. Movement for these species can be maintained if the bridge is elevated above the ground surface. Therefore no impacts will occur. The wetland areas provide limited habitat as pond or marsh and streams are limited to small drainage patterns. As any drainage channel will be bridged or culverted, the existing corridors will be maintained.

4.2.9.3 Threatened and Endangered Species

Federal Listed Species

The proposed Bolz Road Project will not impact any federal threatened and endangered species.

State Listed Species

The proposed Bolz Road Project will not impact the brown creeper bird species, which has been observed in the project area. Suitable habitat is available outside the project limits.

4.2.9.4 Mitigation Measures

All areas disturbed by construction will be restored to turf cover in accordance with "Guidelines for Use of Landscape Items" where appropriate. All trees and shrubs removed for construction will be replaced on a minimum 1:1 nursery stock basis in urban/suburban areas wherever feasible and appropriate under Illinois Department of Transportation (IDOT) guidelines. The IDOT guidelines of replacing areas of dense stands of trees and shrubs at a minimum of a 3:1 seedling stock basis will be

used as a goal, old trees and shrubs will be replaced at this rate where practical and prudent. Wildflower plantings will be considered where applicable.

In addition, control of erosion and sedimentation over the remainder of the project will be implemented. Final contract plans will include the IDOT "Special Provision for Erosion Control" and "Special Provision for Erosion Control Plan." Only the area needed for construction should be cleared and native cover maintained wherever possible. Prompt restoration of vegetative cover to disturbed areas and plantings of native grasses and trees along the roadway will help minimize impacts.

As portions of the proposed road will be new road on new alignment, many mature trees will need to be removed. Larger specimens of higher quality trees that can be avoided will be delineated on the plans, and areas inside the drip zone will be avoided where practical by construction equipment. The trees to be avoided, where possible, should be those of higher natural value.

This proposed project will bisect forests of varying size. In particular, the forest along the west bank of the Fox River is currently undisturbed by roads or development. Through the lack of development in this area, this forest most likely serves as a major wildlife corridor in conjunction with the Fox River. Therefore, to reduce the blocking effect of the proposed bridge structure, areas under the bridge should be of sufficient height to allow free movement of wildlife under the structure. No fencing should be placed along the right-of-way in the vicinity of the bridge. As the remaining forested areas are already fragmented or isolated, movement of wildlife should not be affected.

Special care will be taken during the construction of bridge piers in the Fox River. Measures to reduce the amount of sediment stirred up during construction will be implemented to avoid temporarily increasing sediment loads.

4.2.10 Air Quality

There will be no adverse impact to air quality as a result of the Build Alternative. Please see section 4.1.10 for a more complete discussion of Air Quality impacts.

4.2.11 Noise

Twelve sites were selected as receptors for analysis along the preferred Bolz Road alignment. They were selected on the basis of proximity to traffic and traffic volumes. The sites were also selected as a representative of the noise impacts to a Noise Sensitive Area (NSA) (see Exhibit 3.2-1 for the locations and Table 4.2-3). The NSAs selected fall under Activity Category B of the FHWA Noise Abatement Criteria (NAC) (see Section 4.1.11).

Future traffic noise levels were predicted for the design year of 2020 for both the Build Alternative and No-Build Alternative (for an explanation of noise levels and the analysis, see section 4.1.11). For the No build Alternative, noise levels typically increased by one dBA or less within the project corridor.

Traffic noise levels under the Build Alternative ranged from 44 dBA to 69 dBA. Areas adjacent to major crossroads, such as Randall Road, represent the highest noise levels. For the sites analyzed, the noise increase from the Build Alternative ranged from 2 dBA to 24 dBA.

TABLE 4.2-3
BOLZ ROAD CORRIDOR
Noise Sensitive Area (NSA) Impact Summary

NSA#	Receptor Description	No. of Units per Receptor	Existing dBA level	dBA level 2020 No-Build	dBA level 2020 Build Alignment	Build Net Increase over Existing (dBA)	Impact Yes or No
1	Residence at Huntley/Bolz Road	1	54	55	60	6	No
2	Residence at Boyer Road	1	56	56	61	5	No
3	Residence at Randall Road	1	64	67	69	5	Yes
4	Residences; between Sleepy Hollow Road & IL Rte 31 -both sides of road	16/24 (north side/south side of road)	41	45	65	24	Yes
5	Residences on Crescent Road	17	48	50	50	2	No
6	Residence at Karen Drive	1	49	51	59	10	No
7	Residence at Williams Street	3	58	59	60	2	No
8	Dundee Crown High School	1	35	36	44	9	No
9	Residences at Amarillo Dr. and Existing Bolz Road	31	60	60	69	9	Yes
10	Residences on Navajo Drive	15	52	53	59	13	No
11	Woodland School	1	48	50	56	8	No
12	Residences at Illinois Route 62	1	64	66	67	3	Yes

Using the definition of a traffic noise impact described in Section 4.1.1, four receptor locations have a traffic noise impact. Noise abatement measures were evaluated for the noise-impacted areas considering both the achievable noise reduction and economic reasonableness. OPTIMA, the abatement module of STAMINA, was used to determine potential noise reductions for various noise wall configurations. A summary of the findings for the impacted receptors follows in Table 4.2-4.

NSA #3 is located directly on a major crossroad (Randall Road). The noise contribution from Randall Road limits the effectiveness of any proposed barrier, even with partial wrapping of the wall onto Randall Road. No noise barriers are likely for this corridor.

TABLE 4.2-4
BOLZ ROAD CORRIDOR
RESULTS OF NOISE ABATEMENT ANALYSIS

NSA #	No. of Units per Receptor	Barrier Height In Meters (Feet)	Barrier Length In Meters (Feet)	Cost* ($269/Sq. M) ($25/Sq. ft)	No. of Benefitted Residences **	Cost per Benefitted Residence ($/Residence)	Reduction Potential dB(A)	Likely To Be Implemented	If No Reasons Why
3	1	5.5 (18)	191 (627)	$282,000	0	--	3	No	1
4***	16/24	5.5 (18)	380/600 (1247/ 2000)	$561,000/ $888,000	16/24	$35,000/ $37,000	8**** 6	No	2
9	31	5.5 (18)	905 (2970)	$1,3404,000	58	$23,000	5	No	1
12	1	5.5 (18)	270 (886)	$399,000	0	--	3	No	1

Notes:
* The cost includes preliminary analysis/design, final design and related construction costs.
** Where benefitted residences exceed No. of Units per receptors, the second row residences receives at least a 5dBA reduction
*** In the row, the first number is for the north side of Bolz Road and the second number is for the south side
**** If a noise wall is built on both sides, the reduction decreases from 8 to 6 dBA because of reflected noise

REASONS FOR NOISE WALL NOT BEING IMPLEMENTED:

1 - Does not provide substantial noise abatement (8dBA or larger reduction).
2 - Not economically reasonable or feasible based on cost compared to benefit.

4.2.12 Special Wastes

Hazardous Wastes

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS] list) has been reviewed to ascertain whether the proposed project will involve any listed site(s). No CERCLIS sites were found within a 1.6 kilometers (one-mile) distance of the proposed roadway. As a result of this review, it has been determined that the proposed undertaking will not require any right-of way or any easement from a site included in the CERCLIS listing as of July, 2001.

Undetermined Waste Status

A Preliminary Site Investigation (PSI) of the Fox Valley Gun Club shooting range area within the proposed right-of-way is needed to determine if it should be considered a special waste site. This would occur as part of the design report prior to land acquisition. (If soils have greater than 5 mg/L (TCLP test method) concentration of lead, the excavated material would be considered hazardous). Due to the undefined use of lead ammunition in this area, this assessment concluded that the build alternative is at moderate to high risk of encountering environmental impairment at the Fox Valley Gun Club area of the alignment. Any soils considered hazardous waste (above 5 mg/L TCLP lead) would be handled according to Federal and State laws and regulations; specifically, treatment would be required prior to landfilling which substantially increases disposal costs. If the soils are non-hazardous based upon testing results, the excavated soils could be disposed as special or municipal solid waste in accordance with local landfill requirements.

Non-Hazardous Wastes

In addition to confirming that the project will not involve any CERCLIS sites, this environmental site assessment concluded that the project will not involve other known special waste sites or that the involvement will be an acceptable (low) risk level. One farmstead that may contain a fuel oil tank is located within the currently proposed right-of-way.

4.2.13 Visual Resources

The most dramatic effect on the visual scene will be the introduction of a bridge into an area where there is not another manmade structure crossing the river within sight and where the banks are wooded. Besides the bridge itself, some of the trees will be removed to build and maintain the bridge.

The rural flavor of the area west of the Fox River is rapidly disappearing to development. The new roadway will blend in with this development. East of the Fox River the area is already developed and the new roadway will not change the flavor.

4.2.14 Utilities

There are no known major utilities that will be affected by construction of the Bolz Road alignment.

4.3 Central Region

Two of the three corridors (CC&P/Stearns Road and C&NW/Dean Street) in the Central Region involve active railroads. Since the initiation of this project, both railroads have changed ownership. The Chicago Central & Pacific (CC&P) Railroad was sold to the Illinois Central Railroad and subsequently to the Canadian National and the Chicago & NorthWestern Railroad is now owned by the Union Pacific Railroad. In the interest of consistency with previous reports, the corridor names will remain CC&P/Stearns Road and C&NW/Dean Street. Any discussion of the railroad within the text, however, will refer to the current owner.

Since the release of the *Draft Environmental Impact Statement and Section 4(f) Evaluation* the Red Gate Corridor and the C&NW/Dean Street Corridor have been dropped from further consideration. Since the discussion of those corridors is remaining in the following for historical purposes and to provide understanding of those decisions, only very limited updates of those corridors were provided.

4.3.1 Socioeconomics

4.3.1.1 Land Use

The existing land use pattern and development trends for the Central Region have been described in Section 2.3.1.1. The proposed alignments in the three corridors of the Central Region are shown on Exhibits 2.3-2, 2.3-3, and 2.3-4.

The proposed roads will be constructed primarily on new right-of-way that will serve the existing and planned residential and non-residential land uses in proximity to the bridge and roadway improvements. These improvements will provide a major transportation link to employment, shopping, and recreational opportunities. These improvements will also make it possible to provide some government services more efficiently.

CC&P/Stearns Road Corridor

The primary future growth areas of South Elgin are west of the Fox River, along the IC and the area west of McLean Boulevard, and along Illinois Route 25. Recent annexations and new development projects are focused on the western boundary of South Elgin. Even without transportation improvements, this development is forecast to continue because of the availability of large tracts of land, proximity to municipal services and utilities, and market demand. In addition, as congestion increases on the existing State Street bridge in downtown South Elgin, the viability of this commercial area will be reduced, and pedestrian movement will be constrained, including both local movement between commercial properties and along the Fox River bicycle trail.

The existing market pressures for development are evidenced by the rate of residential construction within the CC&P/Stearns Road Corridor. Increased access and associated traffic will further enhance the market potential of the corridor. Conversely, it is estimated that the proximity of the

corridor to the existing State Street crossing will reduce through-traffic from downtown South Elgin, thereby easing local movements in this important area of the community.

Consistency with Plans

The improved accessibility and projected traffic increases across the Fox River enhances the development potential of the undeveloped parcels within the CC&P/Stearns Road Corridor. Growth in these areas is consistent with the policies of local governmental units as reflected in their Comprehensive Plans and Zoning Ordinances. In addition, these improvements will facilitate plans for the future redevelopment of the Fox River Stone Quarry.

The Village of South Elgin's *Comprehensive Plan* identifies the need for a new bridge crossing of the Fox River to serve regional traffic needs, planned growth within the community, and reduce congestion on the existing State Street crossing. The village's comprehensive plan proposes two alignments: the CC&P/Stearns Road Corridor and a Bowes Road extended corridor. The CC&P/Stearns Road Corridor is considered the locally preferred alignment.

The CC&P/Stearns Road Corridor is north of the Village of Wayne. The Village of Wayne's comprehensive plan encourages development of this corridor as an alternative to the Red Gate Road Corridor, which Village officials believe would negatively impact the rural character and historic resources along Army Trail Road.

Red Gate Road Corridor

Even with transportation improvements, little is forecast to change with regard to development trends within the corridor because a majority of the land area is either built out or already planned for development. Market forces and local planning and zoning will determine the rate and type of growth that occurs on the remaining vacant and agricultural parcels. In addition, as congestion increases on the existing bridges in the central business districts of St. Charles and South Elgin, the viability of these commercial areas will be reduced.

There are approximately three large undeveloped areas in the Red Gate Corridor. The first area is west of the intersection of Randall Road and Red Gate Road (see Exhibit 2.3-3). This area currently lies within unincorporated Kane County. Both the County and the City of St. Charles have planned all four quadrants of this intersection of Randall and Red Gate Roads for rural residential uses. Based on officially planned uses and traffic projections, the expected land use will not be impacted by the proposed transportation improvements.

The same situation is true for a second large parcel west of Illinois Route 31 and north of the Build Alternative alignments. This parcel is planned for rural residential development by St. Charles.

The third large undeveloped parcel appears more likely to be influenced by the proposed transportation improvements. This parcel is located east of Illinois Route 25, north and east of the junction of the Alignments A and B, and is currently being used for agricultural purposes. Access to and therefore traffic volumes adjacent to this site are projected to increase. Both the City of St. Charles and the Village of Wayne include this property in their comprehensive plans, and both municipalities designate the majority of this property for low density/rural residential.

There is also a small portion in both plans allocated for commercial use. These municipal plans are consistent with the County's *2020 Land Resource Management Plan*.

The improved accessibility and projected traffic increases across the Fox River will enhance the development potential for this parcel. The enhancement will be less for the Red Gate/Army Trail Road alignment because the two lane cross-section limits the capacity of the new road when compared to the four lane cross-section of the Alignments A and B.

Consistency with Plans

Since plans for both the Village of Wayne and the City of St. Charles are consistent with Kane County's future land use designations, no change in the type or intensity of use is anticipated as a result of the incremental traffic increase attributable to the Build Alternatives. In addition, development is consistent with Kane County's Plan for encouraging new growth in the Urban Corridor, where it is better served by proximity to existing infrastructure and services.

The transportation component of St. Charles' *Comprehensive Plan* identifies the need for a new bridge crossing of the Fox River to accommodate increasing growth, especially in the northwest quadrant in the community. It notes that a new bridge is needed to provide some relief from congestion in the downtown area of St. Charles. The location identified for a new bridge crossing follows an alignment along Red Gate Road with a connection to Illinois Route 25, north of Army Trail Road. This alignment is consistent with the North and Middle Build Alignments (Alignments A and B) under study for the Red Gate Road Corridor.

Officials from the Village of Wayne are opposed to any new bridge crossing that would negatively impact the rural character along Army Trail Road. Wayne's *Comprehensive Plan* notes that the Village opposes any bridge connecting Red Gate Road and Army Trail Road because "it would severely disrupt the quality of the community, the historic rural road corridor formed by Army Trail Road, and profoundly damage the character of two National Register historic landmark districts along Army Trail Road." For these reasons, the Comprehensive Plan encourages development of an alternative bridge crossing, one that follows an alignment of Stearns Road extended. This position applies even though the proposed connection of Red Gate Road to Army Trail Road would not widen Army Trail Road; the only widening would be for intersection improvements at the intersection of Army Trail Road with Dunham Road.

Traffic projections show notable traffic volume increases on Army Trail Road, even with the No-Build Alternative. These traffic projections reflect the extensive growth which has occurred, and is projected to continue both within and beyond the Central Region. They are also a reflection of the continuity of Army Trail Road and the link it provides between employment and residential concentrations.

While the Kane County Regional Planning Commission has stated that it views the proposed project as generally compatible with the land use strategy of the County's *2020 Land Resource Management Plan*, the Red Gate Corridor Alignment C was noted as inconsistent with the *Plan*. The Village of Wayne is viewed as an agricultural village whose low density makes a major

transportation project inappropriate. The Commission concluded that the Red Gate Corridor is incompatible with the policies and objectives of the *2020 Plan*.

C&NW/Dean Street Corridor

Even with transportation improvements, little is forecast to change with regard to development trends within the C&NW/Dean Street Corridor because a majority of the land area is built out (see Exhibit 2.3-4). Market forces and local planning and zoning will determine the rate and type of growth that occurs on the few remaining vacant parcels. In addition, as congestion increases on the existing bridges in the central business district of St. Charles, the viability of this commercial area will be reduced.

The Build Alternative will be primarily constructed on new right-of-way that will serve as an alternate to the congested downtown area. Although limited access will be provided to the adjacent properties, the bridge and roadway improvements provide a major transportation link to employment, shopping and recreational opportunities. These improvements also make it possible to provide governmental services more efficiently as described in Section 4.3.1.3.

There are a few undeveloped sites in the corridor. There are, however, properties along the Union Pacific Railway that are vacant or underutilized in terms of their development potential. Most of these sites are in unincorporated St. Charles Township, including the vacant Moline Foundry site.

The improved visibility provided to properties along the alignment could enhance the market potential for redevelopment of vacant and underutilized sites. The lack of a connection with Illinois Routes 25 and 31, however, limits any access benefits provided to properties along the alignment.

Consistency with Plans

The transportation component of St. Charles' *Comprehensive Plan* identifies the need for a new bridge crossing of the Fox River to accommodate increasing growth in the community, especially in the northwest quadrant of the City. It also notes that a new bridge is needed to relieve congestion in downtown St. Charles. The City of St. Charles supports the Red Gate Corridor as the preferred alternative in the Central Region. The St. Charles Superintendent of Schools has written a letter to the Kane County Board recommending the Red Gate Road corridor and opposing the C&NW/Dean Street and CC&P/Stearns Road Corridors (see Appendix A - Coordination Documentation). St. Charles officials have expressed concerns about traffic impacts and benefits to the downtown area associated with the C&NW/Dean Street Corridor, in addition to impacts on existing land uses. Thus, they have stated that the corridor is inconsistent with their plan.

Kane County declined comment on the C&NW/Dean Street corridor because it falls almost entirely within the corporate limits of the City of St. Charles and is therefore a local improvement (see Appendix A - Coordination Documentation).

4.3.1.2 Displacement

For a discussion of displacement mitigation, please see Section 4.1.1.2.

CC&P/Stearns Road Corridor

Residential

The No-Build Alternative does not displace any residential or non-residential structures. The Build-Alternative displaces seven single-family residential structures to accommodate the proposed bridge and roadway improvements (this has since been increased to 14 due to alignment adjustments and an extensive environmental corridor plan used for mitigation). Based on the property tax records, it appears that the majority of these homes are owner-occupied.

All the residences are located outside of incorporated municipal boundaries, but within unincorporated Kane County. Two homes are located immediately south of the Illinois Central (formerly the CC&P) Railway, between the Fox River Stone Quarry and Illinois Route 31. Another home is east of Illinois Route 31. Three are located on the west side of Dunham Road and eight in the northeast quadrant of the Dunham Road/Stearns Road intersection Relocation of the houses on their existing lots does not appear practical.

The CC&P/Stearns Road Corridor is located predominantly within St. Charles Township. The Multiple Listing Service of Northern Illinois, Inc. reported that within the past year, an average of 55 single-family homes were listed for sale during each month in St. Charles Township (*Source: Multiple Listing Service of Northern Illinois for a period of November 1995 to October 1996*). Of this number, an average of two homes were priced less than $100,000; 25 homes were priced between $100,000 and $199,999; and 28 homes were priced greater than $199,999 (additional homes were probably available but not on the listing). New growth occurring near the CC&P/Stearns Road Corridor, west of the Fox River, and surrounding communities in proximity to the corridor provide other nearby sources of available relocation housing.

Non-Residential

The preferred CC&P/Stearns Road Alignment requires the acquisition of land from four businesses that will not adversely affect business operations. The Caddy Master Driving Range and Tecza's Rainbow Garden Nursery are located north and west of the intersection of McDonald and Umbdenstock Roads. Right-of-way acquisition would take an estimated 40 of the driving range's approximately 75 existing parking spaces. However, most of these parking spaces could be replaced by reconfiguring the existing parking area and relocating additional spaces to vacant land on- and off-site. Similarly, the storage structures, greenhouse, and few parking spaces that will be displaced from Tecza's Nursery could be relocated to other on-site areas.

Fox River Stone Quarry is expected to cease operations around the year 2005. Roadway construction will be delayed until such time as it would not adversely affect this business. A strip of land is required from Elmhurst Chicago Stone. However, this area is only used for outdoor storage purposes, which the business owner agreed could be relocated to accommodate roadway expansion.

Right-of-Way acquisition requires the complete displacement of four businesses. Midwest Groundcovers is located south of corridor and west of Illinois 25. Roadway needs displace multiple greenhouse-type structures. The owner of Midwest Groundcovers believes a loss of area of the size proposed could render the business at the current site nonviable and cause 160 jobs to be lost (actual employment is seasonally dependent). Also, the size of the site makes the relocation nearby potentially difficult. ***(Since the DEIS was issued, the Midwest Groundcovers has petitioned Kane County for a zoning change and special use for an agricultural site to establish a nursery on 252 acre site located along southeast corner of Illinois Route 64 and Fabris Road in Virgil township, approximately 19 miles west of their current location. See letter of August 6, 2001 from Midwest Groundcovers to Kane County. On September 11,2001 Kane County Board approved this zoning change).***

Kane County is committed to assist and work with the owners of Midwest Groundcovers as part of this project to make their transition to new location possible. For further details, see Commitments 6.4.1

Another business that would be displaced by right-of-way acquisition is a trash hauling facility operated by Crown, south of the intersection of Illinois Route 25 and Dunham Road. This facility makes an important contribution to Kane County's recycling program (since the DEIS was issued, the recycling market has changed considerably. The recycling activity on-site has been reduced to a minimum and there is no reason to believe an irreplaceable void would be created by its displacement. See letter of May 2, 2001 from Kane County Department of Environmental Management) .

The other businesses that would be displaced are at the corner of Gilbert Street and Illinois Route 25. These business are Illini Construction and Fox Valley Towing Service. These are small operations with a total combined employment of seven. Based upon conversations and reviews of the sites, it appears that they could and would relocate nearby.

Red Gate Road Corridor

Residential
The No-Build Alternative does not displace any structures. Table 4.3-1 shows the number of displacements that would result from each of the Build Alternatives in the Red Gate Corridor.

Table 4.3-1 Displaced Dwelling Units, Red Gate Corridor			
Dwelling Type	**Red Gate Road/Illinois Route 25/Stearns Road Alignments**		**Red Gate Road/Army Trail Alignment**
	Alignment A	**Alignment B**	**Alignment C - Two Lane**
Single-Family Detached	27	13	6

The North Alternate of the Red Gate Road/Illinois Route 25/Stearns Road Alignment (Alternate A) displaces the greatest number of dwellings, as many as 27 single-family detached homes. These residences are concentrated near the west bank of the Fox River in unincorporated Kane County, and north of the Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve). Some of them are on the segment of road common to the CC&P/Stearns Road alignment. Several of these properties are also located on the existing Red Gate Road alignment, between Randall Road and Illinois Route 31. Three homes are located along Dunham Road west of the Illinois Prairie Path and one along Stearns Road -- all common to the preferred CC&P/Stearns Road alignment (see Exhibit 2.3-2). The majority of these homes are owner occupied.

Alignment B roughly follows the Alignment A. The primary locational difference is that the Middle Alternate passes through the northern edge of the Fox River Bluff East (a.k.a. Severson) Forest Preserve to avoid displacing homes north of the preserve. This shift reduces the total displacement to 13.

The Alignment C or Red Gate Road/Army Trail Road, with a two-lane section, displaces 6 homes.

The homes that will be affected by the proposed alignments are not viable candidates for relocation on their existing lots. In most cases, the lots are shallow or a majority of the land area is needed to accommodate the roadway improvements.

Homes displaced to accommodate bridge and roadway improvements are either located in the Village of Wayne or unincorporated Kane County. The Red Gate Road Corridor is located within St. Charles Township, which also includes portions of the City of St. Charles, and the Villages of Bartlett and South Elgin. The Multiple Listing Service of Northern Illinois, Inc. reported that in St. Charles Township, there have been an average of 55 single family homes for sale during any one month over the past year (*Source: Multiple Listing Service of Northern Illinois for a period of November 1995 to October 1996*- additional homes were probably available but not on the listing). Of this number, an average of two homes were priced less than $100,000; 25 homes were between $100,00 and $199,999; and 28 homes were priced greater than $200,000. New growth occurring near the Red Gate Corridor, both east and west of the Fox River, is another source of available relocation housing.

Non-Residential

Build Red Gate Road Alignments A and B displace a recycling facility operated by Monarch Disposal, south of the intersection of Illinois Route 25 and Dunham Road. The Red Gate Road/Army Trail Road Alignment does not require any non-residential displacements. This facility makes an important contribution to Kane County's recycling program. Selection of a relocation site is subject to local zoning and an extensive public hearing process. As both of these factors impose limitations on the relocation of the facilities, it many be difficult to find a suitable replacement site nearby.

Other properties affected by the proposed alignments include the Silver Fox Farm, located at the northwest corner of Illinois Route 31 and Red Gate Road. The Alignments A and B bisect the land area of this farm. It is anticipated that the property will continue to be used for farming; therefore, the relocation of the dirt/gravel road and minor fencing should maintain the viability of this operation. These alignments would also require a strip of land from Elmhurst Chicago Stone. However, this area is only used for outdoor storage purposes, which the business owner agreed could be relocated to accommodate roadway expansion.

Parking will be displaced from four businesses to accommodate the proposed roadway improvements associated with the Alignments A and B (see Table 4.3-2 below). However, a majority of the parking spaces could be replaced by reconfiguring the existing parking areas, or locating new spaces on vacant portions of the subject properties or adjacent parcels. These mitigation measures will maintain the viability of these businesses at their existing locations. Right-of-way will be required from the Midwest Groundcovers property, but as minor frontage.

Table 4.3-2
Displaced Business Parking Spaces/Red Gate Corridor
Alignments A and B

Business	Total Approximate Number of Parking Spaces	Estimated Number of Parking Spaces Displaced
Silver Pheasant Restaurant	60	15
Fox View Grocery and Liquors	20	6
Custom Furniture Inc.	15	5
Blanchard's Western Store	12	5

C&NW/Dean Street Corridor

Residential

The No-Build Alternative will not displace any residential or non-residential structures. The Build-Alternative displaces five single-family residential structures and one duplex (seven dwellings total) to accommodate the proposed bridge and roadway improvements. Based on the property tax records, the majority of the homes are owner occupied.

The C&NW/Dean Street Corridor is located within St. Charles Township. The Multiple Listing Service of Northern Illinois, Inc. reported that within the past year, an average of 55 single-family homes were listed for sale during each month in St. Charles Township (*Source: Multiple Listing Service of Northern Illinois for a period of November 1995 to October 1996-* additional homes were probably available but not on the listing). Of this number, an average of two homes were priced less than $100,000; 25 homes were priced between $100,000 and $199,999; and 28 homes were priced greater than $199,999. Based on the information provided in Chapter Two - Affected Environment, the City of St. Charles offers many housing options at different price ranges. New growth occurring within the City of St. Charles and surrounding communities in proximity to the corridor provide other nearby sources of available relocation housing.

Non-Residential

Six non-residential properties would be displaced to accommodate the proposed bridge and roadway improvements. These properties include the Moline Foundry site and St. Charles Screw Co., west of the Fox River. St. Charles Screw Co. is a small shop immediately adjoining the Union Pacific tracks. The Moline Foundry site has been abandoned, so no active business activities would be displaced. The site was purchased in January of 1997 for redevelopment into a business park, for which planning is proceeding.

Two other properties west of the Fox River that will be displaced include Boynton Products and the building complex housing J&B Equipment Repair, Unity Electric, and G. Porter. Right-of-way needs will displace 10 of Boynton Products' approximately 38 parking spaces and render their existing truck loading facility inoperable. The remaining site area is too constrained to mitigate these impacts. Similarly, the building occupied by the three businesses noted above would be displaced due to right-of-way takings adversely impacting the access to the site and loading operations. However, the owner of this building also owns the adjoining vacant land and is considering options for rebuilding on this site if the project proceeds.

Great Lakes Aquastore Systems (formerly the site of Balck Electric) loses 12 of their approximately 28 parking spaces. However, these spaces could be replaced at other on-site locations, which would maintain viability of the existing operations. This reconfiguration limits any future expansion of this operation.

Business displacements east of the Fox River include the Cedar Avenue Business Center and Tastee Freeze restaurant/ice cream parlor. The Cedar Avenue Business Center consists of several buildings that house a mixture of industrial, warehousing, commercial and service establishments (a major tenant is Wagner Plumbing & Piping). This business center provides space suitable for new companies starting operations. The entire business center is considered a displacement, because although only a portion of the building is required for right-of-way, parking is displaced and the access restricted from some approaches.

It may be possible to displace a portion of the building and relocate displaced parking within remaining areas on the site. This would minimize the impact to the employees and customers that rely on the services of these businesses. The owner of the property has indicated that the net effect due to loss of parking and access will be the loss of 250 jobs within the complex. The exact

impacts, however, have not been confirmed by a detailed examination of the operations within the center. This will happen when detailed right-of-way acquisition studies are underway. Opportunities to minimize impacts to this property will be evaluated as part of right-of-way negotiations.

In addition to these displacements, proposed road closures near the eastern terminus of the C&NW/Dean Street corridor eliminate the most direct access for numerous companies from Main Street including three office complexes, one manufacturer, and a real estate firm. This slightly increases the trip length for some vehicles traveling to these properties. The road closures will lead to some increase in the use of Illinois Street for vehicles accessing three of these properties, as well as to other local streets. The viability of these firms will not be affected.

4.3.1.3 Community Cohesion

CC&P/Stearns Road Corridor

Neighborhoods
No identifiable neighborhoods are affected by the proposed bridge improvements.

Central Business Districts
Except for the possible enhancement of downtown South Elgin by the limiting of traffic increases resulting from improved access, no central business districts are affected by the proposed bridge improvements.

Institutions/Governmental

School Districts
Elgin School District #46 is bisected by the Fox River. The proposed road will improve access to district facilities and activities by persons living on the opposite side of the river.

Police Protection
The South Elgin Police Department is located west of the Fox River at 111 West Spring Street. Bridge and roadway improvements will improve response times by reducing congestion on the existing State Street bridge, and by providing an alternate means for squad units to cross the Fox River. Department officials indicated routine patrols take squad cars on the east and west sides of the river. According to the Kane County Sheriff's Office, a large number of calls are received from the Valley View area. The CC&P/Stearns Road Bridge will speed response times to this area because it is closer than the State Street bridge. Currently, squad units west of the Fox River responding to calls in Valley View must travel to either the State Street bridge or the Main Street bridge in St. Charles to cross the river.

Fire Protection/Health Emergencies
The South Elgin Fire Protection District currently serves areas east and west of the Fox River from two stations, one in downtown South Elgin (150 W. State Street) and one in an

unincorporated area west of the Village of South Elgin (Stevens Road and Hopp Road). District officials indicated the proposed CC&P/Stearns Road crossing would benefit fire service by reducing the amount of traffic that otherwise would use the State Street bridge. Congestion on the bridge and adjacent streets already causes delays in response times.

Park Districts/Recreation Areas
There are many park and recreational opportunities within the Central Region. These facilities are located on both the east and west sides of the Fox River. Providing improved service across the Fox River will improve access for many residents in South Elgin, adjacent communities, and unincorporated Kane County. Adequate space would be provided within the future right-of-way for sidewalks and a bikeway. These improvements would provide a beneficial link to the Fox River Trail, Illinois Prairie Path, and regional trail system.

Red Gate Road Corridor

Neighborhoods
While no identifiable neighborhood exists or substantial pedestrian activities occur along Red Gate Road between Randall Road and Illinois Route 31, this section is a two lane roadway in a rural setting of adjacent large lot single family homes. Traffic along this roadway is projected to increase with the new road. This wider roadway cross section and associated increase in traffic will impact the existing character of this area; however, this increase in traffic volume will not represent congestion on this roadway segment.

The North Alignment A displaces residential homes along the southern perimeter of the Novak Park and Fox River Estates Subdivisions (see Exhibit 2.3-3). Since the improvements will be located along the perimeters of these areas, they will not affect the cohesion of these neighborhoods.

Central Business Districts
No central business districts are affected by the proposed bridge improvements.

Institutions/Governmental

School Districts
St. Charles School District #303 will benefit from improved bus access within its service area as a result of constructing the bridge and roadway improvements in the Red Gate Corridor. District #303 serves both sides of the Fox River. This requires buses to use the Main Street bridge in downtown St. Charles. District officials indicated a Red Gate crossing would substantially shorten driving distances and times, and possibly allow the service areas of some schools to be redrawn. In addition, this crossing would directly benefit the Wredling Middle School, located in the southwest quadrant of the Red Gate Road and Illinois Route 31 intersection. Little Woods School, which teaches grades K-1, is south of Pinelands Road. The South Alignment passes between the school and the residences of students who walk to this school. St. Charles School District #303 reported in the fall of 1996 that there were four children that walk to Little Woods School from the area north of the proposed alignment. However, as the proposed alignment will be elevated

above Weber Road and the Prairie Path, pedestrian access between areas north of the alignment and Little Woods Elementary School will not be disrupted.

Police Protection
The proposed Red Gate Road bridge crossing will not substantially alter the way police services are provided by the St. Charles Police Department. There could be shorter response times when backup assistance is needed in the far northern portions of the community. Depending on the location of the squad car, driving times will also be shortened when responding to requests for backup assistance from neighboring communities or the Kane County Sheriff's Office.

According to the Kane County Sheriff's Office, a large number of calls are received from the Valley View area (see Exhibit 2.3-3). The Red Gate Road Bridge would reduce response times to this area. Currently, squad units west of the Fox River that are responding to calls in Valley View must travel to the State Street bridge in South Elgin, or the Main Street bridge in St. Charles to cross the river.

Fire Protection/Health Emergencies
The St. Charles Fire Department has selected a site for a future station south and west of the Illinois Route 31 and Red Gate Road intersection. The Red Gate bridge will provide excellent service from this new station to the northeast side of St. Charles and Wayne.

Park Districts/Recreation Areas
There is a diverse variety of park district land and recreational opportunities within the St. Charles Park District. These facilities are located on both the east and west sides of the river. Therefore, providing another bridge crossing between the two existing crossings in downtown St. Charles and South Elgin will improve access for many residents in St. Charles, Wayne, and unincorporated outlying regions in the county. Pedestrian and bicycle movements and linkages within the region will be improved by the accommodations on the proposed bridge facility.

The Middle Alternate of the Red Gate Road/Illinois Route 25/Stearns Road and the South Alternate alignment (Red Gate/Army Trail Road) (Alignments B and C, respectively) require land acquisition from Kane County Forest Preserves. The Red Gate/Army Trail Alternate (Alignment C) bisects the Fox River Bluff West (a.k.a. Red Gate) Forest Preserve. The Middle Alternate of the Red Gate Road/Illinois Route 25/Stearns Road Alignment requires a strip along the northern boundary of the Fox River Bluff West and the Fox River Bluff East (a.k.a. Severson) Forest Preserves. The remainder would be left intact. Because the A, B, and C alignments would span the neighborhood west of Illinois Route 25 on a grade-separated structure, Weber Road access will be maintained and community cohesion will not be impacted.

C&NW/Dean Street Corridor

Neighborhoods
In the Build Alternative, residential displacement would occur only from the back of the Timber Trails neighborhood and from the edge of downtown adjoining railroad property. Additionally, since access would not be affected, neighborhood cohesion will not be impacted.

Central Business Districts
The Build Alternative could enhance community cohesion in downtown St. Charles by reducing congestion through the downtown.

Institutions/Governmental

School Districts
St. Charles School District #303 benefits from improved bus access within its service area as a result of constructing a bridge and roadway improvements in the C&NW/Dean Street Corridor. District #303 serves both sides of the Fox River, which currently requires buses to use the Main Street bridge in downtown St. Charles. The proposed new bridge provides an alternative to using this existing bridge during peak use periods, thereby reducing travel times. The location of the bus garage at 205 North Randall Road (one block north of Illinois Route 64) would be well served by the proposed improvements.

Police Protection
The proposed C&NW/Dean Street bridge crossing will not substantially alter the way police services are provided by the St. Charles Police Department. Currently, most patrols are on either the east or west sides of the Fox River. Shorter response times would result when a squad unit requires back-up assistance from another squad on the other side of the river.

Fire Protection/Health Emergencies
The St. Charles Fire Protection District is split by the Fox River. An additional crossing within the district will reduce the rate of increasing congestion on existing bridges and provide opportunities to respond to emergencies on the opposite side of the river in less time. Also, an alternate is provided in case the emergency blocks the current bridge or its approaches.

Park Districts/Recreation Areas
There is a diversity of park district land and recreational opportunities within the St. Charles Park District. Recreational areas and facilities are located on both the east and west sides of the river. Given the proximity of the corridor to existing bridge crossings, the proposed improvements would not provide a significant level of new access to these resources. However, the proposed roadway will improve access to these resources through an alternate means of crossing the Fox River and by providing some congestion relief on the existing crossings. Also, non-motorized access will be enhanced by the provision of a mixed use path on the bridge and immediate approaches. These improvements will provide a beneficial link to the Fox River Trail, Great Western Trail, and the rest of the regional trail system.

4.3.1.4 Government Finance
Within the Central Region, property tax and other revenues (sales tax) and fees generated from business activity and new development enhanced by the proposed bridge and roadway improvements will help offset these estimated reductions. The costs of providing facilities and services to new construction are typically shared by developers and user fees. The proposed transportation improvements will encourage development in areas that are planned and suited to accommodate growth due to proximity to existing infrastructure and services. The property tax

reductions due to property acquisitions are not significant impacts affecting the fiscal operation or security of any taxing jurisdictions.

CC&P/Stearns Road Corridor

Table 4.3-3 provides a summary of the property tax revenue losses that will result from property acquisition for the new road. (Note: only primary taxing jurisdictions are listed. Others jurisdictions are not included since impacts are minimal). The right-of-way acquisition will total approximately 42 hectares (104 acres). Acquisition costs are influenced by negotiations and appraisals after final right-of-way limits are established in final design. Based on area wide land costs, the assessed value of the 42 hectares is estimated to be $6,000,000 (see Section 4.1.1.4 for discussion of methodology).

The total assessed value of all structures amounts to approximately $278,000. The final column in Table 4.3-3 indicates the estimated property tax loss by taxing jurisdiction directly attributable to right-of-way acquisition. Based on these conservative estimates, which overstate the impact, the Village of South Elgin will have the highest percentage loss of assessed value. The highest actual dollar loss in assessed value will be incurred by St. Charles School District #303 ($272,000).

This figure, however, only represents 0.58% of the districts' tax base in Kane County. This percentage is further reduced when District #303 tax base areas in DuPage County are also included in this analysis.

Since the release of the DEIS, the area to be acquired has increased by approximately 100 acres to accommodate the development of the Environmental Corridor that is part of the mitigation. The result is that the assessed value of acquisition has approximately doubled. As a result, the percentage of tax base could have potentially increased to approximately 1%. The actual percentage of tax base is less, however, due to ongoing development in the area. The impact is further reduced in that the properties to be acquired will no longer need to be served by the local taxing jurisdiction, i.e., roads and detention ponds do not send children to school or require much fire protection.

Red Gate Road Corridor

Tables 4.3-4 and 4.3-5 provide a summary of the direct property tax impacts that will result from decreases in the revenue base of taxing jurisdictions caused by implementation of the Build Alternatives (primary taxing jurisdictions only. Some jurisdictions not included because impact determined to be not significant. Table not provided for alignment C because property impacts are minimal). The North Alignment A of the Red Gate Road/Illinois Route 25/Stearns Road Alignment would displace the highest assessed value of structures, approximately $1,000,000. The build Red Gate Road/Army Trail Road Alignment displacement is only 10.7 hectares (25.6 acres), which corresponds to approximately $400,000 of assessed value.

The greatest percentage revenue loss of less than one half of one percent, number of structures, and assessed valuation would be incurred by the St. Charles Township Fire Protection District

with the North Alignment. The Red Gate/Army Trail Road Alignment has even less impact of assessed valuation. Based on these estimates, the property tax reductions are not significant impacts affecting the fiscal operation or security of any taxing jurisdictions.

The potential displacement of two retail businesses see Section 4.3.1.2) will not result in a significant loss of retail sales tax revenues. None of these businesses is located within a municipal jurisdiction, so the adjacent communities do not receive a portion of the associated sales tax receipts. Even if these establishments did not locate elsewhere in Kane County, the associated loss in sales tax receipts to the County will be relatively small compared to the existing tax base.

Table 4.3-3
Fiscal Impact on Taxing Districts, CC&P/Stearns Road

PROPERTY TAX REVENUE LOSS ANALYSIS

Taxing Unit	Addition ROW* (hectares)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes† ($)	Percent Tax Loss
Kane County	42	6,062,661	277,768	0.4988	31,626	26,405,241	0.12%
Kane County Forest Preserve	42	6,062,661	277,768	0.1204	7,634	6,373,679	0.12%
St. Charles Township	42	6,062,661	277,768	0.0712	4,514	642,894	0.70%
St. Charles Township Road District	42	6,062,661	277,768	0.0992	6,290	895,718	0.70%
St. Charles Cemetery	42	6,062,661	277,768	0.0122	774	110,159	0.70%
St. Charles Library††	42	6,062,661	277,768	0.3062	19,414	2,764,806	0.70%
St. Charles Township Fire District††	27	3,438,357	277,768	0.2056	7,640	735,314	1.04%
South Elgin Fire District††	15	2,624,304	0	0.3321	8,715	797,336	1.09%
Village of South Elgin	15	2,624,304	0	0.7803	20,477	1,165,908	1.76%
St. Charles Park District††	42	6,062,661	277,768	0.3321	21,057	2,952,743	0.71%
St. Charles Park Bond District	42	6,062,661	277,768	0.0581	3,684	524,537	0.70%
St. Charles School District #303††	42	6,062,661	277,768	4.2950	272,321	46,635,918	0.58%

Sources: Kane County Clerk's Office, Tax Department; 1995 Kane County Abstract of Taxes

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the Socioeconomic Technical Report or EIS). During further refinement in design phases, these estimates may be reduced because of varying right-of-way takings and median widths.

**$98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).

†Based only on tax base within Kane County. Some jurisdictions extend into other counties.

††Jurisdiction's boundary extends outside Kane County.

Table 4.3-4
Fiscal Impact on Taxing Districts, Red Gate Corridor, Alignment A

Taxing Unit	Addition ROW* (ha)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes† ($)	Percent Tax Loss
Kane County	24	789,921	1,012,000	0.4988	8,988	26,405,241	0.03%
Kane County Forest Preserve	24	789,921	1,012,000	0.1204	2,170	6,373,679	0.03%
St. Charles Township	24	789,921	1,012,000	0.0712	1,283	642,894	0.20%
St. Charles Township Road District	24	789,921	1,012,000	0.0992	1,788	895,718	0.20%
St. Charles Cemetery	24	789,921	1,012,000	0.0122	220	110,159	0.20%
St. Charles Library ††	24	789,921	1,012,000	0.3062	5,517	2,764,806	0.20%
St. Charles Township Fire	24	789,921	1,012,000	0.2056	3,705	735,314	0.50%
City of St. Charles ††	1	32,913	0	0.4793	158	3,022,605	0.01%
Village of Wayne ††	0	0	0	0.5040	0	200,612	0.00%
St. Charles Park District ††	24	789,921	1,012,000	0.3321	5,984	2,952,743	0.20%
St. Charles Park Bond District	24	789,921	1,012,000	0.0581	1,047	524,537	0.20%
Elgin School District #46 ††	1	32,913	0	5.2954	1,743	50,384,368	0.00%
St. Charles Sch. District #303††	23	757,008	1,010,202	4.2950	75,902	46,635,918	0.16%

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the EIS but represent a reasonable estimate of impacts).
**$98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).
†Based only on tax base within Kane County. Some jurisdictions extend into other counties.
††Jurisdiction's boundary extends outside Kane County.

Table 4.3-5
Fiscal Impact on Taxing Districts, Red Gate Corridor, Alignment B

Taxing Unit	Addition ROW* (hectares)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes † ($)	Percent Tax Loss
Kane County	22	724,095	549,713	0.4988	6,354	26,405,241	0.02%
Kane County Forest Preserve	22	724,095	549,713	0.1204	1,534	6,373,679	0.02%
St. Charles Township	22	724,095	549,713	0.0712	907	642,894	0.14%
St. Charles Township Road District	22	724,095	549,713	0.0992	1,264	895,718	0.14%
St. Charles Cemetery	22	724,095	549,713	0.0122	155	110,159	0.14%
St. Charles Library††	22	724,095	549,713	0.3062	3,900	2,764,806	0.14%
St. Charles Township Fire††	22	724,095	549,713	0.2056	2,619	735,314	0.36%
City of St. Charles††	1	32,913	0	0.4793	158	3,022,605	0.01%
Village Wayne ††	0	0	0	0.5040	0	200,612	0.00%
St. Charles Park District††	22	724,095	549,713	0.3321	4,230	2,952,743	0.14%
St. Charles Park Bond District	22	724,095	549,713	0.0581	740	524,537	0.14%
Elgin School District #46††	1	32,913	0	5.2954	1,743	50,384,368	0.00%
St. Charles Sch. District #303††	21	691,181	549,713	4.2950	53,296	46,635,918	0.11%

Sources for tables 4.3-4 and 4.3-5: Kane County Clerk's Office, Tax Department; 1995 Kane County Abstract of Taxes. NOTE: The impact of properties common with the CC&P/Stearns Road corridor were not repeated in this table. The results would not be practically different.

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the EIS but represent a reasonable estimate of impacts).
**$98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).
†Based only on tax base within Kane County. Some jurisdictions extend into other counties.
††Jurisdiction's boundary extends outside Kane County.

C&NW/Dean Street Corridor

Table 4.3-6 provides a summary of the direct property tax impacts that will result from decreases in the revenue base of taxing jurisdictions caused by implementation of the Build Alternative (table includes primary taxing jurisdictions only. Some jurisdictions not included because impacts were determined to be insignificant). The right-of-way acquisition totals approximately 5.6 hectares (13.8 acres). Acquisition costs are influenced by negotiations and appraisals after final right-of-way limits are established in final design. Based on area wide land costs, the assessed value is estimated to be approximately $600,000 (see Section 4.1.1.4 for discussion of methodology).

The total assessed value of all structures amounts to approximately $635,000 (Moline Foundry structures not included since abandoned with removal likely). The final column in Table 4.3-6 indicates the estimated maximum property tax loss by taxing jurisdiction directly attributable to right-of-way acquisition. Based on these conservative estimates which overstate the impact, the St. Charles Township Library has the highest percentage loss of assessed value (0.34%). The highest actual dollar loss in assessed value will be incurred by St. Charles School District #303 ($52,487). However, this figure only represents 0.11% of the district's tax base in Kane County. This percentage would be further reduced if the full tax base for District #303, including those areas in DuPage County, were also considered. The overall loss of assessed value would be less than one percent for all jurisdictions.

Table 4.3-6
Fiscal Impact by Taxing District, C&NW/Dean Street Corridor

Taxing Unit	Addition ROW* (hectares)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes† ($)	Percent Tax Loss
Kane County	5	587,612	634,445	0.4988	6,096	26,405,241	0.02%
Kane County Forest Preserve	5	587,612	634,445	0.1204	1,471	6,373,679	0.02%
St. Charles Township	5	587,612	634,445	0.0712	870	642,894	0.14%
St. Charles Township Road District	5	587,612	634,445	0.0992	1,212	895,718	0.14%
St. Charles Cemetery	5	587,612	634,445	0.0122	149	110,159	0.14%
St. Charles Library††	5	587,612	634,445	0.3062	3,742	2,764,806	0.14%
St. Charles Township Fire District††	5	587,612	634,445	0.2056	2,513	735,314	0.34%
City of St. Charles ††	4	297,502	595,007	0.4793	4,278	3,022,605	0.14%
St. Charles Park District††	5	587,612	634,445	0.3321	4,058	2,952,743	0.14%
St. Charles Park Bond District	5	587,612	634,445	0.0581	710	524,537	0.14%
St. Charles School District #303††	5	587,612	634,445	4.2950	52,487	46,635,918	0.11%

Sources: Kane County Clerk's Office, Tax Department; 1995 Kane County Abstract of Taxes.

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the EIS but represent a reasonable estimate of impacts).
**$98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).
†Based only on tax base within Kane County. Some jurisdictions extend into other counties.
††Jurisdiction's boundary extends outside Kane County.

4.3.1.5 Employment

Within the overall context of the Central Region, the proposed bridge and roadway improvements will help focus new employment opportunities within the Urban Corridor as planned by Kane County and local municipalities. Businesses that are currently located in this urbanized corridor

will also benefit from the improved access to major transportation routes, business districts, customer bases, and public services. These factors can improve the viability of a business and, therefore, influence its decision to stay in the established communities along the Fox River.

There will be temporary loss of employment from businesses before they have a chance to relocate. There will also be loss of employment from marginal businesses or those that are site dependent or sensitive.

Tables 4.3-7 and 4.3-8 estimate the number of potential employee losses by businesses affected by the implementation of the Build Alternative. Crown has indicated that they having been actively seeking a new larger parcel in the area to accommodate their business. The owner of Midwest Groundcovers has indicated that the site will be too small to be viable. There are few sites of this size that would be available and/or financially viable in the developed and developing portions of the study area. However, a relocation site would likely be available in the less developed areas of Kane County. The relocation of this business within the County would mitigate the potential for adverse impacts to the seasonally employed labor force. The owner has purchased additional property in the County and it appears that the sales part of the business may remain at its current location and the production component relocated about 8 miles to the west.

Most of the impacted employees of Midwest Groundcovers are minority population. For further information, see 4.3.1.2 and 4.3.1.6. Salaries are above the poverty guidelines.

As a business incubator, the Cedar Avenue Business Center may provide an atmosphere that is hard to replicate in the area. Small retail such as Tastee Freeze will probably have a difficult time relocating. Total actual impacts on employment from displacement of businesses structures cannot be accurately assessed since business owners may not be candid in order to improve their negotiating position. Estimates for the CC&P/Stearns Road corridor vary between 40 and 200. For the Red Gate Road Alignments A and B the estimate varies between 20 and 60. For the Red Gate/Army Trail option (Alignment C) the estimate is zero. For C&NW/Dean Street the estimate varies from 100 up to 450. Interviews will be conducted prior to property acquisition to assist the businesses with reconfigurations of their properties or relocations to new facilities.

Table 4.3-7
Employment Loss*, CC&P/Stearns Road

Business	Estimated Number of Employees
Midwest Ground Covers	160 (seasonally dependent) (Average annual equivalent of approx. 70)
Crown	55
Illini Construction	3
Fox Valley Towing	4

* Loss probably overstates the condition. Many of these jobs would be displaced with the business as it relocates.

Table 4.3-8 Employment Loss, C&NW/Dean Street	
Business	**Estimated Number of Employees**
Boynton Products	80
Cedar Avenue Business Center (approximately 50 businesses)	250
J&B Equipment Repair/Unity Electric/ and G. Porter	20 (combined)
St. Charles Screw	40
Tastee Freeze	7

4.3.1.6 Environmental Justice

The preferred alignment for CC&P/Stearns Road Corridor with its improvements is located in census tracts #8520.01 and #8521.00 (See exhibit 2.3-5a). The following existing businesses will be impacted by the preferred alignment for CC&P/Stearns Road Corridor, Illini Construction, Fox Valley Towing Service and Crown-West (formerly Monarch Disposal and Alliance). Based upon discussions with the owners or managers of these businesses, the pay scale for their employees is above the poverty level and their employee pool is not made up of a disproportionately high percentage minorities. Crown-West is currently seeking a larger site to better accommodate their operation.

The major impact in this corridor will be to Midwest Groundcovers and the potential displacement of its minority population employees. Avoidance of this property is not possible (see section 3.3.2.1 of this EIS). Of the total 160 acres of land used by Midwest Groundcovers, approximately 40 acres will be needed to construct the preferred alignment in the CC&P/Stearns Road Corridor. It is estimated that 25% to 35% of the Midwest Groundcovers employees will be impacted by the displacement of their business. However, there are opportunities to implement strategies to minimize and/or mitigate the impacts to the employees of Midwest Groundcovers, by providing reasonable alternative employment opportunities. A proposed Action Plan identifying such strategies has been developed (see Section 6.4.1).

A point of interest is the continuing growth of new businesses and the need for a variety of new employees along Randall Road, within this area. This growth has been on-going for a number of years. These new businesses provide a variety of employment opportunities with similar wages.

In February of 2001, Kane County and the Kane County Economic Development Advisory Board published an extensive "Wage and Benefit Survey" for Kane County. This survey was designed to gather labor market businesses in Kane County for the purpose of aiding Kane County in business retention, business attraction, and work force development. Industries were categorized into five sectors listed below:

- Agriculture, Construction
- Manufacturing
- Business Services; Health; Communications; Transportation;
- Utilities; Finance; Insurance; and Real Estate
- Personal Services, Retail Trade
- Information Technology and service; E-Business

The result of the survey for *Agriculture and Construction* is of interest to this corridor and indicates the following information:

Laborers and Helpers,

Number of Businesses	8
Number of Full Time and Part Time Employees	154
Average Hourly Salary	$19.00
% Of Businesses Reporting that this position is very difficult to attract quality applicants	12.5%

Landscaping and Grounds keeping laborers,

Number of Businesses	10
Number of Full Time and Part Time Employees	118
Average Hourly Salary	$10.44
% Of Businesses Reporting that this position is very difficult to attract quality applicants	40.0%

From this data, it can be concluded that there are potential opportunities for dislocated employees of Midwest Groundcovers to find a similar position without much difficulty.

The preferred alignment for CC&P/Stearns Road Corridor with its improvements is located in census tracts #8520.01 and #8521.00, which have a higher median household income and lower percent persons below poverty level than Kane County as a whole (See Table 2.3-6). There will not be any disproportionate impacts on low-income population by the preferred alignment for CC&P/Stearns Road Corridor in the Central Region.

The preferred alignment for CCP/Stearns Road Corridor with its improvements is located in the census tracts #8520.01 and #8521.00, which has a lower percentage of minority population level than Kane County as a whole (See Table 2.3-5). There will not be any disproportionate impacts

on the minority population. The racial character is predominately white within Kane County and the Villages of South Elgin and Wayne.

4.3.2 Agriculture

A summary of impacts to farm operations for the preferred CC&P/Stearns Road alignment, build Red Gate Road alignments, and the build C&NW/Dean Street alignment are presented in Table 4.1-3. Impacts to prime and state important farmland by conversion to roadway right-of-way are shown in Table 4.1-4.

CC&P/Stearns Road Corridor

Near the western limit of the project by Randall and McDonald Roads, frontage will be required from farm properties located on three of the corner properties; the frontage involved should not affect the viability of these operations (since the issuance of the DEIS these properties have been or are in the process of being converted to commercial and residential properties). East of Illinois Route 25/Dunham Road the alignment will displace two agricultural operations. Row crops with limited livestock is the activity on these properties. The alignment selected for the CC&P/Stearns Road corridor minimizes impacts to agricultural resources (see Exhibits 2.3-2 and 3.3-1). On the west side of the Fox River, the alignment is primarily either centered on existing roadway right-of-way or through an active quarry (scheduled to be abandoned in the not too distant future). On the east side of the Fox River the alignment options were constrained by wetlands and landfills. East of the Fox River most of the alignment is immediately adjoining a Commonwealth Edison transmission line or centered on existing roadway right-of-way. The portion of the proposed road that does have the major agricultural impacts (i.e., east of Dunham Road and north of Stearns Road - see section 4.1.2 for a more complete discussion of these impacts) is constrained by the need to realign the Dunham Road, Stearns Road, Illinois Route 25 intersection for safety reasons.

Red Gate Road Corridor

For build alignments A, B and C most of the impact is to a horse farm (11.2 hectares for A, 10.5 for B, and 1.6 for C). Silver Fox Farm (a horse farm) will be split by alignment A or B. Build Alignment A will reduce the 34.5 hectare (85.1 acre) parcel to a west tract of 12.5 hectares (30.9 acres) and an east tract of 11.8 hectares (29.1 acres). Build Alignment B splits the parcel into a west tract of 15.0 hectares (37.1 acres) and an east tract of 8.9 hectares (22.0 acres). An at grade driveway connection will provide access across the new road. Build Alignment C requires frontage (1.6 hectares) from the Silver Fox Farm.

The Red Gate Road alignments as developed minimize agricultural impacts (see Exhibits 2.3-3 and 3.3-2). Alignment C, except in the immediate Fox River area, is centered on improvements to existing roads (i.e., Red Gate Road and Army Trail Road). Where not on existing road, it crosses a forest preserve on the most direct connection between the roads on each side of the Fox River. Alignments A and B were developed to avoid or minimize impacts to the Fox River Bluff West Forest Preserve. This requires the alignment to cross through the Silver Fox Farm. On the east side of the Fox River these alignments primarily follow existing roadway.

C&NW/Dean Street Corridor
As this corridor is totally urbanized, there are no impacts to agriculture. The only land that is not highly disturbed so that it could be considered as prime or state important farmland if converted to roadway is in Pottawatomie Park; this property is not farmed and as an urban park is not likely ever to be farmed.

4.3.3 Special Lands

CC&P/Stearns Road Corridor
The **preferred** CC&P/Stearns Road alignment will use 0.8 hectares (2 acres) of land from the Blackhawk Forest Preserve and will isolate 0.6 hectares (1.4 acres) of the forest preserve between the Illinois Central tracks and the proposed road. The roadway will pass over the Fox River Trail within the forest preserve on a bridge structure, thereby maintaining continuity of the trail.

The preferred CC&P/Stearns Road alignment (and build Red Gate Road Alignments A and B) uses 0.14 hectare (0.4 acre) from a corner of the Tri-County State Park.

No property will be used from Pratt's Wayne Woods Forest Preserve for the widening of Stearns Road associated with the preferred CC&P/Stearns Road alignment (Note: this area and impact is also common to Alignments A and B of the Red Gate Road Corridor). No improvements from any of these properties will be affected.

The proposed CC&P/Stearns Road improvement (also Red Gate Alignments A and B) will realign part of Illinois Route 25 where the Illinois Prairie Path crosses it on structure. A new structure will be provided over the roadway, resulting in no net change of access for the path.

Red Gate Road Corridor
Alignment A avoids use of any public forest preserve or park, except where it is common to the CC&P/Stearns Road alignment. As noted above, it uses property of the Pratt's Wayne Woods Forest Preserve and the Tri-County State Park and will be crossed by a new structure for the Illinois Prairie Path. The alignment crosses above the Fox River Trail on structure, resulting in no net change in access for the Trail.

Alignment B has the same impacts to Pratt's Wayne Woods, the Tri-County State Park, the Fox River Trail and the Illinois Prairie Path as Alignment A. Additionally, Alignment B crosses through the north section of the Fox River Bluff West Forest Preserve. This alignment will use approximately 1.1 hectares (2.75 acres) of forest preserve property to construct the proposed section of roadway. Additional forest preserve property (approximately 0.8 hectare or 2 acres) on the north side of the proposed roadway will be separated from the remaining forest preserve to the south; this separation could effectively be considered a use.

Alignment B also crosses through the north edge of Fox River Bluff (a.k.a. Severson) Forest Preserve. Approximately 2 hectares (5 acres) from the north edge of the property will be used to construct the roadway.

Alignment C will bisect the Fox River Bluff West Forest Preserve. Approximately 1.1 hectares (2.75 acres) of the forest preserve will be used to construct the proposed section of roadway. The proposed improvement includes the intersection of Dunham Road and Army Trail Road. Right and left-turn storage lanes will be provided resulting in the use of approximately 0.01 hectare (0.03 acre) from Misty Meadows Park. Alignment C crosses above the Fox River Trail on structure, resulting in no net change in access for the trail.

C&NW/Dean Street
The build C&NW/Dean Street alignment will use 0.5 hectare (1.1 acres) at the southern edge of Pottawatomie Park. No amenities of the park will be affected, nor will access be affected.
The St. Charles Park District passed a resolution on May 13, 1997 opposing the C&NW/Dean Street alignment because it "would have a significant adverse impact on the useability, aesthetics and historic character of Pottawatomie Park."

In St. Charles the bicycle trails are on city streets without a dedicated path for the bicycle facility and with only posting of signs to note the trails. In the area affected by the project, the Fox River Trail crosses on Second Avenue, which will be maintained as the posted trail. A bike trail developed with Land And Water Conservation Fund monies links Mount St. Mary's Park by the Fox River to the Great Western Trail on the west side of St. Charles. In the area affected by the project, this trail consists of bicycle trail signs posted on Dean Street. As part of the obligation of replacing with equivalent functional value a facility funded by Land and Water Conservation Fund monies, the signs denoting a bicycle facility along Dean Street will be replaced.

4.3.4 Transportation

4.3.4.1 Roadway
Traffic volumes will continue to grow in the North Region with the Build or No-Build Alternatives for each corridor. See Exhibit 4.3-1 for existing traffic volumes and 4.3-2 through 4.3-4 for projected volumes.

CC&P/Stearns Road
CC&P/Stearns Road will provide a Fox River crossing about 1.8 kilometers (1.1 miles) south of the existing crossing at State Street in South Elgin (see Exhibit 1.3-1). This corridor will fill part of an approximate 9 kilometer (5.5 miles) gap between State Street and Illinois Route 64 in St. Charles. Exhibit 4.3-2 illustrates that the CC&P/Stearns Road bridge crossing is predicted to carry approximately 34,000 vehicles per day in the year 2020. The volumes will vary slightly over the rest of the corridor. Stearns Road will carry 39,000 under the Build scenario and only 21,000 vehicles per day under the No-Build scenario. The CC&P/Stearns Road crossing will decrease traffic approximately 20% (5,000 vehicles) at the State Street crossing.

Traffic volume on McLean Boulevard north of the proposed corridor will increase approximately 25% (18,000 under the Build scenario vs 14,600 vehicles per day under the No-Build scenario). This traffic volume is near the capacity limit for a two-lane McLean Boulevard. This increase results since the proposed corridor will provide a much improved route to the east in relation to the existing circuitous route utilizing State Street for local trips and Illinois Route 20 for regional

trips. The new road will have lesser effects on traffic volumes on other routes.

The proposed road will generally not affect local access. Direct access will be eliminated for the houses which will remain near the realignment and improvement of Stearns Road and Dunham Road. The largest rerouting will be from Dunham Road to the new road, a distance of approximately 650 meters (2,100 feet). No direct connection is proposed between the CC&P/Stearns Road crossing and Illinois Route 31.

Red Gate Road Corridor

There are three alternative alignments for the Red Gate Road Corridor. Alignments A (North Alignment) and B (Middle Alignment) are four-lane alignments between Randall Road and Stearns Road (note: this means Illinois Route 25 will be widened where it is part of the corridor and this is what has been evaluated). The crossing for alignments A and B are located approximately 4.8 kilometers (3.0 miles) north of the existing crossing at Illinois Route 64 in St. Charles. Alignment C (Red Gate/Army Trail Road) will provide a Fox River crossing about 4.0 kilometers (2.5 miles) north of the existing crossing at Illinois Route 64 in St. Charles. The crossings will split the approximate 9 kilometer (5.5 mile) gap between State Street in South Elgin and Illinois Route 64 in St. Charles (see Exhibit 1.3-1).

Since Alignments A and B are generally in the same location, the projected traffic volumes are identical. Exhibit 4.3-3a illustrates that these crossings are projected to carry approximately 31,000 vehicles per day in the year 2020, the approximate maximum volume for a four lane roadway. As part of the corridor, Illinois Route 25 will experience an increase to approximately 30,000 vehicles per day under the Build scenario from 21,000 under the No-Build scenario. Red Gate Road west of the Fox River will carry 20,000 vehicles per day under the Build scenario and only 6,300 vehicles per day under the No-Build scenario. Traffic volumes on Army Trail Road are projected to increase 5-10% with construction of the new crossing.

Alignment C as a two lane crossing will only carry 22,000 vehicles daily (see Exhibit 4.3-3b). Traffic volume on Red Gate Road will increase to 14,000; this volume is compatible with a two lane road. Traffic on Army Trail Road west of Dunham Road will increase approximately 25% (from 14,000 to 17,000). Traffic on Illinois Route 25 will remain relatively unchanged.

Alignments A and B will maintain access for all existing roads including the eastern portion (between Wredling School and Illinois Route 31) of Red Gate Road. Although both Alignments A and B depart northward away from the existing Red Gate Road, a T-intersection will be constructed to maintain access to the school. Alignments A and B will be elevated over Weber Road without a connection. However, access of the existing roadway network, including Elder Avenue and Weber Road, will remain unchanged in this area.

Alignment C will maintain direct access for all existing roads. The majority of the new portion of the roadway will be elevated. The structure will pass over Weber Road without restricting Weber Road or providing a connection to Weber Road. Therefore, the existing roadway network, including Weber Road, will remain unchanged.

C&NW/Dean Street

C&NW/Dean Street will provide a Fox River crossing about 0.3 kilometer (0.2 mile) north of the existing crossing at Illinois Route 64 in St. Charles. The immediate impact will be the reduction in the growth of congestion through downtown St. Charles. This in turn will help reduce the backups that extend east of the downtown. Other reductions will be minimal outside of St. Charles.

Exhibit 4.3-4 illustrates that the C&NW/Dean Street bridge crossing is predicted to carry approximately 20,000 vehicles per day in the year 2020. Illinois Route 64 will experience a 10% traffic reduction (43,000 vehicles per day under the Build scenario from 48,000 under the No-Build scenario) as a result of vehicles shifting from Illinois Route 64 to C&NW/Dean Street. Volume shifts from Illinois Route 64 to C&NW/Dean Street will be partially negated as vehicles from other roadways shift back onto Illinois Route 64 as traffic volumes reduce on Illinois Route 64. East of the Illinois Route 64 and C&NW/Dean Street intersection, volumes will not change noticeably; the projected volumes are greater than 40,000 vehicles per day under both the Build and No-Build scenarios. This indicates that this section of Illinois Route 64 will experience major congestion for a four lane roadway, regardless of the proposed C&NW/Dean Street alignment.

Dean Street north of Illinois Route 64 and south of the new road to Randall Road will experience traffic reduction (9,800 vehicles per day under the No-Build scenario and 5,000 under the Build) as a result of the new road. Randall Road south of the proposed corridor will experience a volume increase to 32,000 vehicles per day under the Build scenario from 30,000 vehicles per day under the No-Build scenario. Based upon the 32,000 vehicles per day, Randall Road should be widened to six lanes through St. Charles or it will experience major congestion.

Since the proposed road primarily borders a railroad with a limited number of intersections, it has limited impacts on local roadway access and access to properties. 17th Street will access the new roadway from the north. 17th Street will be closed south of the C&NW/Dean Street because its proximity to the Union Pacific (UP) track; The distance from the track to Dean Street would not provide adequate storage distance for safe intersection operation. Instead, vehicles traveling east on Dean Street from Randall Road will follow the new street to stay north of the UP tracks, and then turn left at 17th Street. Vehicles traveling west on Dean Street will turn right on DeBruyne Street, cross the railroad tracks, turn left on C&NW/Dean Street and turn right at 17th Street. This involves no adverse travel. 17th Street provides access to industrial properties and Timber Trails Park.

State Avenue east of the Fox River will be closed at the railroad track since the distance between the railroad track and the C&NW/Dean Street alignment will not provide adequate storage distance for vehicles on State Avenue. Cedar Avenue will be closed at 9th Avenue because of the proximity of that intersection to the intersection of 9th Avenue and the new road adjoining the railroad tracks. Access to 11th Avenue north of the new roadway will be right- in/right-out only due to the proximity of the proposed southbound to westbound right turn from Main Street to the new roadway. Alternate access will be provided by 9th Avenue or through the neighborhood. 12th Avenue north of Main Street and 11th Avenue south of Main Street will be closed due to the proximity of the proposed intersection of C&NW/Dean Street and Main Street. Alternate access

is available by adjacent connecting streets.

4.3.4.2 Transit

The proposed build alternatives will have no noticeable impact on bus service. They neither complement nor detract from any current operations or proposed. The build alternatives will, however, allow more flexibility in future bus service operations.

The proposed C&NW/Dean Street alignment will limit any station location that could be built along the Union Pacific line, though there is no obvious location now for such a station and the City of St. Charles has no plans for incorporating a station along the line. The proposed CC&P/Stearns Road alignment could enhance access to a station along the Illinois Central tracks, assuming commuter rail service is ever developed along the line. While the Village of South Elgin has no plans, a Randall Road station has been discussed by some planners. This location would benefit from the CC&P/Stearns Road alignment.

4.3.4.3 Non-motorized Transportation

The three corridors under consideration in the Central Region will all provide a mixed used path along their bridge crossing of the Fox River. Additionally, a mixed use path will be provided along most of the rest of roadway. These new paths will result in a net increase in the usage of non-motorized paths. New linkages will also be provided to existing paths.

The existing grade-separated crossing of the Illinois Prairie Path by Illinois Route 25 will be replaced with a new-grade separated crossing for the CC&P/Stearns Road alignment and Alignments A and B of the Red Gate Road Corridor. The Fox River Trail will remain grade-separated from any new roads. No direct connection is proposed between the Fox River Trail and the CC&P/Stearns Road build alternative.

The Great Western Trail will be unaffected by any of the proposed crossings. The C&NW/Dean Street alignment will eliminate access for the proposed St. Charles bicycle trail using the piers of the UP bridge across the Fox River. The new road would replace this lost trail with its own mixed use/bicycle path along the new bridge.

4.3.4.4 Other Modes

CC&P/Stearns Road Corridor

For the most part, construction and operation of the roadway will have negligible impacts upon the Canadian National/Illinois Central (CNIC) Railroad. Construction activities, including new bridges for Umbdenstock Road and Dunham Road over the track, will cause only minor temporary inconveniences. Construction staging and close coordination with the railroad will minimize impacts.

Replacement of the McLean Boulevard railroad bridge will require care to minimize disruption to rail service. Suitable windows for closure and alternate construction techniques, such as roll-in structures or construction in place, will need to be investigated in Phase I engineering.

The CNIC has expressed concerns that the preferred CC&P/Stearns Road alignment's proximity to the tracks will limit development potential of railroad appropriate land uses next to the tracks. They feel this would limit new potential rail customers. However, the South Elgin preliminary plans for development of the open areas adjoining the tracks indicate no such type developments.

The new road will be grade-separated from the Fox River Trolley track and the service track connecting to the CNIC track (while this track has been removed, the operators of the Trolley Museum indicate they expect the track to be restored in 1998). The proposed road centerline will be 80 meters (260 feet) south of the CNIC tracks. This distance will allow the trolley tours to continue to stop south of the CNIC tracks as part of their tour. Additional setback would increase the use of the Blackhawk Forest Preserve. There will be no net impact to trolley operations.

A grade separated crossing of a widened Illinois Route 25 and the CNIC tracks is impractical due to the high groundwater feeding the nearby fen and the proximity to the Union Pacific tracks. The railroad has indicated that due to safety reasons an expansion of the existing at-grade crossing at Illinois Route 25 will be unacceptable. This issue will need to be addressed, if necessary, with the Illinois Commerce Commission during Phase I engineering.

The existing Union Pacific structure over Illinois Route 25 will have to be replaced with a longer structure to accommodate a wider road. Maintenance of railroad traffic options will need to be more fully evaluated in Phase I engineering. Options will include partial construction in place, runaround tracks, and roll-in structures.

Red Gate Road Corridor
Except as Alignments A and B are common to the CC&P/Stearns Road alignment, there are no other relevant modes operating in this corridor. Alignments A and B will widen the crossing of the IC tracks to four lanes and require a longer bridge on the Union Pacific.

C&NW/Dean Street Corridor
New bridges will be constructed for 2nd, 3rd and 5th Avenues. The Union Pacific Railroad has indicated that they would like the clearances for these bridges increased to 7 meters (23 feet) from the current 6.58 meters (21'7"). Increasing the clearances would require raising 2nd Avenue, 3rd Avenue and 5th Avenue (Illinois Route 25) over the railroad tracks or removing the structures to provide unlimited vertical clearance. Removing the structures would disrupt access across the tracks and isolate neighborhoods. Raising the structures would disrupt access to adjoining properties because the road would be too high. Either way, it is not practical to increase the clearances as part of this project because of the above mentioned adverse impacts. No new at-grade crossings will be constructed for this project. As discussed in Section 4.3.4.1, a limited number of existing crossings will be closed. Maintenance of rail traffic issues will be minor. Several of the existing crossings will be upgraded while others are closed.

4.3.5 Cultural Resources

4.3.5.1 Standing Structures
For all the impacts described below, coordination has taken place with the State Historic

Preservation Officer (SHPO) to verify the findings presented below and to develop the appropriate mitigation. (Additional discussions of historic properties with adverse effects are found in the Section 4(f) discussion in Section 5.9.)

CC&P/Stearns Road (see exhibit 2.3-7a for locations)
Frontage will be required from the property at 37W 103 McDonald Road. The nearest structure will still be 20 meters (68 feet) from the proposed right-of-way. Further investigations have determined that the property is not eligible for inclusion on the National Register of Historic Places (NHRP).

The property adjoins an existing road. The project widens McDonald Road as part of the intersection improvement at the end of the project.

Red Gate Road Corridor (see exhibit 2.3-7b for locations)
The Federal Highway Administration has determined that a four-lane facility in the Red Gate Road corridor would have unmitigatable significant impacts, and has recommended against carrying the Red Gate Road corridor forward as a reasonable alternative for advancement. Therefore, the following properties will not be impacted: 36W 927 Red Gate Road; 36W 788 Red Gate Road; 36W 612 Red Gate Road; 36W 368 Red Gate Road (Red Gate Farm); 5N 754 Illinois Route 31 (Silver Fox Farm); the Janes & Kirtland Plant; the Oak Lawn Historic District; and the Pinelands Summer Camp site at 5N 375-368 and 35W 405-423 Pinelands.

Because the Red Gate Road corridor is not recommended for advancement, further investigations beyond the October 22, 1998 meeting with the IHPA are not required for all the above properties in the Red Gate Road Corridor to determine eligibility for inclusion on the NRHP and the extent to which the grounds contribute to any potential eligibility.

C&NW/Dean Street (see exhibit 2.3-7c for locations)
The Build Alternative will avoid most of the potentially historic properties identified along the alignment. The primary exception is the Moline site, eligible for inclusion on the National Register of Historic Places (NHRP). Besides requiring 15 meters (50 feet) from the buildings, this also requires the most noteworthy part of the Moline structure: the original office area. While a developer has slated most of the site for demolition, preliminary plans indicate the office area will be salvaged. The proposed road will constitute an effect. If the build alternative is selected, further coordination ~~is~~ will be required with the SHPO to determine appropriate mitigation.

These two properties are immediately adjoining the north side of the UP tracks. The UP tracks formed the basis for the definition of the corridor with the idea that it represented an underutilized corridor in a densely developed urban setting. While these buildings adjoin the north side of the tracks, the south is even more developed with numerous houses, factories, power substations (aside: the power substations and factories contain special wastes which render usage of those sites unacceptable and disproportionately expensive to relocate) and the Andrew Weisel House, a property on the NRHP.

The project will have no effect on the Andrew Weisel House (312 2nd Avenue), a property on the

NRHP, or the property at 416 2nd Avenue, potentially eligible.

4.3.6 Geology

4.3.6.1Bedrock and Surface Geology

Impacts to the bedrock are not expected. Except near the Fox River bridge crossings, changes to the surface geology are expected to be minor. Grading changes will include cut and fill areas with potential impacts from erosion.

Along the several corridors within the Central Region, soils consist of near surface deposits of granular material. Where these granular materials are present at the ground surface, there is a potential for any contaminants spilled or leaked during construction, or as a result of roadway operations, to migrate into the ground.

4.3.6.2Mineral Resources

The impacts of the proposed road on mineral resources will be the exclusion of mining of sand and gravel and stone within and adjacent to the right-of-way. Along the CC&P/Stearns Road corridor, impacts west of the river will include the exclusion of potential mining at the Fox Valley Stone Properties where expansions are planned. The setback requirements from highways will preclude mining of some portions of these adjacent lands. These prohibitions would impact both sand and gravel and bedrock mining on these properties. East of the river on the CC&P/Stearns Road corridor, where thick sand and gravel deposits are at present unmined, construction of the proposed road will also preclude future mining of the Henry Formation deposits at that location.

Along the Red Gate corridor, commercial deposits of sand and gravel are limited to valley train deposits adjacent to the Fox River. No active sand and gravel pits are present, although deposits 3 to 6 meters (10 to 20 feet) of bouldery outwash have been described near the east end of the corridor. The generally thick glacial cover for the area precludes economic development of bedrock stone quarries. The presence of five active sand and gravel pits indicate the proposed Red Gate corridor will not impact sand and gravel or stone availability within the region.

For the C&NW/Dean Street corridor, sand and gravel deposits are generally limited to fine grained deposits of silt, sand and gravel on the order of 6 meters (20 feet) thick in valley trains in the immediate vicinity of the Fox River. No active mines are present adjacent to the C&NW/Dean Street corridor. No active stone quarries mining the bedrock are present within or adjacent to the C&NW/Dean Street corridor. One possible source of commercial dolomite is an area approximately 2.8 kilometers (1.75 miles) mapped east of the Fox River with Silurian dolomite on the order of 7.5 to 15 meters (25 to 50 feet) thick. The thickness of the dolomite increases farther to the east from 15 meters (50 feet) to perhaps 30 meters (100 feet) at the east terminus of the corridor. Silurian dolomite was not found to be present at commercial depths west of the river within this corridor.

The absence of minable deposits in commercial quantities beneath the corridor and the presence of an estimated ten sand and gravel pits and two stone quarries within 16 kilometers (10 miles) of

the C&NW/Dean Street corridor suggest that the development of this corridor will not adversely affect the availability of sand and gravel or stone in the corridor vicinity.

4.3.6.3Groundwater Resources

CC&P/Stearns Road Corridor

Groundwater Supply

The shallow, unconfined aquifers present in the CC&P/Stearns Road corridor is potentially impacted by construction activities which may excavate or penetrate below the water table. Consideration of grade changes at railroad and highway crossings could result in interruption of shallow groundwater flow paths. Potential changes to groundwater flow paths are not anticipated to affect groundwater supplies because impacts will be minimal and confined to the immediate right-of-way; most, if not all, wells draw water from deeper aquifers.

The area of new impervious roadway pavement, estimated at 0.12 square kilometers (0.0469 square miles), is, in most cases, a fraction of 1% of the several square kilometer (mile) recharge area for the aquifer and wells along the proposed corridor. No demonstrated effect on groundwater recharge as a result of this new impervious roadway pavement is anticipated considering the roadway section and alignment proposed.

Approximately 24 private water supply wells, the majority of which are completed in the confined aquifer, are identified within the 300 meter (1,000 foot) wide corridor. Some of these wells will have to be properly abandoned. If an alternate water supply is not available, wells will be relocated as a result of final corridor alignment selection. No public water supply wells were identified within 300 meters (1,000 feet) of the corridor.

Groundwater Quality

Groundwater quality data from water supply wells showed no exceedances of Class I potable water supply standards. Impacts are evident in groundwater monitoring wells around the Tri-County Landfill. Changes in groundwater flow patterns from construction could result in impacts to the shallow aquifer from the identified landfill contamination.

The groundwater monitoring program in the Brewster Creek watershed provided groundwater elevation and quality data at 26 locations. This baseline information was supplemented with six additional wells to establish boundary conditions for a groundwater flow and transport model (MODFLOW/MT3DMS). The groundwater model provided a three-dimensional description of groundwater flow in the upper aquifer, as well as at the South Elgin Sedge Meadow and the Brewster Creek Fen. (See Appendix 6 of the *CC&P/Stearns Road Environmental Roadway Corridor Technical Memorandum*, July 31, 2000.)

Groundwater flows from the boundaries of the watershed toward Brewster Creek, its tributaries, the Fox River, or the wetlands. The primary source of groundwater is precipitation that infiltrates into the soil and recharges the aquifer. Other groundwater sources are losing reaches of Brewster Creek and septic discharge, although the septic discharge is a small component of the overall

contribution. There are no known wells or other groundwater sinks in the upper aquifer other than the creeks, wetlands, and Fox River.

Calibration of the model showed a good correlation between observed and modeled groundwater elevation and chloride concentration. This model included existing chloride sources, such as the Tri-County Landfill, the horse farm northeast of Dunham and Stearns Road, the Elmhurst-Chicago Stone pipe plant, residential sources, and road salt. Chloride transport was modeled for the proposed roadway into the groundwater system and then towards the wetland areas and other groundwater sinks.

The groundwater model evaluated impacts of the proposed roadway with and without mitigation measures. Model results for the roadway without mitigation indicated increasing chloride loading to South Elgin Sedge Meadow and Brewster Creek Fen by 6 and 0.5 percent, respectively with minimal change at the DeSantos site and no substantive change in the groundwater discharge to any of the sensitive wetlands. When the mitigative measures of removal of septic systems, horse farms, and residences are incorporated, the model predicted that the chloride loading would decrease by 3 and 1 percent, respectively, relative to existing conditions. Groundwater discharge to the fens under the mitigation scenario decreased by 0.1 and 0.9 percent, respectively. The modeling results indicate the changes in groundwater quality and quantity associated with the proposed roadway will not impact South Elgin Sedge Meadow, Brewster Creek Fen, or DeSantos INAI site.

Red Gate Road Corridor

Groundwater Supply

The roadway construction is not anticipated to penetrate the near surface aquifers along the proposed Red Gate corridor Alternatives either A, B or C. The area of new impervious roadway pavement estimated at 0.0342 square kilometer (0.0132 square mile) for Alternatives A and B and estimated at less than 0.0010 square kilometer (0.004 square mile) for Alternative C is a fraction of a percent of the several square kilometer (square mile) groundwater recharge area for wells in the vicinity of these roadway corridors. No impedance of groundwater flow toward the Fox River is anticipated considering the roadway section, existing roadways to be utilized, and the alignment proposed.

There are approximately 50 private water supply wells, the majority of which are completed in the confined aquifer, within 300 meters (1,000 feet) of each of the three Red Gate corridor alternatives. Some of these wells will have to be properly abandoned and relocated as a result of the final roadway corridor selection. Three public water supply wells are identified within 1,600 meters (1 mile) of these corridors. One well is located within 300 meters (1,000 feet) of alternative corridors A and B. It is not anticipated that public water supply wells will be impacted by corridor selection.

Groundwater Quality

Groundwater quality data for water supply wells within the Red Gate corridor indicate one exceedance of a groundwater quality standard, apparently from natural causes. For wells near

Alternative corridor C, total iron maximum concentrations of 10 milligrams per liter (mg/ℓ) exceeded the 5 mg/ℓ per liter standard. The potential to impact the shallow aquifer is high, particularly on the eastern side of the Fox River given the absence of an aquitard over the sand and gravel deposits. Calculation of chloride loading from runoff and the relatively large recharge area indicate that chloride levels will not increase over those currently present in the aquifer. No cumulative adverse impact is anticipated to the groundwater resource. In areas of near surface granular materials, drainage ditch lining shall be used to reduce potential for infiltration of other run-off contaminants.

C&NW/Dean Street Corridor

Groundwater Supply

Roadway construction along the proposed alignment is not anticipated to penetrate the shallow aquifer in the vicinity of the corridor. The area of new impervious roadway pavement, estimated at 0.0022 square kilometer (0.0084 square mile), is a fraction of a percent of the 3.88 square kilometer (1.5 square mile) groundwater recharge area that supplies the shallow aquifers for this corridor. No impedance or interruption of groundwater flow toward the Fox River is anticipated considering the roadway section and alignment proposed.

There are approximately 20 private water supply wells, the majority of which are completed in the confined aquifer, located within 300 meters (1,000 feet) of the corridor. One public water supply well is located within 150 meters (500 feet) of the corridor. It is anticipated that some of the private water supply wells will have to be properly abandoned and relocated as a result of final corridor selection. The public water supply well is not anticipated to be impacted by corridor selection.

Groundwater Quality

Groundwater quality could potentially be impacted by construction of the roadway on portions of the Moline Foundry property near the intersection of 17th Street and Dean Street in St. Charles, Illinois. The Moline Foundry is a potential source of contamination as a result of industrial operations formerly on that property. Design phase studies will determine the nature and extent of the contamination, and appropriate mitigation measures will be provided, as necessary.

Several parameters had maximum values which exceeded current Class I potable groundwater standards. These exceedances are apparently naturally occurring. Chloride, total dissolved solids, barium, manganese, and mercury had maximum concentrations that exceeded Class I potable drinking water standards in deeper wells. In the shallower wells, only manganese and mercury exceeded the Class I standards. The potential to impact the confined water supply wells is considered minimal, considering the presence of the Marengo aquitard overlying this aquifer. The potential to impact the shallow aquifer present along the Fox River is higher given the absence of an aquitard over these valley train sand and gravel deposits. Areas exhibiting shallow, unconfined aquifers present an increased potential for aquifer contamination. Calculation of chloride loading from runoff of roadway deicing salts and the large relative size of the recharge area indicate that chloride levels will not increase over those currently present in aquifers along this corridor. No adverse impact is anticipated to the groundwater resource.

4.3.7 Water Quality and Water Resources

4.3.7.1 Construction Impacts to Surface Water

CC&P/Stearns Road Corridor

The proposed CC&P/Stearns Road corridor crosses the Fox River ~~crossing~~ and three tributaries: Brewster Creek, North Arm of Brewster Creek and Brewster Creek [East Branch] Tributary. Based on preliminary bridge designs, two piers, approximately 17 square meters (180 square feet) each, will be placed in the Fox River. Construction of two piers will cause the permanent loss of approximately three percent of the river bottom at the crossing within the road right-of-way limits. A temporary substrate loss during construction of approximately 210 square meters (2,250 square feet) amounting to approximately ten percent of the substrate within the right-of-way limits to provide a temporary construction access road. The substrate for the corridor is gravel and cobble, which is suitable for the elktoe mussel. The habitat assessment did not indicate any unsuitable habitat within the corridor. The ten percent estimate of substrate loss overestimates the loss of suitable habitat in the Fox River crossing area.

Pier placement will cause temporary increases in turbidity; however, the substrate materials, being coarse grain, will deposit quickly. The St. Charles dam is 10 river kilometers (6.2 river miles) downstream of this crossing. Any suspended solids reaching the pool before the St. Charles dam would be expected to settle as the dam creates the longest and possibly the most placid pool on the Fox River (Butts, et al., 1978).

A variety of fish, mussel, and macroinvertebrate species were identified in the Fox River at the crossing location. Habitat conditions in the CC&P/Stearns Road corridor consisted of minimal amounts of silt (Taylor, et al., 1995). At least five dams occur between the mouth of Brewster Creek (downstream of the CC&P/Stearns Road corridor) and the known spawning populations of greater redhorse and river redhorse in southern Kane County, thereby preventing any upstream migration (Taylor, et al., 1997). With bridge construction activities limited to the area and dates designated by the work request, impacts to both species will be minimal (Taylor, et al., 1995).

This corridor includes three Fox River tributaries that exceed a watershed size of 259 hectares (one square mile). The tributaries are Brewster Creek, the North Arm of Brewster Creek, and the East Branch of Brewster Creek. Bridges spanning the channel banks will be used to minimize disturbance of the channel bottoms.

The proposed North Arm of Brewster Creek crossing is located 115 meters (380 feet) upstream of the confluence with Brewster Creek. This location is downstream of the South Elgin Fen. To preserve riparian habitat and to avoid significant floodplain impacts, this crossing of the North Arm and the confluence of Brewster Creek will be accomplished by a structure estimated in length at 150 meters (500 feet). Nevertheless, there will be some shading of the riparian habitat of the North Arm of Brewster Creek from the bridge and possible temporary construction impacts. Piers will not be placed within the normal water or the floodway of these streams.

The bridge crossing of the East Branch of Brewster Creek will span the channel banks and stream

bottom. Temporary impacts to riparian habitat will occur due to the Brewster Creek Tributary [East Branch] removal of the existing culvert.

Construction will cause a temporary increase in suspended solids and turbidity in the tributaries. IDOT and Kane County soil erosion control standards will be employed to keep this impact to a minimum.

Steam-side vegetation and riparian areas adjacent to streams and rivers will be filled for approach embankments. In addition, other surveyed sites such as ditches and detention ponds will also be filled or dredged for roadway construction. The total area of impacted riparian corridor is estimated conservatively to be 2.1 ha (5.2 ac).

In 1999 studies for the *Technical Memorandum* found the overbank riparian fringe FQI in surveyed area No. 2 to be 24.9 which is considered high in quality. In addition, during the site visit several individuals of *Napaea dioica* a state species of special concern were identified. The proposed activity will not directly impact this species. The activity may reduce the overall floristic diversity of this surveyed area.

Red Gate Road Corridor

All alignments of this corridor cross the Fox River, but at slightly different locations. Alignments A and B also cross Brewster Creek. As proposed, each of the alignments will place only one pier in the Fox River. Placement of the pier, estimated at 17 square meters (180 square feet) in size, will cause a short term increase in turbidity and the permanent loss of approximately 1.5 percent of the river bottom within the right-of-way limits.

Due to a river depth of approximately 1.5 meters (5 feet), the bridge pier will most likely be constructed from barges. Stream bottom disturbance will be limited to the area of permanent loss. Pier construction will include the placement of sheet pile to form a cofferdam for construction within a controlled perimeter to minimize impacts.

This corridor crosses the Fox River approximately 3 kilometers (1.9 miles) upstream of the St. Charles dam. The dam reduces flow velocities in the river, reducing the amount of suspended solids downstream. The Fox River substrate in the area of the three alternatives was observed to be primarily cobble overlain with silt. Habitat conditions in the reach are not favorable to the greater redhorse and river redhorse species and, therefore, this species is not expected to be present or impacted. Additionally, there are at least 4 dams between the Red Gate Road corridor and known areas of river redhorse and greater redhorse observed upstream of the Illinois Route 56/Oak Street corridor.

This corridor includes only one crossing of a stream with a watershed that exceeds 259 hectares (one square mile). The Brewster Creek crossing proposed for alignments A and B will be accomplished with a bottomless culvert that spans the channel. The headwall will be constructed at or beyond the top of channel banks in order to minimize increases in turbidity and loss of habitat. Some impacts to riparian corridor will occur due to the Brewster Creek culvert construction. This impact is not expected to be permanent. The Brewster Creek area construction

impacts are similar to the impacts on Brewster Creek caused by construction of the CC&P/Stearns Road corridor.

C&NW/Dean Street Corridor

The C&NW/Dean Street corridor crosses the Fox River, Seventh Avenue Creek and State Street Creek. The C&NW/Dean Street bridge will cross the Fox River where its width is 100 meters (330 feet). Preliminary bridge designs indicate that two bridge piers are proposed in the main channel. The construction of two piers will cause the permanent loss of approximately 3 to 5 percent of the river bottom at the crossing within the road right-of-way limits. Due to the water depth and access, pier construction will be from a barge and includes the placement of steel sheet piles. Therefore, permanent substrate loss during construction will be approximately 30 square meters (300 square feet). Construction impacts will include turbidity caused by pier construction and a direct loss of substrate due to pier placement. The St. Charles dam located immediately downstream will limit the extent of turbidity impacts farther downstream.

The Fox River in this reach has very little flow and is heavily silted, such that the substrate is not suitable for riverine mussels (Taylor, et al., 1995). Existing conditions discourage both redhorse species from inhabiting the Fox River within this corridor and, therefore, impacts to these species are not expected to occur. In addition, at least four dams are known to occur on the Fox River between this corridor and known areas of the river redhorse and greater redhorse upstream of the Illinois Route 56/Oak Street corridor.

On the west side of the Fox River, the corridor crosses State Street Creek, and on the east side of the Fox River, the corridor crosses Seventh Avenue Creek Tributary. Due to the urbanized location, this corridor will be drained directly to the Fox River in an enclosed drainage system. The C&NW/Dean Street corridor will include only minor increases in flow and erosion potential for State Street Creek and Seventh Avenue Creek tributary. Neither of these streams has a watershed that exceeds 259 hectares (one square mile). Both tributary crossings will be accomplished with a culvert that spans the channel. Both streams are already conveyed through culvert enclosures in the crossing locations. The structures will be extended with similar structures. Existing development has reduced the riparian habitat for these two tributaries. Therefore, there will be minimal impacts as a result of the proposed project.

The minimal construction impacts associated with the crossing of the Seventh Avenue Creek or the State Street Creek will not adversely impact any aquatic organisms in these streams located in an urbanized area.

4.3.7.2 Operational Impacts to Surface Water

CC&P/Stearns Road Corridor

Roadway operations in the CC&P/Stearns Road corridor will increase storm water runoff to waterways. Two of these, the East Branch of Brewster Creek and the North Arm of Brewster Creek, flow into Brewster Creek and then into the Fox River. Runoff to Brewster Creek and the East Branch of Brewster Creek will pass through detention facilities designed to treat the runoff. The run-off from the proposed roadway will have a volume flow less than 0.1 percent of the base

flow of the Fox River and is not anticipated to impact existing fish, benthic, or mussel populations in the Fox River..

The *Technical Memorandum* discusses a detailed stormwater management system designed to meet as a minimum the release rate requirements of the Kane County Stormwater Management Ordinance. This system will prevent increased peaks due to the roadway presence. Within the Brewster Creek watershed the roadway will be drained by a closed drainage system to ponds lined to minimize interaction with groundwater. When feasible, residence time for runoff will be extended to promote sediment and pollutant removal and dilution of chlorides accumulated over the winter from deicing operations before release to the stream system. With this system in place the Illinois General Use Water Quality Standards will be achieved for the Fox River and the three Brewster Creek Tributaries.

For the CC&P/Stearns Road crossing of the Fox River, the bridge, including that portion over the adjacent riparian fringe (surveyed area) will contain drains and a storm sewer that will collect and convey roadway runoff to the east and will discharge into detention basins before discharging the Fox River. Since surveyed area No. 2 will also contain a bridge for the crossing of the North Arm of Brewster Creek and Brewster Creek confluence, highway runoff will drain into a stormwater pipe and then discharge into a detention basin before discharging into Brewster Creek. Highway runoff will not be introduced directly to these streams. For surveyed area Nos. 4, 5, and 15, roadway runoff will be conveyed via a storm sewer discharging into a detention basin before discharging into Brewster Creek. These areas will have no direct runoff from the roadway, although 4 and 5 currently are receiving highway runoff.

With direct roadway runoff intercepted, stored in detention basins and bypassing riparian areas, the effect on riparian vegetation during these storm events is also expected to be minor.

Red Gate Road Corridor

The streams receiving runoff from the Red Gate Road corridor are the Fox River (Alternatives A, B, and C) and Brewster Creek (Alternatives A and B). Stormwater runoff from a majority of the proposed road construction on the west side of the river will be conveyed directly to the Fox River in new drainage facilities. All of the Red Gate Road alternatives are located at or near drainage divides on the east side of the Fox River. Most road runoff will continue to be directed to the minor Fox River tributaries that exist along these corridors. The proposed roadways represent a small portion of the total drainage area that contributes flow to these tributaries. Therefore, increases in stormwater runoff will be minor.

The projected pollutant levels and chloride levels associated with roadway operation will meet the Illinois General Use Water Quality Standards and will not affect existing fish, benthic, or mussel populations.

C&NW/Dean Street Corridor

Roadway operations in the C&NW/Dean Street corridor will direct runoff to three streams in the study area: the Fox River, State Street Creek and Seventh Avenue Creek. The projected pollutant levels, including chloride, for the Fox River and the two tributaries will meet the Illinois General

Use Water Quality Standards, and will not impact water quality, or existing fish, benthic, or mussel populations. While there is no existing water quality data for the two tributaries, roadway operations will not impact the streams due to the urbanized nature of the both streams.

Due to the urbanized location, storm sewers will be utilized to route stormwater to the nearest streams. No vegetated swales or ditches will be constructed.

4.3.7.3 Measures to Minimize Harm

Each of the corridors in this region will require an NPDES permit as specified under Section 402(p) of the Clean Water Act since more that 2 hectares (5 acres) of ground will be disturbed. The permit coverage will probably be under the IEPA General Permit for Stormwater Discharges from Construction Site Activities (NPDES Permit No. ILR100000). The permit requires that suitable erosion and sediment control measures will be used during construction. Requirements of the permit include the preparation of a Stormwater Pollution Prevention Plan.

CC&P/Stearns Road Corridor

This corridor crosses the Fox River and three smaller streams. Minimization techniques include the location of this road parallel to an existing railroad where wetland and surface water impacts are less than other alternatives investigated. Soil erosion and sediment control practices will be employed in accordance with the Kane County Stormwater Ordinance and IDOT Standard Specifications to minimize sediment transport. All river and stream banks disturbed by construction will be revegetated immediately following construction. Raw banks will be mulched or protected with blankets until the vegetation is established.

The Fox River bridge currently proposed will include two piers in the river. As river depths are shallow at this location, it is anticipated that construction access will be from land and will require temporary fill in the river. A stable material, such as articulated concrete mats, will be used on the river bottom to help re-establish the substrate after completion of pier construction. Clean stone and gravel fill will be used on top of the matting to provide the construction access. In-stream work and work that would impact the Fox River will be limited to the dates of June 8 through February 29 of the project year, the non-spawning period for the river redhorse and the greater redhorse. Bridges over the North Arm of Brewster Creek and Brewster Creek Tributary [East Branch] will span the stream bottom to minimize water quality and aquatic resource impacts.

All roadway surface runoff will be collected in a closed drainage system and conveyed to stormwater management ponds which will attenuate flows and reduce pollutants. Improvements to the aquatic habitat associated with the area of Brewster Creek near Midwest Groundcovers will include removal of culverts in the stream and restoration of bank areas.

Due to the sensitivity of the aquatic resources in this corridor, the Brewster Creek Greenway/Environmental Road Plan includes compensatory wetland creation for the loss of riparian vegetation. This mitigation will be at a ratio of 1.5:1 for each hectare filled or dredged.

The riverine riparian fringe may be less impacted by salt splash since they are flushed during high

water events. Thus, these riverine areas are not expected to be influenced by salt splash. One state species of special concern is located within surveyed area No. 2. However, the nearest location of the identified state species of special concern *Napaea dioica* is located approximately 60 meters (200 feet) south of the proposed roadway.

The riparian fringe of the East Branch of Brewster Creek (surveyed site No. 14) is a 2.19 hectare (5.41 acre) marsh/wet shrubland located on both sides of the stream. Much of the riparian area exhibits wetland characteristics and is located within the Tri-County State Park. The primary water source for this wetland is groundwater discharge and surface water from the East Branch of Brewster Creek. The wetland plant communities are predominately located in overbank areas beyond the top of banks approximately 0.3 meters (1 foot) above the normal base flow level. The FQI for the site is 23.9, indicating an area of high quality. There is a 10 to 50% chance in any given year that the wetland areas are inundated by storm flows. Therefore, the plants are subjected to water chemistry that is influenced both by creek and groundwater flows. If all roadway stormwater runoff is conveyed directly to the East Branch of Brewster Creek, it is estimated that chloride levels in the river could rise an estimated 10 to 20 percent. These predicted elevated chloride concentrations as a result of roadway operations that could impact vegetation, especially salt sensitive species like tussock sedge. This may cause a lowering of the plant habitat function. The other functions of this wetland should be minimally impacted by the proposed project.

Red Gate Road Corridor

This corridor crosses the Fox River and Brewster Creek. Minimization techniques include the location of this road corridor near the surface and groundwater watershed divide. This location minimizes surface water impacts compared to other alternatives investigated. Soil erosion and sediment control practices will be employed in accordance with IDOT Standard Specifications to minimize sediment transport. All river and stream banks disturbed by construction will be revegetated immediately following construction. Raw banks will be mulched or protected with blankets until the vegetation is established.

The Fox River Bridge proposed has one pier in the waterway. Construction access will be from a floating barge, as water depths allow. A steel sheet pile cofferdam or driven piles will be used to minimize sediment and stream bottom disturbance. The Brewster Creek crossing will include a bottomless culvert that spans the creek bottom to minimize water quality and aquatic resources impacts.

C&NW/Dean Street Corridor

This corridor crosses the Fox River and two urban tributaries. Minimization techniques include the location of this corridor parallel to an existing railroad track, and in an urbanized area. Soil erosion and sediment control practices will be employed in accordance with IDOT Standard Specifications to minimize sediment transport. All river and stream banks disturbed by construction will be revegetated immediately following construction. Raw banks will be mulched or protected with blankets until the vegetation is established.

The Fox River bridge will include three piers in the river. Construction access will be from a

floating barge where water depths allow. A steel sheet pile cofferdam or driven piles will be used to minimize sediment disturbance on the river bottom. Culverts will be utilized for the proposed crossing of both State Street Creek and 7th Avenue Creek.

4.3.7.4 Floodplains

CC&P/Stearns Road Corridor

The proposed CC&P/Stearns Road corridor has a proposed transverse crossing of the Fox River floodplain (see Exhibit 2.3-8). The only construction within the designated floodway and below the 100 year flood elevation will be the construction of piers in the river. The bridge will be designed so that there will be no significant increase in flood elevations or stream velocities.

The North Arm of Brewster Creek will have a transverse crossing. The structure crossing the North Arm will be designed so the channel remains in place and the opening spans the entire designated floodway. The structure will be sufficient to avoid a significant increase in the 100 year flood elevation or velocity. Brewster Creek approaches the proposed road at a confluence with the North Arm. Brewster Creek has a designated floodway and there will be no structure or embankment placed within the designated floodway below the 100 year flood elevation.

The unnamed Brewster Creek [East Branch]Tributary currently crosses Illinois Route 25 in a culvert (there is not a designated floodway). This culvert will be replaced with a bridge sized to cause no significant increase in the elevation or velocity of the 100 year flood.

The net result is that there will be no significant impact to the floodplains of the streams crossed by the proposed CC&P/Stearns Road corridor.

Floodplains filled will be compensated for in accordance with the Kane County Stormwater Management Ordinance.

Red Gate Road Corridor

The Red Gate Road corridor has a transverse crossing of the Fox River floodplain (see Exhibit 2.3-8). The only construction within the designated floodway and below the 100 year flood elevation will be the construction of piers in the river. The bridge will be designed so that there will be no significant increase in flood elevations or stream velocities.

For Alignments A and B there is already a transverse crossing of Brewster Creek at Illinois Route 25. The existing culvert will be replaced with a structure designed so there will be no significant increase in flood elevations or stream velocities.

The unnamed Brewster Creek Tributary crosses Illinois Route 25 in a culvert. This culvert will be replaced with a culvert sized to cause no significant increase in the elevation or velocity of the 100 year flood.

The net result is that there will be no significant impact to the floodplains of the streams crossed by the proposed Red Gate Road corridor alignments.

C&NW/Dean Street Corridor
The proposed C&NW/Dean Street corridor has a transverse crossing of the Fox River floodplain (see Exhibit 2.3-9). The only construction within the designated floodway and below the 100 year flood elevation will be the construction of piers in the river. The bridge will be designed so that there will be no significant increase in flood elevations or stream velocities.

The existing railroad has a transverse crossing of a tributary of the 7th Avenue Creek downstream of the proposed C&NW/Dean Street crossing. The proposed crossing is also upstream of the area with a designated floodway. The proposed culvert will be an extension of the existing culvert and will be sized to prevent any significant increase in flood elevations or stream velocities.

The net result is that there will be no significant impact to the floodplains of the streams crossed by the proposed C&NW/Dean Street corridor.

4.3.8 Wetlands

4.3.8.1 Construction Impacts to Wetlands

CC&P/Stearns Road Corridor (see Exhibit 2.3-10 for locations)
As the following discussion of the impacts to wetlands of the CC&P/Stearns Road Corridor has been extensively revised, to maintain readability the bold and strikeout have not been used to call attention to the changes.

The proposed roadway will impact by the placement of fill into or by the shadowing of the following six wetlands: Nos. 4, 13, 15, 16, 21 and 22 totaling 0.93 hectare (2.3 acres). None of the other 13 (5 in corridor and 8 nearby) wetlands, including the fen areas, will have permanent or temporary loss of acreage or function due to roadway construction. Specific quantities of earthwork that may intersect the water table during construction have not been determined at this time, though the design of the grade line, typical section and drainage system are being set to minimize impacts to the groundwater. The shading effect on wetlands under bridges was considered to be a direct permanent impact since: (a) the canopy trees will be removed and the area under the bridge will be maintained as either an emergent or scrub/shrub wetland thereby converting one wetland type to another, and (b) the shading effect will result in reduced wetland vegetation and function over time.

Wetland No. 4
Wetland No. 4 is a depressional area located immediately to the south of the CNIC Railroad and existing Illinois Route 25. The proposed activity for this area involves the widening of Illinois Route 25. Less than one percent of the total wetland area will be filled. The proposed grade of the widening requires the construction of side slopes in the wetland area. This activity will permanently impact the wetland along the eastern border. Because of the very small overall area of permanent wetland impact (0.16 hectare/ 0.39 acre), compared to the size of the wetland the activity will not lower the functional capacity of any of the identified wetland functions.

Wetland No. 13

The proposed activity for this area involves the construction of a bridge spanning the East Branch of Brewster Creek with some associated tree clearing, and filling to the proposed grade. This would require the permanent destruction of approximately 0.20 hectare (0.50 acre) out of a total of 0.66 hectares (1.65 acres) of forested wetlands (PFO), for a loss of 30 percent of wetland area.

The removal of vegetation, especially trees and shrubs along the eastern part of this wetland will likely result in a reduction in sediment stabilization. The FQI of this wetland is 3.6; however, a vegetative search involving a larger portion of the wetland revealed an FQI of 21.9. The small amount of wetland impacted by bridge construction will not reduce floristic diversity/abundance since the higher quality plant species found along the western edge of the wetland that will not be impacted.

The remaining undisturbed portion of Wetland No. 13 should continue to be viable and self-sustaining after construction. The remaining mature trees and shrubs, in addition to the existing seedbank, will likely provide viable replacement vegetation in open or exposed areas. These wetlands will continue to provide the functions of sediment trapping, nutrient trapping, and flood storage after construction.

Wetland No. 15

Wetland No. 15 is an emergent/scrub/shrub wetland located to the south of the South Elgin Sedge Meadow complex, separated by the CNIC Railroad line. The proposed activity for this area involves the filling to the proposed grade. This would require the permanent destruction of approximately 0.21 hectare (0.52 acre) out of the total 0.93 hectare (2.30 acre) wetland. The placement of fill will reduce the amount of sediment/toxicant retention and nutrient removal transformation thereby lowering the functional capacity for water quality protection. The FQI for the wetland was 16.3 when assessed for the *Technical Memorandum*, which is considered moderate. An earlier assessment found the FQI to be 23.4 in the summer of 1997. Since the activity will destroy approximately 23 percent of the wetland area, vegetative diversity may be reduced.

Wetland No. 16

Wetland No. 16 is located immediately north of Stearns Road approximately 869 meters (2,850 feet) east of Dunham Road. The southern edge of this wetland will be directly impacted due to fill for the proposed construction of the side slopes. This would require the permanent destruction of approximately 0.24 hectare (0.59 acre) out of the total 0.46 hectare (1.15 acre) wetland. The placement of fill will reduce the amount of sediment/toxicant retention and nutrient removal transformation thereby lowering the functional capacity for water quality protection. Since the floristic quality of the wetland is moderate, the activity will have little effect on floristic diversity.

Wetland No. 21

Wetland No. 21 is an emergent/scrub/shrub wetland located south of the IC Railroad tracks and southeast of Wetland No. 18. The proposed activity involves the filling of the wetland to achieve the proposed grade. This would require destruction of the 0.07 hectare (0.17 acre) wetland. The placement of fill will reduce the amount of sediment/toxicant retention and nutrient removal transformation. Since the floristic quality of the wetland is low, the activity will have little effect

on floristic diversity.

Wetland No. 22
Wetland No. 22 is a scrub/shrub wetland located east of Wetland No. 21 and south of the IC Railroad tracks. The proposed activity involves the filling of the of the wetland to achieve the proposed grade. This would require destruction of the 0.06 hectare (0.14 acre) wetland. The placement of fill will reduce the amount of sediment/toxicant retention and nutrient removal transformation. Since the floristic quality of the wetland is low, the activity will have little effect on floristic diversity.

Red Gate Road Corridor (see Exhibit 2.3-11 for locations)
Wetland Nos. 1, 2 and 7 will be avoided completely by construction activities for all of the three alternative alignments described. Wetland No. 3 will be impacted by Alignment C. Wetland Nos. 4, 5, 6, and 8 will be impacted by Alignments A and B. In addition, this corridor includes portions of CC&P/Stearns Road along Illinois Route 25, including the intersection of Illinois Route 25, Dunham and Stearns Roads (viz. Wetland No. 5 and 13 from the CC&P/Stearns Road corridor). Impacts to wetlands in this area are discussed above in the CC&P/Stearns Road section.

Wetland No. 2
The wetland is situated several hundred meters south of Alignments A and B and will not be impacted. The proposed Alignment C is located approximately 50 meters (164 feet) south of the pond and will not require the acquisition of any portion of the site.

Wetland No. 3
Wetland No. 3 is approximately 0.27 hectare (0.66 acres) in size, all within the project corridor of proposed Alignment C. The bridge structure designed for this alignment divides the wetland into two parcels north and south of the roadway. These remnants will be approximately 0.03 hectare (0.08 acre) and 0.14 hectare (0.35 acre) in size. The total area filled is approximately 0.08 hectare (0.20 acre), of this wetland. This is an isolated wetland not directly connected to streams or rivers. With a FQI of 9.6, this is a site of low natural quality.

The wetland will be bisected by construction of the roadway. The two small remnant wetlands will not provide the same function as the larger wetland intact. Therefore, as the function of this wetland is impacted, it is considered totally impacted.

Wetland No. 4
Wetland No. 4 is a 0.24 hectare (0.60 acre) pond located east of Illinois Route 25 and north of Army Trail Road. Approximately 0.08 hectare (0.2 acre) of this wetland lies within the proposed right-of-way of a four lane facility for Alignments A and B . With a FQI of 11.7, this is a site of low to moderate natural quality.

The habitat area will be reduced in this wetland but will still function in collecting precipitation and runoff. Some loss of function will also occur in regards to sediment trapping. The remaining wetland will still provide wildlife habitat, although reduced in size. This is an isolated wetland, not directly connected to streams or rivers.

Wetland No. 5
Wetland No. 5 is a 0.28 hectare (0.69 acre) wet meadow located east of Illinois Route 25 and north of Seminary Road. Approximately 0.08 hectares (0.2 acres) of this wetland lies within the proposed right-of-way of a Alignments A and B. With a FQI of 7.7, this is a site of low natural quality.

The habitat area will be reduced in this wetland but will still function in collecting precipitation and runoff. Some loss of function will also occur in regards to sediment trapping. The remaining wetland will still provide wildlife habitat, although reduced in size. This is also an isolated wetland, not connected to other water bodies.

Wetland No. 6
Wetland No. 6 is a 0.08 hectare (0.20 acre) wet meadow located east of Illinois Route 25 and north of Wetland No. 5. At least 0.04 hectares (0.1 acres) of this wetland lies within the proposed right-of-way of a four lane facility for Alignments A and B. With a FQI of 5.0, this is a site of low natural quality.

The habitat area will be reduced in this wetland but will still function in collecting precipitation and runoff. Some loss of function will also occur in regards to sediment trapping. The remaining wetland will still provide wildlife habitat, although reduced in size. This is an isolated wetland, not directly connected to other water bodies.

Wetland No. 8
Wetland No. 8 is a 0.06 hectare (0.15 acre) wetland located immediately adjacent to Illinois Route 25 (east side) at the crossing of Brewster Creek for Alignments A and B. This wetland is somewhat separated from the larger floodplain wetland along Brewster Creek by an entrenched cut bank. This wetland may also extend in the DeSanto's Brewster Creek INAI site. This wetland complex may extend up to Wetlands Nos. 9 and 10 (Brewster Creek Fen Nature Preserve) of the CC&P/Stearns Road Corridor. The FQI for the portion within the right-of-way is 16.3, indicating fair quality. At least 0.01 hectare (0.025 acre) of this wetland lies within the existing right-of-way and will be impacted by construction of the proposed four lane facility. To avoid impacts to the DeSanto's Brewster Creek INAI site all widening and right-of-way acquisition will occur to the west side of the existing roadway.

The habitat area of this wetland will be slightly reduced as will the floodwater storage capacity and sediment trapping. The remaining wetland, in conjunction with the wetland to the west, will still provide floodwater storage, sediment trapping and wildlife habitat. No direct construction related impacts are anticipated by the proposed Red Gate Road corridor improvement.

C&NW/Dean Street Corridor (see Exhibit 2.3-12 for locations)
There will be no construction impacts to wetlands along this proposed road.

4.3.8.2 Operational Impacts to Wetlands

As the following discussion of the impacts to wetlands of the CC&P/Stearns Road Corridor has

been extensively revised, to maintain readability the bold and strikeout have not been used to call attention to the changes.

CC&P/Stearns Road Corridor

Due to the presence of the fen/seep type communities and other high quality wetlands, detailed studies were conducted on potential operational impacts to wetlands in this corridor only. A groundwater model was utilized to determine the extent of impacts, if any, which would occur as a result of operations of the proposed roadway. Detailed analyses were conducted primarily for chlorides as a result of road deicing procedures. The results of this study are presented in the *CC&P/Stearns Road Environmental Roadway Corridor Technical Memorandum*, July 31, 2000.

Surface Runoff

Wetlands that will potentially be subjected to chlorides associated with runoff discharge upstream include Wetland Nos. 8, 9, 10, 13, and 16. Specific design features of the CC&P/Stearns Road were employed to eliminate runoff directly into wetlands by the use of closed section road (i.e., curb and gutters that collect all surface flow from roadway). Enclosed drainage discharging to detention basins will be used for the proposed Stearns Road east of the Fox River crossing due to the sensitive nature and potential impact to fens and high quality wetlands. This will prevent untreated runoff discharging directly into wetlands.

Splash

When the applied salt is mixed with snow, ice, and water, it can be transported as a liquid or fluid onto roadside vegetation, soils, and into drainage swales as splash. Splash is the liquid brine consisting of larger salt solution drops which fall out near the roadway (Stensland, 1976). Splash lands directly on vehicles, soil, and vegetation though some of it ends up in the roadway drainage system and is transported away as runoff. Potential impacts caused by splash are to vegetation (trees, shrubs, and grasses), soils, and erosion. Splash accounts for 15 to 35 percent of total salt transport. In general, studies have shown that the impact due to direct splash occurs 1.5 to 40 meters (5 to 130 feet) from the roadway (Prior and Berthouex 1967; Berthouex and Prior 1968; Lumis et al. 1973). Accordingly, wetlands within this area may be exposed to higher levels of chlorides on plant leaves, branches, trunks, culms, and organic litter.

McLean Boulevard [Day's] Fen (Wetland No.17) is located from 30 to 50 meters (100 to 164 feet) from the north curb of the proposed roadway. However, the nearest known location of the identified slender bog arrow grass - *Triglochin palustris* is located 64 meters (210 feet) north of the proposed roadway. The sloping topography of the wetland and the presence of the CNIC Railroad that will block splash north of the proposed road indicate that Wetland No. 17 will not receive direct splash.

Areas that may be impacted from splash include Wetland Nos. 4, 13, 15, 16 and 28.

The depressional wetlands have the potential to be impacted by salt splash. However, the overall impact may be limited since the closest wetland edge to the roadway directly adjacent to these wetlands is typically 15 meters (50 feet) from the roadway curb, and 24 meters (80 feet) from the road centerline.

Spray

Moving traffic and wind can cause small amounts of a salt and water mixture to travel at variable heights and distances by aerial transport in the form of spray. Spray consists of fine droplets of salt in solution or particulates which are lifted by wind and moving traffic to varying heights and distances. These smaller droplets will evaporate to an equilibrium size consistent with the ambient relative humidity and be widely dispersed over the entire region. This aerial form impacts the leaves, twigs, and trunks of trees and shrubs, but does not contribute significantly to soil salt concentrations (D'Itri 1992). The effects of salt spray are manifested in leaf-burn, defoliation, die-back, and brooming. In severe cases, or when salt exposure is prolonged, vegetation may die. Salt spray may potentially affect the following wetlands: Nos. 3, 4, 11, 13, 15, 15', 16, 17, 18, 23, and 28.

In general, studies have shown the distances that spray can travel is highly variable and the mass-loading declines rapidly with distance from the roadway. However, spray has been shown to travel at considerable distances from the roadway and can range from 100 meters to well over 500 meters (328 to 1,640 feet) if downwind (Chung 1981, as cited in D'Itri 1992). Although much work has been done on the distance that salt spray can travel, only a few studies have shown the effective impact distance for salt spray. Kelsey and Hootman (1992) in a study of salt spray near two interstate highways (12-16 lanes) in Illinois show white pine damage up to 378 meters (1,240 feet) from the roadway edge. Chung (1981) noted acute needle damage and loss on red and white pine trees mostly within 100 meters (328 feet) of the roadway. And Smith (1970) cited high sodium content of needles and twigs of damaged white pine between 5 and 28 meters (17 to 92 feet) from the road with increased damage on the downwind side of the road. Most of these studies examined white or red pines which are species highly sensitive to salt spray. There is little information available examining the effect of salt spray from roadways on herbaceous species.

Plants, such as grasses, can adjust to rather high osmotic concentrations of salt ions (Hanes et al., 1970). According to Hanes (1970), with adequate moisture, salts can be leached from the soil and thus removed from the zone that affects plant growth. For example, reed canary grass is a salt tolerant species that is typically found in wetland situations. The effect of chlorides on woody and tree vegetation is somewhat species dependent.

Groundwater Transport

Chloride can be transported to wetlands by groundwater. Elevated chloride levels in stream runoff can infiltrate the groundwater table from stream bottoms, if the stream is "losing" water. Streams in this region typically gain from groundwater.. Furthermore, a portion of chlorides deposited on the ground surface by spray can travel to the groundwater table through rainfall infiltration. A groundwater flow and transport model (MODFLOW/MT3DMS) was used to evaluate potential changes in ground water quality. (See Appendix 6, *Fox River Bridges CC&P/Stearns Road Environmental Roadway Corridor Technical Memorandum*, July, 2000.) Results of the modeling indicated that a new, four-lane road without mitigation could increase chloride loading via groundwater to the South Elgin Sedge Meadow and Brewster Creek Fen by 6 and 0.5 percent, respectively. Once design features, such as stormwater drains, and removal of septic systems occurs, the chloride loading to South Elgin Sedge Meadow and Brewster Creek Fen could decrease by 3 and 1 percent, respectively, relative to current conditions. Therefore, there should be no new

groundwater impacts to these fen areas with the proposed roadway design.

The following wetlands will receive chloride loading through groundwater due to elevated stream chloride levels: Wetland Nos. 3, 4, 6, 7, 9, 10, and 15. The following wetlands will receive chloride loading through the infiltration of spray into the groundwater table: Wetland Nos. 3, 4, 6, 7, 11, 12, 13, 15, 15', 16, and 17. Groundwater transported chloride will be a small fraction of background levels and surface water chloride loadings at most of these sites.

On the east side of the Fox River, chloride intrusion to the water table aquifer could have an impact to the South Elgin Sedge Meadow if the chloride is in sufficient quantities. More than 50 percent of proposed road construction on this side of the Fox River falls within the groundwater recharge area of the South Elgin Sedge Meadow. The modeling process indicated a net reduction of chloride with the proposed mitigation plan in effect.

Studies are limited regarding the effects of chloride or sodium on the growth and reproduction of sensitive fen species. One study completed in the Pinhook Bog area in Indiana showed chloride concentrations of 400 mg/L to 1,200 mg/L altered the vegetation such that cattails invaded a portion of the bog (Wilcox, 1986). Other researchers have shown similar values of sodium concentrations (Panno, et al, 1999). Sodium concentrations in rich fens in Alberta, Canada have typical values ranging from 2 to 22 mg/L (Slack et al., 1980). Fens are heavily dependent on the chemistry of the groundwater. Actual sodium and chloride concentrations in the background groundwater become important considerations when comparing the effects of the addition of these ions to the fen ecosystem. Accordingly, the additional inputs of chloride were viewed in reference to the existing background groundwater chemistry.

South Elgin Sedge Meadow INAI - Brewster Creek Fen Nature Preserve - McLean Boulevard Fen [Day's Fen], Kane County Forest Preserve District - Wetland No. 15

The high quality wetlands (South Elgin Sedge Meadow, and Brewster Creek Fen/Seep, and McLean Boulevard [Day's] Fen) will not be impacted by chlorides in runoff during roadway operation. The South Elgin Sedge Meadow is located approximately 183 meters (600 feet) north of the proposed road and a railroad line separates the fen from the proposed road. Surface drainage patterns are such that direct runoff will not collect in the fen. Also, the roadway design incorporates specific features to minimize salt spray, such as sloped shoulders and berms with plantings on both the northern and southern sides of the roadway, were incorporated. Additional blockage of salt splash and spray will occur as the location of proposed roadways and railroad berm provides a height differential of 7.6 m (25 ft.) It is anticipated the berms with plantings adjacent to the roadway will slow wind velocities and reduce wind turbulence.

The Brewster Creek Nature Preserve Fen is located at least 366 meters (1,200 feet) away from any proposed road such that the only impact is likely to be from upstream runoff into Brewster Creek Tributary. The close proximity to the 100-year floodplain suggests that the fen is flushed during high water events and acts more like a riverine wetland when the water table is elevated. Based on the fen's position with respect to the creek, the cross section of the floodplain indicates that the lateral extent of flooding probably includes the fen. If this area is influenced by the creek, then the flushing mechanism probably keeps chlorides in surface water from impacting or affecting the

fen.

The McLean Boulevard [Day's] Fen is located from 75 meters (250 feet) from the proposed Stearns Road. The roadway as designed is approximately 4.5 meters (15 feet) below the adjoining piles from quarry operations or the railroad embankment between the roadway and the fen. This roadway placement will reduce salt spray.

Groundwater Recharge Impact of Fen Areas
In general, the depth to groundwater was found to range from 1.5 to 6 meters (5 to 20 feet). Preliminary hydrogeological analysis of the monitoring well data suggested that the area fens and seeps on the east side of the Fox River are supported by a shallow aquifer and that the shallow groundwater flow direction is west toward the Fox River.

The groundwater model indicated that groundwater discharge to the fens in the Brewster Creek watershed will be decreased less than one percent as a result of construction of the proposed roadway. The net effect will be a possible decrease of up to 0.003m (0.01 foot) in water elevation in the South Elgin Sedge Meadow, Brewster Creek Fen and DeSanto's INAI site. The recharge area for the Day's Fen is upstream of the proposed roadway and will not be adversely affected by the project. In fact, the recharge protection area being implemented will provide protection of the recharge area that may not receive protection otherwise.

Summary of Operational Impacts to Wetlands
A summary of potential operational impacts is presented. Wetland Nos. 6, 7, and 8, are located at a sufficient distance from the proposed roadway (Wetland No. 6, 122 meters [400 feet]; Wetland No. 7, 274 meters [900 feet]; Wetland No. 8 210 meters [700 feet] from the proposed roadway), that no direct operational impacts are anticipated from this project. While wetland 18 is upgradient and on the other side of the CNIC embankment, so it will not experience noticeable operational impacts, it is included in the following discussions for completeness. Since all of Wetland No. 21 and 22 will be impacted by construction, no adverse impacts from roadway operations are anticipated. The use of enclosed section road draining to detention basins will minimize direct runoff impacts from the highway. The relocation of IL Route 25 away from Wetlands 11 and 12 will improve conditions slightly for those wetlands.

Operational impacts will occur to wetlands located in close proximity to the proposed roadway. Because no roadway currently exists in portions of the corridor, some wetlands will be subjected to operational impacts that currently do not receive roadway impacts. These wetlands include 3 (South Elgin Sedge Meadow), 4, 15, 16, 17 (Day's Fen), 18, and 23. A detailed discussion on potential operational impacts to wetlands 3, 15, and 17 is provided in the following sections. Detailed mitigative measures for operational impacts to Wetlands 3 and 17 are provided in Section 4.3.8.4. Although wetlands 9 and 10 (representing the Brewster Creek Fen Nature Preserve), along with Wetland 8, are not located near the proposed roadway, their location downstream from the new roadway increases the potential for operational impacts. A detailed discussion of this wetland complex is also provided. Mitigative measures for potential operational impacts for Wetlands 9 and 10 are also provided in Section 4.3.8.4.

Proposed new operational impacts to wetlands 4, 15, 18, 23, and 28 would be the introduction of splash and spray, and an increase in trash and debris. The functions of these wetlands would not be impacted by the operation of the proposed roadway project. Much of the vegetation in these wetlands is lower quality species tolerant to roadway pollutants.

Wetlands 11, 13, 16, and 28 are located either adjacent to or in close proximity to roads and highways and are already subjected to operational impacts. The functions of these wetlands will not be impacted as a result of the construction of the CC&P/Stearns Road corridor. The proposed drainage system,in general for these wetlands, and the relocation away from 11 and 12, will result in some reduction of existing operational impacts. Higher quality plant communities are located away from existing roadways for Wetland 13. The proposed project will have minimal impacts to the quality of this wetland and will also have very minimal impacts to wetland functions.

Wetland No. 3 South Elgin Sedge Meadow
The South Elgin Sedge Meadow contains a number of sensitive plant species. Background water quality conditions include groundwater with chloride concentrations in the 15 to 100 mg/L range. Chloride concentrations in the North Arm of Brewster Creek have been measured at 70 mg/L. Wetland No. 3 is periodically subjected to inundations from creek backwaters. It is estimated that the wetland has a 20 to 50 percent chance in any given year of experiencing backwater inundation from the creek. Therefore, the wetland setting includes an area with a primary water source from groundwater seepage that is periodically inundated by nearby stream flows.

Potential operational impacts from the proposed road operation include salt spray and ground water transport of chlorides. Existing salt deposition patterns were monitored for the winter of 1999-2000 to establish a baseline condition for South Elgin Sedge Meadow. This information was used to assess future conditions of the proposed roadway.

The proposed roadway will run parallel and south of railroad tracks. This roadway will operate with two lanes in each direction and a 5.5 meter (18 foot) median. The design features also include sloped shoulders and a berm with plantings on both the northern and southern sides of the roadway. The berm is anticipated to slow wind velocities and reduce wind turbulence. Additional blockage of salt splash and spray will occur as the relative locations of proposed roadways and railroad berm provide a height differential of 7.6 meters (25 feet).

During the 1999-2000 study the predominant wind direction in the winter months was from the northeast or northwest. This result is associated with local topographic features and would place the South Elgin Sedge Meadow upgradient of the proposed roadway.

Two scenarios were developed utilizing the existing deposition pattern measured during the winter of 1999-2000. (See *CC&P/ Stearns Road Environmental Roadway Corridor Technical Memorandum*, July 31, 2000). Minimum and maximum chloride deposition was estimated assuming that the wind direction placed the South Elgin Sedge Meadow upgradient or downgradient, respectively, of the proposed roadway.

Features reducing the salt spray quantities included the adjacent road berm and the railroad berm.

Salt application rates were estimated at 85 kg/ km lane mile (300 lb/lane mile). The minimum chloride deposition associated with the proposed roadway varied from 0.27 to 0.43 g/m^2 (0.00005 to 0.00009 lbs/ft^2) and the maximum chloride deposition was estimated at 0.9 to 1.7 g/m^2(0.00018 to 0.00034 lbs/ft^2). This deposition would be added to the existing chloride contribution of 1.8 gm/m^2 (0.00036 lbs/ft^2) associated with spray from Illinois Route 25.

The results of the winter monitoring effort indicate that chloride deposition is already occurring in the fen areas. The proposed roadway will increase existing chloride deposition by 20 percent to 100 percent over existing conditions. Even though the aerial deposition will increase, there are other chloride sources being removed from the South Elgin Sedge Meadow area.

The removal of the two septic systems adjacent to the South Elgin Sedge Meadow will eliminate 3,720 kg/yr (8,184 lbs/ yr) of chloride from the ground water. This reduction can be compared with the chloride contribution from the proposed roadway of 15 to 59 kg/yr (33 to 130 pounds/yr). Therefore, there will be net reduction in chloride loading to the South Elgin Sedge Meadow by removing these sources.

The significance of airborne deposition is dependent upon plant tolerances to sodium and chloride. There is little existing information regarding the importance of airborne deposition upon fen communities; however, there are studies in the literature that indicate the groundwater concentration of chloride can have an effect upon plant communities. These two transport pathways have both been considered in obtaining a net reduction of chloride to the South Elgin Sedge Meadow.

Wetland Nos. 9 and 10 (Brewster Creek Fen Nature Preserve)
Since these wetlands form a continuum from stream to upland, they are discussed together. This complex is located downstream from Wetland No. 8. Wetland No. 9 is a wet meadow/wet shrubland complex adjacent to both sides of the East Branch of Brewster Creek. Wetland No. 10 is the Brewster Creek Fen Nature Preserve upslope and adjacent to Wetland No. 9. Hydrologic conditions in Wetland No. 9 are driven by a mixture of groundwater and surface water flows. This conclusion is similar for Wetland No. 10; however, this area is primarily supported by groundwater. Existing chloride concentrations have been measured in the range of 15 to 70 mg/L within the Brewster Creek Fen Nature Preserve. Furthermore, both areas are periodically subjected to flood inundation from the Brewster Creek Tributary.

Both wetlands are located sufficiently far from the proposed roadway such that direct input from splash or spray will not occur. Direct operational impacts due to roadway construction will be limited to changes in river flow and water quality characteristics for the East Branch of Brewster Creek. Due to the sensitive nature of the plant species in Wetland No. 10 and its status as an Illinois Nature Preserve, an upstream stormwater detention pond discussed for Wetland No. 8 will be constructed to retain peak flows so that no increase in flood stage for given storm events will occur as a result of the proposed roadway. This detention facility will also trap pollutants, reducing any potential water quality impacts to Wetland No. 9 and the Brewster Creek Fen Nature Preserve.

It is estimated that upstream road improvements will elevate average and peak chloride levels by approximately 10 to 20% for a total concentration of 60 mg/L. This is not expected to have an impact on the plant species that exist in Wetland No. 9. Wetland No. 10 will only experience increases in chloride levels during significant flood events when Brewster Creek Tributary exceeds its banks during a spring first flush. These short term temporary inundation events are not expected to have significant impacts to vegetation in Wetland No. 10 since the duration is less than a few days and this floodwater quickly drains from the overbank areas as floodwater recedes. Groundwater seepage should quickly predominate shortly after the occurrence of flood events in the stream system. Finally, overbank flooding events that include elevated chloride levels are expected to occur in late winter and early spring prior to the end of plant dormancy. No detrimental change to hydrology or hydrological/water quality functions is anticipated.

Wetland No. 15

This 0.93 hectare (2.3 acre) is an emergent wetland located south of the existing CNIC Railroad tracks. Operational impacts to this wetland area are expected to be limited to splash and spray. New roadway surface runoff will not be discharged to this area. The roadway project is not expected to either increase or decrease the existing surface watershed draining to this area. Therefore, no detrimental change to hydrology is anticipated. Furthermore, existing wetland outlet systems will be maintained such that water surface frequency relationships are not modified.

The FQI for this site is 12.6, indicating an area of moderate natural quality. As this wetland is a depressional system with a drainage ditch, and the fact that this area contains sensitive fen vegetation, it is likely that the chloride input to the wetland will have an adverse effect to some less salt tolerant wetland vegetation. The magnitude of chloride impacts cannot be determined without additional data on background groundwater chemistry, and hydroperiod analysis. If the vegetation is significantly affected, the wetland may experience lower wildlife diversity/abundance. In combination with the plant diversity, the uniqueness/heritage function may also be decreased.

The construction of the proposed roadway will introduce roadway operational impacts to this site, as there is no existing roadway in the vicinity of the wetland. Additional hydrogeological data collected in this wetland area will aid in the determination of chloride impacts. Activity within the wetland area conducted by Midwest Groundcover will most likely cease after the roadway is in place. Other functions not associated with plant diversity will only be minimally impacted.

Wetland No. 17 - Day's Fen

This 2.0 hectare (5.1 acre) fen/seep is located north of the proposed Stearns Road. Operational impacts to this wetland will be limited to salt spray during the wintertime deicing events. This is due to the placement of Stearns Road south of the existing CNIC Railroad tracks that will block splash and potential roadway runoff. The proposed Stearns Road will be approximately 3 to 5 meters (10 to 16 feet) lower than the existing CNIC Railroad track. Existing salt deposition patterns were monitored for the winter of 1999-2000 to establish a baseline condition for Day's Fen. This information was used to assess future conditions associated with the proposed roadway. The proposed road will run parallel to the railroad tracks and be located south of the railroad tracks and south of Day's Fen. Incorporated into the design are specific features to

minimize salt spray. These included sloped shoulders, a berm with plantings on both the northern and southern sides of the roadway.

During the 1999-2000 study the predominant wind direction in the winter months was from the northeast and northwest. This result would place Day's Fen up-wind of the roadway.

Two scenarios were developed utilizing the existing deposition pattern measured during the winter of 1999-2000. (See Appendix 3 of the *CC&P/ Stearns Road Environmental Roadway Corridor Technical Memorandum*, July 31, 2000). Minimum and maximum chloride deposition was estimated assuming the wind direction placed Day's Fen up-wind and down-wind, respectively, of the proposed roadway. Features reducing the salt spray included the adjacent road berm and the railroad berm. Salt application rates were estimated at 85 kg/ lane-km (300 lb/lane mile). The minimum chloride deposition associated with the proposed roadway varied from 0.2 to 0.5 g/m^2 (0.00004 to 0.0001 lbs/ft^2) and the maximum chloride deposition was estimated at 0.6 to 2.1 g/m^2 (0.00012 to 0.0006 lbs/ft^2). This deposition is slightly higher than that associated with South Elgin Sedge Meadow as the roadway is closer to Day's Fen.

The results of the 1999-2000 monitoring effort indicate that chloride deposition is already occurring in Day's Fen as a result of quarry operations. The proposed roadway will increase existing chloride deposition by 33 to 130 kg (73 to 286 lbs) on an annual basis. Even though the aerial deposition will increase, there are other chloride sources that can be controlled and removed. The chloride deposition from dust particles from the quarry spoil pile occurs during the non-deicing months.

Vegetation of the quarry spoil pile will offset the proposed roadway contribution. If an 80 percent reduction can be achieved through stabilization of the quarry pile, then 237 kg (521 lbs) of chloride can be removed from Day's Fen. This berm stabilization would result in a net reduction in chloride loading to Day's Fen associated with aerial deposition and therefore eliminate any potential impact of the salt spray from the roadway.

Red Gate Road Corridor

No operational impacts are anticipated for Wetland Nos. 1 and 2. The operational impacts to CC&P/Stearns Road Wetland Nos. 5 and 11 through 15 are also common to Alignments A and B of the Red Gate Road Corridor.

Wetland No. 3

Alignment C will essentially divide this 0.27 hectare (0.66 acre) wetland in two pieces. Therefore, concentrations of chloride and heavy metals in the wetlands will increase. This wetland has no known outlet. There are no existing roads near this site, so roadway runoff, splash and spray will introduce pollutants to the remaining segments of wetland. Since the remaining wetlands will be impacted by operations, it is anticipated that the entire wetland will be considered impacted and mitigation will be required.

Wetland No. 4

Wetland No. 4 will receive runoff, splash and spray from the proposed roadway. Due to its proximity to Illinois Route 25, this wetland is already receiving runoff. The additional runoff into this wetland will result in minimal impact and will not affect the functional values of the wetland.

Wetland No. 5

Due to its proximity to Illinois Route 25, this wetland is already receiving road runoff. Additional runoff from the proposed new roadway will contribute to the amount of runoff, splash, and spray reaching this wetland. However, the increase will result in minimal impacts to the site. The combined effect of fill and operational impacts will result in minimal impacts to the functional values of the remaining wetland.

Wetland Nos. 6 & 7

At least 0.04 hectare (0.1 acre) of Wetland No. 6 lies within the proposed right-of-way of a four lane facility for Alignments A and B. Wetland No. 7 is located adjacent to Illinois Route 25 on the west side. The proposed alignment avoids construction impacts to Wetland No. 7. This site is currently receiving roadway runoff from Illinois Route 25, as is Wetland No. 6. Both Wetland Nos. 6 and 7 are in the Brewster Creek watershed. The widening of the existing roadway will increase the amount of pollutants into the site. However, there will only be minimal impacts to the function of these wetlands as a result of operations.

Wetland No. 8

At least 0.01 hectare (0.025 acre) of Wetland No. 8 lies within the proposed right-of-way of a four lane facility for Alignments A and B. This wetland is immediately adjacent to Illinois Route 25 on the east side, along the banks of Brewster Creek. This site currently receives direct runoff from the roadway and from adjacent residences. Due to the presence of the DeSantos' Brewster Creek INAI site, believed to abut the existing Illinois Route 25 right-of-way, all widening at this location will be to the west to avoid additional right-of-way acquisition from and impacts to this site. Roadway runoff will be captured and routed to the west side of the roadway to reduce runoff impacts to the remainder of Wetland No. 8 and to the DeSantos' Brewster Creek INAI site. This will have a somewhat positive impact, due to the removal of all roadway runoff from the site. The operation of the roadway will have minimal impacts to this wetland area.

Operational impacts to the DeSantos' Brewster Creek INAI site are discussed in Section 4.3.8.4 and 4.3.9.1. Downstream impacts as a result of the operation of the CC&P/Stearns Road corridor have been detailed for the other sensitive sites in this section under the CC&P/Stearns Road discussion and additional in Section 4.3.8.4.

C&NW/Dean Street Corridor

No operational impacts to wetlands are expected in the C&NW/Dean Street corridor.

4.3.8.3 Avoidance Alternatives

CC&P/Stearns Road Corridor

Numerous project alternatives were studied that would avoid impacts to wetlands. Alignment shifts were considered as avoidance options. Any shift to the north east of the Fox River would

bring the project in closer proximity to the South Elgin Sedge Meadow and the two existing landfills, including one Superfund site. A shift north would also fragment the Tri-County State Park and Pratt's Wayne Woods. West of the Fox River, a shift to the north would increase residential displacements of unknown quantities as the area is still being developed. This would also bring the alignment into direct contact with the McLean Boulevard [Day's] Fen. With the McLean Boulevard [Day's] Fen and the South Elgin Sedge Meadow on the north side of the railroad tracks, alignment options are restricted to the south side of the tracks.

An alignment shift further south would bring impacts closer to the Brewster Creek Fen Nature Preserve. Other limitations to alignment shifts are the large forest preserve holdings west of the Fox River.

Due to the presence of wetlands along existing roads which are part of the proposed alignment, complete avoidance of wetlands is not practical.

Red Gate Road Corridor
This corridor was analyzed for alternates which would avoid wetlands. The alignment west of the Fox River succeeds in avoiding wetlands. Alignments A and B utilize the existing Illinois Route 25 corridor for much of their length east of the Fox River. As wetlands are adjacent to both sides of Illinois Route 25, avoidance of wetlands is not possible. All widening will occur to the west in the vicinity of the DeSantos' Brewster Creek INAI site to avoid right-of-way acquisition impacts to this site. Parts of Wetland No. 8, which may extend into the DeSantos' site cannot be completely avoided due to its proximity to the existing road.

The alignment selected for alternate C in the vicinity of Wetland No. 3 minimizes wetland impacts and residential displacements. A shift of the alignment north or south to avoid Wetland No. 3 would potentially increase residential displacements by approximately four to eight residences. In addition, this shift would most likely increase the skew of the proposed intersection of Army Trail Road and Illinois Route 25, which would reduce safety at this intersection. Therefore, avoidance of wetlands is not practical.

C&NW/Dean Street Corridor
All wetlands are avoided in this corridor.

4.3.8.4 Measures to Minimize Harm

As the following discussion regarding the CC&P/Stearns Road Corridor has been extensively revised, to maintain readability bold and strikeout have not been used to call attention to the changes.

CC&P/Stearns Road Corridor
There are six (4, 13, 15, 16, 21, and 22) wetlands in the corridor with permanent losses as a result of construction activity. In addition, thirteen wetlands (Wetland Nos. 3, 8, 9, 10, 11, 15', 17, 18, 23, and 28) are in close proximity to the proposed roadway. Measures to minimize impacts have been evaluated for construction activities as well as for potential operational impacts.

Within the corridor selected, shifts in the alignment were considered to possibly reduce potential direct and indirect, construction and operational impacts to some wetlands. Minor shifts in the alignment within the corridor may benefit wetlands 3, 4, 6, 13, 15, and 17.

Modifying the alignment at the proposed intersection of Illinois Route 25, Dunham and Stearns Road could possibly increase the distance between the proposed roadway and Wetland No. 13 at the expense of increasing impacts to the riparian corridor along the East Branch of Brewster Creek.

Shifting the roadway south, west of Illinois Route 25 would increase the distance between the proposed road and Wetland Nos. 3 and 4. This would minimize potential salt splash/spray impacts to these sites. Since the DEIS was released, the alignment has been shifted south to the maximum extent possible that still allows a crossing of the Fox River to be practical. Any further southerly shift would increase impacts to wetland 28 and have an adverse impact on Brewster Creek.

West of the Fox River, an alignment shift to the south would increase the distance between the proposed roadway and Wetland No. 17 (Day's Fen) and Wetland No. 18. The limiting factor at this site is increasing the amount of right-of-way necessary to construct the roadway and impacting the existing business there. Increasing the the distance from wetland 17 will have negligible benefits to it.

The proposed Stearns Road extension calls for a four lane cross section with curb and gutter. The roadway will have a median that accommodates turn lanes at intersections. Due to the amount and proximity of intersections east of the Fox River, a wide median will be used to provide left turn lanes for safety concerns. The use of curb and gutter with the narrowest reasonable median minimizes the area converted to pavement and increases the distance between the road surface and nearby wetlands. Therefore, the cross-section proposed is the minimum required to provide a safe roadway. Projected traffic volumes for this roadway require a four-lane section. Therefore, an alternate of a narrower roadway is not deemed practical and would not satisfy the purpose and need for this corridor.

Much of the proposed roadway is at grade, which reduces the amount of fill required; however, there are locations where the proposed road surface could be as high as 4.5 meters (15 feet) above the existing ground surface in places. The use of bridges at stream crossings and enclosed drainage system limits the impacts.

During construction, erosion and sedimentation control plans developed as part of the final contract documents would be strictly enforced. The contractor would abide by the plans to avoid uncontrolled sediment from entering adjacent water bodies and streams. At minimum, erosion control measures will be detailed following the Kane County and IDOT "Special Provision for Erosion Control" and the "Special Provision for Erosion Control Plan."

Wetlands within or adjacent to the corridor which exhibit a moderate to high quality native character include: 3, 8, 9, 10, 13, 15, and 17. These include the three fens, Wetland Nos. 3, 10 and 17. Fens in general are particularly sensitive to changes in water quality. Wetland No. 3, the

South Elgin Sedge Meadow, currently contains areas that appear to be degraded due to existing backwater flooding from a culvert restriction on the North Arm of Brewster Creek as it passes under the CNIC Railroad tracks. Currently, direct roadway runoff reaches Wetland No. 3. The proposed drainage system will intercept this runoff and bypass this wetland. Wetland No. 3 will also benefit from the following protection and enhancement measures: a large parcel surrounding the South Elgin Sedge Meadow will be acquired to reduce the impact of lawn chemicals, chloride from a septic field on the parcel, and to provide an appropriate buffer around the wetland.

Stormwater runoff will be collected upstream of Wetland Nos. 8, 9, and 10 (Brewster Creek Fen Nature Preserve) and of the DeSantos' Brewster Creek Site and detained in a detention basin at Illinois Route 25 and Dunham Road. Roadway runoff would be routed to this basin allowing for control of the amount and quality of runoff from the first flush from the road surface. This basin would store the water, allowing for particulates and toxicants to settle out before being released to the watershed.

Wetland No. 17, the McLean Boulevard [Day's] Fen, will benefit from a restoration of the original drainage pattern, including removal of the spoil pile away from the site. This will return drainage to conditions prior to the disruption caused by the spoil pile and the subsequent sedimentation it has caused. Benefits will also be accrued from the purchase and protection of the fen recharge area. Additionally, the roadway will be separated from the fen by a vegetated berm.

Alternative road de-icers were considered for the sections of CC&P/Stearns Road in proximity to the three fens. Alternative de-icers include sand mixtures or calcium magnesium acetate (CMA). In the selective and experimental situations in which it has been used, CMA has often performed acceptably, although not in the same manner and not quite as effectively or consistently as salt. At concentrations likely to be generated by highway de-icing, CMA is less likely to be environmentally damaging than salt, except with regard to dissolved oxygen levels. CMA has the potential to reduce dissolved oxygen levels as it decomposes. Hence, heavy CMA treatment near small poorly-flushed or poorly-diluted ponds, streams, and wetlands could cause adverse effects to aquatic organisms (Transportation Research Board, 1991). This would be a concern for the fens and wetland areas. An alternative de-icer will not be used because the economics of its use are not practical at this time. Kane County will continue to explore alternatives to the use of sodium chloride.

Special Wetlands

These special wetlands are the Brewster Creek Fen Nature Preserve, the South Elgin Sedge Meadow Site, and the McLean Boulevard [Day's] Fen, a new holding of the Kane County Forest Preserve District. In addition to these sites, another sensitive natural area is located just outside this corridor, south on Illinois Route 25. This area is identified as the DeSantos'/Brewster Creek Site, a designated Illinois Natural Areas Inventory Site. Because of the presence of state listed endangered plant species in these sites, special care will need to be taken to avoid unnecessary impacts to these sites. Minimization of unavoidable impacts is also important. Potential minimization strategies for each area are discussed in the following sections. The South Elgin Sedge Meadow and Brewster Creek Fen are currently being managed by the Nature Conservancy Volunteer Steward Network. They currently monitor and maintain the site to reduce potential

impacts from outside activities. Management will most likely begin at the McLean Boulevard [Day's] Fen now that it has been acquired by the Kane County Forest Preserve District. There are no known management activities at the newer designated DeSantos'/Brewster Creek Site.

1. South Elgin Sedge Meadow

The South Elgin Sedge Meadow is located north of the proposed alignment and will be separated from the roadway by the CNIC Railroad track embankment. There will be no change in the existing culvert crossing utilized by the railroad over this stream unless further study by the Forest Preserve District identifies additional culvert capacity as a restoration management tool. As noted previously, Kane County, in conjunction with the Kane County Forest Preserve, is undertaking enhancement and protection of the site through the implementation of the Environmental Roadway Corridor Plan (Exhibit 4.3-5).

2. Brewster Creek Fen

The Brewster Creek Fen Nature Preserve is located south of the proposed alignment and will be separated from the roadway by the Illinois Central and Union Pacific Railroad track embankments. This area will not receive direct construction impacts. The construction of the proposed detention basin north of this site will reduce some flooding events along Brewster Creek by detention of stormwater runoff, while also providing water quality improvements by allowing sediments to drop out during detention.

3. McLean Boulevard [Day's] Fen

The McLean Boulevard [Day's] Fen is located north of the proposed alignment west of the Fox River and will be separated from the roadway by the CNIC Railroad track embankment. This area will not receive direct construction impacts and the recharge area, located mainly north and west, will be protected.

4. DeSantos'/Brewster Creek INAI site

The DeSantos'/Brewster Creek site is located south of the proposed alignment along Illinois Route 25. However, it is mentioned here due to its proximity to the Stearns Road Corridor as well as being downstream from the construction impacts of the Stearns Road extension. This area will not receive direct construction impacts. Because of the distance from the proposed roadway to this site, no additional direct operational impacts are anticipated from the Stearns Road extension. The endangered plant species within the site are believed to be located upstream from the Illinois Route 25 crossing of Brewster Creek and at some distance from the roadway and therefore would receive minimal impacts from roadway operations along both Stearns Road and Illinois Route 25. There is no active maintenance program for this site.

Red Gate Road Corridor

The three proposed alternatives in this corridor have minimized impacts to wetlands as much as possible. No wetlands west of the Fox River are impacted by any of the alternates. Alignments A and B use the existing Illinois Route 25 for much of their length. This limits impacts to wetlands which are already affected by the existing roadway and does not introduce impacts to new wetlands. It is anticipated that all wetlands within the proposed right-of-way will be impacted by construction activities. Therefore, the use of retaining walls or steeper side slopes or other such

measures will not further minimize impacts to wetlands. The collection of roadway runoff into storm sewers which will not outfall into wetlands will reduce runoff impacts to these sites.

Due to the location of Wetland No. 3 in relation to nearby homes, there are no prudent measures to minimize impacts to this site. As previously mentioned, shifting the alignment for Alternate C may jeopardize homes, therefore, this is not feasible.

Red Gate Road Alignments A and B are common to the CC&P/Stearns Road alignment proceeding north and east along Illinois Route 25 north of the IC tracks. The approach to minimization for those wetlands in common is identical. In particular, the approach to minimization for the DeSantos Brewster site and the Brewster Creek Fen are includes the detention basin at Illinois Route 25 and Dunham Road.

C&NW/Dean Street Corridor
All wetlands are avoided in this corridor.

4.3.8.5 Compensation

CC&P/Stearns Road Corridor

As wetland impacts are unavoidable, compensation of these impacts will be required. Based on the proposed project, approximately 0.93 hectare (2.3 acres) of jurisdictional area will be directly impacted by construction activities along the preferred CC&P/Stearns Road corridor. Wetlands directly impacted include Wetland Nos. 4, 13, 15, 16, 21 and 22.

Alteration or destruction of wetlands which contain a state or federally listed threatened or endangered species, wetlands which contain essential habitat for state or federally listed species, presence of an INAI site, or a wetland with an FQI of 20 or more or a mean C value of 4.0 or more will require wetland compensation of 5.5:1.

Sites within or adjacent to the CC&P/Stearns Road corridor which meet these guidelines include: Wetland No. 3 - the South Elgin Sedge Meadow INAI site, Wetland Nos. 9 and 10 - The Brewster Creek Fen Nature Preserve, 13, 15, and 17 - the McLean Boulevard [Day's] Fen. Of these wetlands, only Wetland No. 13 is expected to be directly impacted during construction and therefore compensation at a ratio of 5.5:1 is required for this wetland. The remainder of the wetlands will be compensated at a ratio of 1.5:1.

The compensation for impacts has been integrated into the Brewster Creek Greenway - Environmental Corridor plan. This plan includes wetland creation sufficient to compensate for direct wetland impacts in accordance with US Army Corps of Engineers 404 requirements and in accordance the requirements of the Illinois Department of Natural Resources (IDNR). In addition to wetland creation for direct impacts to wetlands, the plan provides for wetland creation for related impacts to riparian systems, including bank areas.

The plan includes other mitigation strategies recognized by the IDNR, including the purchase of sensitive properties, stream restoration, removal of on-stream obstructions, diversion of runoff away from sensitive facilities, and the creation of a stormwater management system designed to improve the quality of surface runoff from the roadway facility. Berming, landscaping and the removal of septic fields are also a part of the comprehensive approach to mitigation for both direct and indirect impacts. Long term management of the Corridor will be under the jurisdiction of the Kane County Forest Preserve.

Red Gate Road Corridor
As wetland impacts are unavoidable for all of the alternatives, compensation will be required, at an anticipated ratio of 1.5:1. Approximately 0.37 hectare (0.91 acre) would be impacted for either Alignments A or B and approximately 0.08 hectare (0.20 acre) for Alignment C.

As the area within the corridor is developed, with areas west of the Fox River developing currently, on-site mitigation locations may be extremely limited when construction and permitting commences. In addition, on-site mitigation for any of these alignments will create relatively small, isolated wetlands near the proposed roadways. For these reasons, mitigation banks will be considered for compensation. The nearest wetland bank is Ferson Creek (approximately 1.6 kilometers (1 mile) west of the corridor. Other banks will be considered if this bank fills before construction begins.

As these wetlands are, in general, of low quality, in-kind replacement at larger wetland banks will create similar types of wetlands of higher vegetative quality.

C&NW/Dean Street Corridor
No compensation is required as no wetlands are impacted in this corridor.

4.3.9 Biology

4.3.9.1 Vegetation and Cover Types

CC&P/Stearns Road

Construction Impacts
Even though 85 per cent of the CC&P/Stearns Road Corridor is developed or agricultural land within the 100 meter project corridor, there are high quality natural areas in close proximity to the project area. All but one of these Illinois Natural Areas is a wetland. The wetland impacts are discussed in more detail in Section 4.3.8.

The proposed alignment follows the Illinois Central Railroad tracks from Randall Road on the west to existing Stearns Road on the east. The railroad and Stearns Road have already disturbed and fragmented vegetation communities. Land west of Illinois Route 31 is being converted to new housing north of the railroad tracks. As the project west of Illinois Route 25 primarily follows the IC tracks, the remnant vegetation communities are linear edges, which will be reduced in size and converted to right-of-way. (See Exhibit 2.3-10 for cover types.)

Table 4.3-9 identifies the vegetation communities converted to road right-of-way. Impacts related to roadway construction include pavement, embankment, and clearing of vegetation.

Table 4.3-9
Cover Type Loss in CC&P/Stearns Road Corridor
(within proposed right-of-way)

Cover Type	Hectares
Upland Forest	1.1
Floodplain Forest	1.6
Shrubland	3.8
Forbland	2.4
Wetland Communities	0.66

No large upland forest areas are located within the project corridor. Edges of two upland forest (B) parcels will be taken for a total of 1.1 hectares (2.7 acres). The parcels are relatively isolated from each other and each is less than 2 hectares in size, providing minimal cover for existing wildlife.

Up to 1.6 hectares (4 acres) of floodplain forest (A) along the banks of Brewster Creek and the Fox River will be removed during right-of-way clearing. Edges of existing floodplain communities will be removed from four separate tracts of floodplain forest. These floodplain forests are considered generally of low community quality, but they do provide wildlife habitat. The floodplain forest adjacent to the South Elgin Fen, north of the CNIC tracks will not be directly impacted as the proposed alignment will be south of the CNIC Tracks.

The largely degraded shrublands along the CNIC Railroad tracks will be converted to right-of way. After these shrublands are taken, remnants of these early successional communities will remain. Their existing linear nature offers marginal habitat that will be further reduced.

Edges of three forbland areas adjacent to existing roadway will be taken with the proposed alignment. A total of 2.4 hectares (5.9 acres) will be converted to road right-of-way; however, the tracts remaining will continue to provide wildlife habitat.

Two native prairie areas are located within the study area. The first prairie is a 0.4 hectares (1 acre) tract identified as A/Site 2 and is located southeast of the junction of the CNIC Railroad and Union Pacific Railroad tracks. This area is rated as a high quality natural area. This area, which is being managed, supports a population of woolly milkweed (state endangered) and habitat for the ear-leafed foxglove (state threatened). This prairie remnant lies adjacent to Brewster Creek, south of the proposed alignment. The proposed alignment will extend through the Elmhurst Chicago Stone (a concrete pipe manufacturer) 250 meters (820 feet) north of the prairie remnant. Therefore, this site will not be directly impacted by the project and none of the area will be converted to right-of-way or pavement.

The second native prairie community is located near the McLean Boulevard [Day's] Fen, west of McLean Boulevard, north of the IC tracks. This is a lower grade community than the other prairie remnant and does not contain habitat for any threatened or endangered species. This tract will not have any land taken or converted to permanent right-of-way as it lies 14 meters (46 feet) north of the proposed right-of-way. This prairie is approximately 0.8 hectares (2 acres) in size.

The remaining tracts of vegetation located within the corridor are primarily wetland communities. The four high quality wetland areas are the Brewster Creek Fen, the South Elgin Sedge Meadow, the McLean Boulevard [Day's] Fen and the wetland adjacent to the East Branch tributary to Brewster Creek east of Dunham Road. The proposed alignment was selected to avoid direct permanent impacts to the South Elgin Sedge Meadow, Brewster Creek Fen, and McLean Boulevard [Day's] Fen. These sites contain suitable habitat and have records of occurrence for Illinois threatened and endangered species.

The southern edge of the floodplain forest wetland complex located east of Dunham Road and along the unnamed tributary to Brewster Creek will be adjacent to the proposed right-of-way, but not directly affected.

Operational Impacts

Operational impacts to the vegetation communities will be primarily increases in salt spray/splash and the periodic mowing of the unpaved portions of the right-of-way. Therefore salt splash/spray are the main direct impacts to be considered. This will be especially important in that a major portion of the proposed project will be new road on new alignment. As a result, salt splash/spray as well as other roadway pollutants will be introduced into areas not previously affected.

The potential impact to the few remnant upland forests is determined by the tolerance of the woody species and the magnitude and extent of salt spray. Upland forest communities are dominated by salt tolerant species, such as box elder, oaks, and choke cherry. Minimal amounts of damage would occur to these species. The shrublands remaining after construction may be subjected to additional salt spray, which may result in a composition change in the shrublands, favoring species which are more tolerant to salt. As these shrubland areas are very low quality, impacts are minimal to the overall community.

The remnant prairie (A/Site 2 in Hill, 1994) is located south of the proposed alignment, south of the existing Illinois Route 25/Dunham Road intersection. The centerline of Illinois Route 25 is currently 250 meters (820 feet) from the prairie. The proposed right-of-way is 225 meters (738 feet) away or approximately 25 meters (82 feet) closer.

Studies indicate damage to terrestrial vegetation is limited to areas exposed to high levels of salt splash/spray or runoff and areas containing salt sensitive plants. Vegetation can be affected by root uptake or salt spray. Salt impacts on soils are usually limited to 4.5 meters (15 feet). Salt spray, however, occurs as a function of traffic volume, salt loading, and roadway drainage features.

Vegetation in the prairie remnant near Illinois Route 25 is currently exposed to salt spray. No impacts are anticipated given the separation distance (250 meters or 820 feet), protection by the railroad embankment, predominant wind directions, and traffic volumes. The northern railroad embankment extends 0.98 meters (3 feet) in height and provides some additional blockage.

The remnant prairie located near the McLean Boulevard [Day's] Fen will be located approximately 14 meters (46 feet) from the proposed roadway. The proposed roadway is south of the CNIC Railroad and 4 meters below the top of the railroad embankment. One of the species, the downy shadbush, was identified within the prairie. This genus is generally intolerant of salt (Dirr, 1976) while this species is rated as intermediate. Its proximity to the new roadway may result in a reduction of numbers in areas closer to the roadway.

Due to the proximity of some of the vegetation communities to existing high volume roads (Illinois Route 25, Illinois Route 31, Randall Road, Stearns Road and Dunham Road and lesser roads such as McLean Boulevard and McDonald Road) in the corridor, the plant communities in the vicinity of these roads are already subject to salt splash/spray. The communities which have evolved consist generally of plants that are tolerant of salt.

The grasslands in the corridor will not be impacted by the project. Grasses have moderate to good salt tolerance (Carpenter, 1970) and maintained areas adjacent to the existing and proposed roadway, including the few residences around Stearns and Dunham Roads should not be impacted.

Red Gate Road

Construction Impacts

The Red Gate Road Corridor primarily consists of developed land, large agricultural tracts, non-native grassland areas, and small upland forests. Three alignments are proposed within the corridor: Alignment A (north); Alignment B (middle); and Alignment C (south). All three alignments proceed east from Randall Road on the Red Gate road alignment.

Alignments A and B turn northeast before Illinois Route 31. At this point the alignments do not follow existing right-of-way until they rejoin near Illinois Route 25. As a result Alignments A and B will bisect large tracts of agricultural land west of the Fox River. Alignment C follows existing right-of-way from the western limit at Randall Road to the eastern limit at Dunham Road, except the portion between Illinois Route 31 and Army Trail Road at Illinois Route 25. Since Alignment C primarily follows existing right-of-way, the remaining vegetation communities within 100 meters of the proposed roadway have been disturbed and are generally remnants of large communities previously impacted by roadways and development.

The Red Gate Road Corridor Alignments A and B join the CC&P/Stearns Road Corridor near the intersection of Illinois Route 25, Gilbert Road, and the IC Railroad tracks. As a result, some of the community types identified for the CC&P/Stearns Road Corridor will be incorporated into this corridor as well. The community types were discussed in detail in Chapter 2 and the impacts to this portion of the corridor are discussed in the CC&P/Stearns Road portion of Chapter 4.

Table 4.3-10 indicates the number of hectares in each alternative, excluding the portion common to the CC&P/Stearns Road Corridor and excluding developed and agricultural lands, that will be converted from vegetated communities to road right-of-way. The vegetation communities are depicted on Exhibit 2.3-8. Approximately 6.1 hectares (15 acres) will be converted in Alignment A, 9.3 hectares (23 acres) in Alignment B, and 2.6 hectares (6 acres) in Alignment C. Impacts related to roadway construction include conversion of land for pavement, embankments, drainage ditches and the clearing of vegetation.

Three upland forest communities occur in the corridor. Two of these forested communities are considered areas of high natural quality, upland forest D2 and D3 located in Alignment C. Upland forest community D1 is of moderate to poor quality and occurs in 23 small sites distributed throughout the corridor. These forest tracts are located along the existing right-of-way and the impacts will reduce the forested areas while maintaining the same shape and number of edges.

Table 4.3-10
Impacted Cover Type in the Red Gate Road Corridor
(within right-of-way)

Cover type	Hectares		
	North (A) Alignment	**Middle (B) Alignment**	**South (C) Alignment**
Upland Forest	0.9	0.6	1.2
Shrubland	0.1	0.1	0.1
Non-native Grassland	2.9	6.7	2.6
Wet Meadow	0.2	0.1	0.04
Pond	0.04	0.04	0.08

The upland forest community D2 is 1.3 hectares (3.2 acres) in total size. Alignment C will reduce this sugar maple/oak forest by 0.2 hectares (0.5 acres) or approximately 15 percent along the southern edge.

The upland forest community D3 consists of 1.8 hectares (4.5 acres) north of Army Trail Road and 5 hectares (12 acres) south of Army Trail Road in Alignment C. These areas will be reduced by 0.1 hectares (0.25 acres) north of Army Trail Road and by 0.1 hectares (0.25 acres) south of Army Trail Road or a total reduction of 0.2 hectares (0.5 acres) in a 6.8 hectare (17 acre) forested tract. The configuration of this segmented forest tract will remain roughly the same and edges will not be increased.

Approximately 0.1 hectares (0.25 acres) of shrubland areas will be taken in the proposed right-of-way for each alignment. These shrublands, dominated by gray dogwood and young box elder, are distributed in small segments throughout the corridor. The shrubland communities are highly degraded and provide minimal wildlife habitat. Impacts to these low quality shrublands will be minimal.

Low quality non-native grassland areas are distributed throughout the corridor in all three alignments. These grasslands, dominated by smooth brome grass, orchard grass, annual fleabane, reed canary grass, timothy and Kentucky blue grass, provide minimal wildlife habitat.

Two large fields of non-native grasslands are located in Alignments B and C. The grassland in Alignment B is located on the east shore of the Fox River and is 12 hectares (30 acres) in total size. Approximately 2.2 hectares (5.4 acres) will fall within the right-of-way. This field would be reduced along its northern edge, but would maintain the same overall shape.

The non-native grassland in Alignment C is located on both the north and south-sides of Red Gate Road just west of the Fox River. Approximately 1.2 hectares (3 acres) of the 21.7 hectares (53.5 acres) parcel will fall within the right-of-way. Alignment C will reduce the segmented non-native grassland, but will not change the shape of the parcel.

A high quality natural area, identified by the Illinois Natural Area Inventory as DeSantos'/ Brewster Creek site, is located immediately east of Illinois Route 25 along Brewster Creek. This site is identified as a seep/spring community which contains the state endangered yellow-lipped ladies' tresses orchid. This site, which is discussed in detail in Section 4.3.8, Wetlands, can be avoided by construction if improvements to existing Illinois Route 25 occur on the west side of Illinois Route 25. This site will be impacted only by Alignments A and B of the Red Gate Road Corridor. The impacts will be limited to the area within the existing Illinois Route 25 right-of-way and will avoid acquisition and impacts to the actual INAI site. No impacts will occur to this site from Alignment C.

Impacts to four separate ponds will occur in the corridor. Two ponds are located in Alignments A and B near the intersection with Illinois 25 and will be removed. The remaining two ponds are located in Alignment C just east of the Fox River will also be taken. These ponds provide habitat for wildlife; however, the natural quality rating for these four wetlands are low to medium. Impacts to wetlands are discussed in Section 4.3.8.

Operational Impacts

Operational impacts to the vegetation communities will be increased salt splash/spray and mowing of unpaved portions of the right-of-way. Collection of runoff from paved and unpaved areas minimizes any potential effects on adjacent vegetation.

Forested and shrubland communities are adjacent to existing roads in the corridor. These plant communities are currently subject to salt splash/spray. The potential operational impact is determined by the tolerance of the woody species and the magnitude and extent of salt spray.

The upland forest D2 is dominated by sugar maple, white oak, and bur oak, but other unique species occur as well. This parcel will be severely reduced in size, exposing new areas to roadway spray. Sugar maples and Norway spruce are sensitive to salt spray and may incur medium high to high damage up to 46 meters (150 feet) from pavement. The tolerant species, such as white oak, bur oak, and mock orange, would remain in this remnant.

The second high quality upland forest community D3 also contains sugar maples and white oaks. This community is adjacent to Army Trail Road in two tracts that will be reduced in size by a total of 10 per cent. Salt sensitive species in close proximity to the alignment may incur medium high to high amounts of damage.

The shrublands remaining after construction will be subjected to additional salt spray; however, the composition of these shrublands is not expected to change. Grasslands are generally salt tolerant and no salt impacts are anticipated.

C&NW/Dean Street

Construction Impacts

Biological impacts associated with the bridge crossing construction and operation are loss, degradation, or modification of terrestrial habitat. Direct impacts include bridge construction areas and construction impacts from conversion of land for pavement, embankments, drainage ditches and the clearing of vegetation during construction and maintenance of the Dean Street extension.

The alignment follows existing roadway or railroad right-of-way from the western limit near Randall Road to the eastern limit where the alignment joins Illinois Route 64. As a result, vegetation within proposed roadway is limited to degraded forbland and shrubland. Table 4.3-11 indicates that only 4.8 hectares of vegetation communities will be converted to road right-of-way. This vegetation community is depicted on Exhibit 2.3-12.

Table 4.3-11
Cover Type Loss
(C&NW/Dean Street Corridor)
(within proposed right-of-way)

Cover Type	Hectares
Shrubland/forbland	4.8

Impacts to shrubland/forbland vegetation within Pottawatomie Park will be confined to areas adjacent to the land maintained for active recreation and picnicking. Approximately 1 hectare (2.5 acres) of shrubland/forbland within the park will be impacted.

The southern portion (0.5 hectares or 1.2 acres) of the 21 hectares (52 acres) shrubland/ forbland, located at the northwest corner of the crossing of the Union Pacific Railroad and Illinois Route 25, is located within 100 meters of the proposed roadway. This area is also identified as low quality shrubland/forbland. As the proposed project will only remove the southern edge of this tract, no additional vegetation edges will be created.

Approximately 3.3 hectares (8.1 acres) of shrubland/forbland along Dean Street and the Union Pacific (formerly the C&NW) railroad will be converted to roadway right-of-way. This community extends from DeBruyne Street west of the Fox River to 5th Avenue east of the river. The proposed project will require the removal of all the shrubland/forbland identified north of the railroad tracks.

Operational Impacts

The cover types are limited to shrubland/forbland in the C&NW/Dean Street. Since runoff will be collected throughout the paved and unpaved areas, salt splash and salt spray are the only direct effects to be considered.

The dominant trees and shrubs, box elder and Siberian elm, found within the corridor are moderately tolerant to tolerant of roadway salt (Sucoff, 1975). Therefore, no impacts related to salt are anticipated to these shrubland communities. Grasses have moderate to good salt tolerance (Carpenter, 1970) and maintained areas within Pottawatomie Park, adjacent to the proposed roadway, will not be impacted. Grasses in this area that are less tolerant to salt will eventually be replaced by more tolerant species.

Continued maintenance of the right-of-way during operation will prevent new growth of shrubs, thereby permanently converting some shrublands to grasses and forbs. If grasses are planted, they will be periodically mowed.

4.3.9.2 Wildlife

CC&P/Stearns Road

The presence of numerous large forested and open tracts of land outside the corridor in the surrounding forest preserve, parks and state parks provides a majority of the wildlife habitat in the area. The presence and alignment of streams and wetland complexes throughout the CC&P/Stearns Road Corridor serve as potential corridors of movement for wildlife in the area between these large natural areas. These wildlife corridors already are cut by existing roads and railroads. The species normally present in this type of setting are edge adapted species and those adapted to close proximity to human activity. Therefore this roadway will not increase impacts to these types of species.

The roadway will be adjacent to existing railroad right-of-way for much of its length and therefore the existing habitat edges will be the areas receiving the most impact. Improvements to the Stearns Road/Dunham Road/Illinois Route 25 intersection may actually reduce fragmentation caused by the current intersection alignment. Combining the two separate intersections into one larger one will bring the roads together at one spot, causing some re-alignment of existing roads. Old alignments will be vacated which reduces the amount of pavement approaching the intersection.

Movement of wildlife may be disrupted in the nursery and farm fields west of the Fox River. While these fields provide minimal habitat for wildlife, they do not hinder movement. The addition of the new roadway increases the chances for collisions with vehicles. The existing railroad embankment and cut area (steep in most places) will hinder movement of wildlife through the area more than the proposed road. The presence of the road immediately adjacent to the IC Tracks, along with the slopes graded for motorist safety may actually assist in the movement of wildlife across the railroad tracks.

Birds

Habitat within the corridor are small tracts of shrub and forb vegetation and upland forest. Trees appear in small tracts and within residential lots, so existing habitat is limited for birds dependent upon trees and forests. The brown creeper, which has been known to forage in the area, will have alternative available foraging areas and will not be impacted by the project. The bridge will not inhibit the movement of most birds flying up and down the river including the sharp-shinned hawk, which was observed as a fly-by.

The construction of the bridge may provide additional nesting sites for certain varieties of birds, increasing potential habitat. In general, the species which nest on bridges are more urban adapted species, such as the rock dove. These birds, which were not recorded in the corridor could be attracted to it by the structure and the suburban surroundings. This could increase competition among existing birds present for food and nesting sites. However, the presence of the existing railroad bridge adjacent to the proposed structure will reduce the impact to the area as this type of habitat is already in place.

The proposed right-of-way will not require land from the three large fen complexes that provide habitat for state listed species of birds. No impacts to the habitat or the potential presence of these species will occur as a result of the project.

Mammals

Several types of communities within the corridor, including agricultural land, provide suitable habitat for a variety of mammals. The species of mammals observed or believed to be within the corridor will not be impacted by the extension of Stearns Road. The species present are adapted to the existing suburban condition which will not change as a result of the roadway. Many habitat generalists use a variety of habitat types and occur in disturbed areas and close to humans.

Impacts would most likely occur during the post construction operational phase and would be more in the form of collisions with vehicles.

The addition of a new road on new alignment can increase the frequency of wildlife/vehicle collisions. The new roadway will only minimally disrupt wildlife corridors as the adjacent steep slopes of the railroad embankment and cuts already provide some barriers to wildlife movement.

Overall, the loss of permanent wildlife habitat will not impede wildlife movement and available habitat remains in the general area.

Reptiles and Amphibians

As with mammals and birds, movement of reptiles and amphibians can be disrupted within the large wetland tracts throughout the corridor. The natural vegetation is highly fragmented and provides limited habitat for these species. Therefore impacts from the addition of a new roadway will be limited to a reduction of natural habitat, increasing competition for food and cover. The amphibians identified within the corridor inhabit the wetland areas. Although some wetlands will be impacted, large areas of wetlands will be avoided, thereby leaving large areas of habitat available to these species. No reptile or amphibian species of concern are located within the corridor.

Red Gate Road Corridor

The wildlife species currently existing within the corridor are adapted to habitat edges and close proximity to humans. The existing fragmented habitat is marginal for wildlife; however, the remaining portions of communities are expected to continue to support the wildlife present and to provide corridors for wildlife movement.

Birds

Birds within the corridor move within the existing fragments of upland forests. Two birds of special concern, the savannah sparrow and eastern meadowlark, were observed in forest preserve areas and are not affected by the three alternate alignments.

The forest tracts provide forage area for the brown creeper (state threatened) and other common bird species. Forage habitat will be available in the remaining forest tracts, and there are no anticipated impacts to birds.

Mammals

Corridors for small mammals are maintained along the Brewster Creek corridor and in the large areas of open space, such as the wetlands, grasslands, and forest preserve sites in Alignments A and B. The mammals in the area are expected to continue to move within these corridors. Small mammals may be inhibited from crossing pavement bisecting grassland areas near the Fox River. Alternative routes can be utilized along the Fox River. Also, existing routes, such as Red Gate Road, may already impede small mammal movements in this area.

Reptiles and Amphibians
The passageways for amphibians and reptiles are primarily associated with Alignments A and B. The Fox River, Brewster Creek, and the wetlands of the CC&P/Stearns Road Corridor provide for movement of these species as well as habitat. Streams and drainage channels will be bridged or culverted, maintaining these existing corridors.

C&NW/Dean Street
The species of wildlife currently existing within the corridor are adapted to habitat edges and close proximity to humans. Therefore, this project will have minimal impact on the species of wildlife present. The existing habitat within the corridor is marginal for wildlife. Much of the habitat present receives constant or periodic maintenance which further reduces the habitat potential. Additional maintenance for the new roadway during operation will have minimal effect on wildlife. The additional roadway miles created may slightly increase the potential for wildlife/vehicle collisions.

Birds
As no bird species of special concern utilize the corridor area for foraging or breeding, no impacts to these species will occur. The species of birds present within the corridor are adapted to an urban setting and therefore will not be significantly impacted by the project. In some cases, bridge structures provide additional breeding sites for urban species of birds. An increase in this type of habitat is expected to occur with this project.

Mammals
The limited wildlife habitat supports species adapted to proximity to humans. No species of special concern are located within the corridor. Therefore impacts to mammals will be minimal. Impacts would most likely occur during the post construction operational phase and would be more in the form of collisions with vehicles rather than habitat destruction.

Reptiles and Amphibians
The only area of potential habitat for amphibians or reptiles was the open water pond/wetland area located east of Randall Road and areas adjacent to the Fox River. No impacts to this pond will occur, therefore, no impacts to amphibians and reptiles will occur. The project will increase the amount of roadway associated pollutants entering into this pond. However, this would be limited to splash or spray, as roadway runoff will be collected in curb and gutters into an enclosed storm sewer system.

4.3.9.3 Threatened and Endangered Species

CC&P/Stearns Road
Federal Listed Species
There are no federally listed species observed within the CC&P/Stearns Road corridor. Therefore, there will be no impacts to federal threatened and endangered species within the CC&P/Stearns corridor.

State Listed Species
Three state listed bird species (brown creeper, pied-billed grebe, and northern harrier) were observed as migrants in the CC&P/Stearns Road corridor however, there is no suitable breeding habitat within the corridor. Therefore, no impacts will occur to these species of birds.

Four plant species (spotted coral root orchid, false asphodel, bog bedstraw and slender bog arrow grass) are located adjacent to the CC&P/Stearns Road corridor. These plants will not be directly impacted by the proposed project. These plants will be indirectly impacted by the proposed project. These indirect impacts are attributed to salt spray from de-icing salts.

To minimize impacts to the state listed species as well as to the high quality natural areas (which includes the Brewster Creek Fen Nature Preserve, South Elgin Sedge Meadow INAI site and McLean Boulevard (Day's Fen)) the Brewster Creek Greenway Corridor plans were developed. Federal & State natural resource agencies have been involved in the plan development. The IDNR has closed the endangered species consultation (letter dated February 6, 2001). This closure is based on the implementation of the Brewster Creek Greenway Corridor Plan.

Red Gate Road

Federal Listed Species
No federal threatened and endangered species have been observed in the corridor. There will be no impacts as a result of the proposed project.

State Listed Species
No state listed threatened and endangered species have been observed in the corridor. There will be no impacts as a result of the proposed project. The yellow-lipped ladies tresses orchid located in DeSantos Brewster Creek INAI will not be impacted.

C&NW/Dean Street Corridor

Federal Listed Species
The federal listed bald eagle was observed as a migrant within the corridor. There is no suitable breeding habitat within the corridor. Therefore there will be no impacts to federal listed species as a result of this proposed project.

State Listed Species
No state-listed species were observed within the corridor. Therefore there will be no impacts to state listed species resulting from this proposed project.

4.3.9.4 Mitigation Measures
All land areas disturbed by construction will be restored to turf cover in accordance with

"Guidelines for Use of Landscape Items" where appropriate. All trees and shrubs removed for construction will be replaced on a minimum 1:1 nursery stock basis in urban/suburban areas wherever feasible and appropriate under IDOT guidelines. Replacement of dense stands of trees and shrubs will occur at a seedling stock basis of 3:1 wherever prudent and practical.

In addition, control of erosion and sedimentation over the remainder of the project will be implemented. Final contract plans will include the IDOT "Special Provision for Erosion Control" and "Special Provision for Erosion Control Plan" and conform to the Kane County Stormwater Management requirements. Only the area needed for construction should be cleared and native cover maintained, wherever possible. Prompt restoration of vegetative cover to disturbed areas and plantings of native grasses and trees along the roadway will help minimize impacts.

Special care will be taken during the construction of bridge piers in the Fox River. Measures to reduce the amount of sediment stirred up during construction will be implemented to avoid temporarily increasing sediment loads.

Where proposed roads will be on new alignment, mature trees will need to be removed. Larger specimens of higher quality trees that can be avoided will be delineated on the plans and areas inside the drip zone noted to be avoided by construction equipment, as possible.

The INAI site identified as DeSantos'/Brewster Creek site lies adjacent to Illinois Route 25, within Alignments A and B of the Red Gate Road Corridor. According to the Illinois Department of Natural Resources, the boundary of this natural area approaches Illinois Route 25. The endangered plant species that inhabits the site is presumed to be located further east, away from the proposed roadway. The exact location of the endangered plant and its proximity to the proposed right-of-way is still under review. If necessary pending this determination, this Natural Area will be avoided by shifting the alignment to the west, away from the site, and acquiring all necessary right-of-way west of the existing Illinois Route 25. Shifting the alignment to the west will increase right-of-way impacts to Midwest Groundcovers located along the west side of Illinois Route 25 at Brewster Creek. The nursery is currently using this land for planting beds and greenhouses, leaving little natural vegetation along the creek. By shifting the alignment to the west, all construction impacts on the east side will be confined to the existing right-of-way, thereby avoiding impacts to and right-of-way acquisition from the INAI site.

Because the INAI site lies upstream of Illinois Route 25, any construction-related sediment which enters the creek will be carried west, away form the INAI site by the flow of Brewster Creek. As is typical of the entire project, the use of a perimeter erosion barrier will reduce the amount of sediment entering the stream at this location.

Prior to construction, the live mussel population within the corridor will be surveyed, and, in consultation with the IDNR, the mussels requiring relocation within the construction area will be identified.

4.3.10 Air Quality

There will be no adverse impact to air quality as a result of the Build Alternative. Please see section 4.1.10 for a more complete discussion of Air Quality impacts.

4.3.11 Noise

CC&P/Stearns Road Corridor

Six sites were selected as receptors for analysis along the preferred CC&P/Stearns Road alignment. They were selected on the basis of proximity to traffic and traffic volumes. The sites were also selected as a representative of the noise impacts to a Noise Sensitive Area (NSA) (see Exhibit 3.3-1 for the locations and Table 4.3-12). The NSAs selected fall under Activity Category B of the FHWA Noise Abatement Criteria (NAC) (see Section 4.1.11)

Future traffic noise levels were estimated for the design year of 2020 for both the Build Alternative and No-Build Alternative (for an explanation of noise levels and the analysis, see Section 4.1.11). For the No-Build Alternative, noise levels increased between 2 and 6 dBA. With the Build Alternative, noise levels increased between 4 and 7 dBA.

Table 4.3-12
CC&P/Stearns Road
Noise Sensitive Area (NSA) Impact Summary

NSA#	*Receptor Description*	*No. of Units per Receptor*	*Existing dBA level*	*dBA level 2020 No-Build*	*dBA level 2020 Build Alignment*	*Build-Net Increase over Existing (dBA)*	*Impact? Yes or No*
1	*Farmhouses @ McDonald & Randall Road*	*2*	*63*	*68*	*70*	*7*	*Yes*
2	*Residences McLean Blvd*	*19*	*61*	*67*	*68*	*7*	*Yes*
3	*Residences, IL Rte 31*	*2*	*68*	*71*	*74*	*6*	*Yes*
4	*Residences, IL Rte 25*	*2*	*68*	*70*	*72*	*4*	*Yes*
5	*Residences, Dunham Road*	*1*	*65*	*67*	*70*	*5*	*Yes*
6	*Residences, Stearns Road*	*6*	*68*	*72*	*61*	*-*	*No*

Using the definition of a noise impact described in Section 4.1.1, five of the six receptor locations (NSAs #1, 2, 3 & 4, & 5) have an impact.

Noise abatement measures were evaluated for the noise-impacted areas considering both the achievable noise reduction and economic reasonableness. Because both NSA #3 and 4 are located

on major side roads (Illinois Routes 31 and 25, respectively) which contribute to the noise experienced, a noise barrier on the proposed alignment would not be able to achieve a substantial noise reduction and is therefore not likely to be incorporated into the project.

For NSA #1 the effectiveness of a noise barrier would be compromised by the driveways along McDonald Road. For NSA #2 67 dBA is associated with the existing roadway (McLean Blvd) and its configuration. Therefore, a noise barrier on the proposed alignment would not be able to achieve a substantial noise reduction.

To shield NSA #5requires noise barriers along two sides of what will be a corner lot at a minimum length of 170 meters (560') to be effective at a cost in excess of $100,000. This is not cost effective.

Red Gate Road Corridor

Eight sites were selected as receptors for analysis along the proposed Red Gate Road alignments. They were selected on the basis of proximity to traffic and traffic volumes. The sites were also selected as a representative of the noise impacts to a Noise Sensitive Area (NSA) (see Exhibit 3.3-2 for the locations and Table 4.3-13). The NSAs selected fall under Category B of the FHWA Noise Abatement Criteria (NAC) (see Section 4.1.11)

Traffic noise levels were predicted for the design year of 2020 for the No-Build and the three Build Alternative alignments. For the No-Build Alternative, noise levels increased by between 2 and 6 dBA with the higher increase projected to occur on Army Trail Road.

Noise levels under the Build Alternative ranged from a low of 58 dBA to a high of 69 dBA. The noise level increases over existing levels ranged from a low of 3 dBA to a high of 23 dBA.

Table 4.3-13
Red Gate Road Corridor
Noise Sensitive Area (NSA) Impact Summary

NSA #	Receptor Description	No. of Units per Receptor	Existing dBA Level	dBA Level with No-Build	dBA Level 2020 Build Alignment (Increase Above Existing)			Impact? Yes or No (ALT.)
					ALT. A	ALT. B	ALT. C	
1	Red Gate Ridge Subdivision	3	62	64	67 (5)	68 (6)	65 (3)	YES (A&B)
2	Long View Estates Subdivision	11	56	59	67 (11)	67 (11)	64 (8)	YES (A&B)
3	Fox River Estates (Alt. A)	7	45	48	60 (15)	(†)	(‡)	YES (A)
4	Fox River Estates (Alt. B)	10	45	49	(*)	68 (23)	(‡)	YES (B)
5	Pearson Lane (Alt. C)	9	48	52	(*)	(†)	60 (12)	NO
6	Army Trail Road	26	53	59	58 (5)	58 (5)	60 (7)	NO
7	Skyline Dr. (a.k.a. Valley View)	11	65	68	69 (4)	69 (4)	68 (3)	YES (A,B& C)
8	Wredling School	1	51	54	(*)	(†)	56 (5)	NO

(*) Receptors 4, 5, & 8 are not associated with Alignment A.
(†) Receptors 3, 5, & 8 are not associated with Alignment B.
(‡) Receptors 3 & 4 are not associated with Alignment C.

Using the definition of a noise impact described in Section 4.1.11, five of the seven receptor locations have a noise impact.

Noise abatement measures were evaluated for the noise-impacted areas considering both the achievable noise reduction and economic reasonableness. OPTIMA, the abatement module of STAMINA, was used to determine potential noise reductions for various noise wall configurations.

NSA #2 was not considered for noise barrier since there are various subdivisions and single family residences that have direct access off Red Gate Road. A noise barrier would not be effective since there would be several "breaks" or openings in the barrier for access. A summary of the findings for

the other impacted receptors follows:

Table 4.3-14
Red Gate Road Corridor
Results of Noise Abatement Analysis

NSA# (Alignment Option)	No. of Units per Receptor	Barrier Height In Meters (Feet)	Barrier Length In Meters (Feet)	Cost* ($270/Sq M)	Reduction Potential dB(A)	Likely To Be Implemented	If No Reasons Why
1 (A & B)	3	5.5 (18)	235 (770)	$349,000	7	No	1
3 (A)	7	5.5 (18)	344 (1,130)	$511,000	7	No	1,2
4 (B)	10	4.9 (16)	314 (1,030)	$415,000	10	Yes	--
7 (A,B & C)	11	4.3 (14)	372 (1,220)	$432,000	10	Yes	--

Notes:
* The cost includes preliminary analysis/design, final design and related construction costs.
1 - Not economically reasonable or feasible based on cost compared to benefit.
2 - Does not provide substantial noise abatement.

C&NW/Dean Street Corridor

Seven sites were selected as receptors for analysis along the proposed C&NW/Dean Street alignment. They were selected on the basis of proximity to traffic and traffic volumes. The sites were also selected as a representative of the noise impacts to a Noise Sensitive Area (NSA) (see Exhibit 3.3-3 for the locations and Table 4.3-15).

Future traffic noise levels were estimated for the design year of 2020 for both the Build Alternative and No-Build Alternative. For the No-Build Alternative, noise level increases for those receptors ranged from 0 to 4 dBA within the project corridor. Predicted noise levels under the Build Alternative ranged from a low of 51 dBA at the Pottawatomie Park amphitheater (NSA #5) to a high of 71 dBA at the intersection of the proposed alignment and Illinois Route 64 (NSA #7).

Table 4.3-15
C&NW/Dean Street Corridor
Noise Sensitive Area (NSA) Impact Summary

NSA#	Receptor Description	Number of Units per Receptor	Existing dBA level	dBA level with 2020 No-Build	dBA level with 2020 Proposed Alignment	Build Net Increase over Existing (dBA)	Impact? Yes or No
1	Residences Dean Street /17 Street	21	59	63	64	5	No
2	Residences Debruyne St/ Fox Meadows Court	8	48	52	60	12	No
3	Timber Trails (Millington Way)	12	45*	45	65	20	Yes
4	Timber Trails (Sedgewick Circle)	14	43*	43	65	22	Yes
5	Pottawatomie Park	amphitheater	43*	43	51	8	No
6	Residences - Park Avenue	17	51	54	59	8	No
7	Residences - IL Rte. 64	5	69	71	71	2	Yes

* The existing ambient noise levels at these locations were measured rather than modeled because they are not immediately adjacent to roadways.

Using the definition of a noise impact described in Section 4.1.11, three of the seven receptor locations have a noise impact

Noise abatement measures were evaluated for the noise-impacted areas considering both the achievable noise reduction and economic reasonableness. NSA #7 is located on the east side of Twelfth Street, north of Illinois Route 64. This noise level represents two single family homes on the north side of Illinois Route 64 and three on the south side of Illinois Route 64. This is not a likely location for noise mitigation because the sidewalks and driveways in this area would make a wall ineffective. OPTIMA, the abatement module of STAMINA, was used to determine potential noise reductions for various noise wall configurations for the remaining impacted sites. A summary of the findings for the impacted receptors follows.

Table 4.3-16 *C&NW/Dean Street Corridor* *Results of Noise Abatement Analysis*							
NSA#	*No. of Units per Receptor*	*Barrier Height In Meters (Feet)*	*Barrier Length In Meters (Feet)*	*Cost* ($270/Sq M)*	*Reduction Potential dB(A)*	*Likely To Be Implemented*	*If No Reasons Why*
*3 & 4***	*26*	*4 (13)*	*570 (1,870)*	*$616,000*	*12*	*Yes*	--

Notes:
* The cost includes preliminary analysis/design, final design and related construction costs.
**NSA 3 and 4 are treated here as continuations of each other since they are adjoining parts of the same Timber Trails subdivision

4.3.12 Special Wastes

CC&P/Stearns Road Corridor

Hazardous Wastes

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS] list) has been reviewed to ascertain whether the proposed project will involve any listed site(s). As a result of this review, it has been determined that the proposed undertaking will not require right-of-way from a site included in the CERCLIS listing as of July, 2001.

Undetermined Waste Status

This assessment concludes that the project is at moderate to high risk because the right-of-way acquisition includes a parcel known to be the former Daily LeRoy Landfill with reported violations for accepting household waste and other non-clean fill along with demolition debris. As a result, a Preliminary Site Investigation (PSI) for this area is recommended to determine the nature of the waste material, and to identify any areas of impacts prior to acquisition of property. Groundwater analysis and monitoring may be included in the PSI. Any contaminated soils removed during construction will need to be waste characterized and permitted for disposal in a landfill.

Since there is one build alternative for this corridor, specific characterization of the adjacent landfill areas (Woodland, Elgin and Tri-County) was not conducted. Soil disrupted during construction in the vicinity of the landfills that exhibit evidence of impairment should be stockpiled and sampled for waste characterization. As in all of the corridors, construction personnel working in an area exhibiting contamination will need to be certified in OSHA 40 Hour Health and Safety Training.

Non-Hazardous Wastes

In addition to confirming that the project will not involve any CERCLIS sites, the environmental site assessment noted one non-hazardous waste site located in the project area. The involvement of the Tecza Nursery ASTs within the right-of-way are considered an acceptable risk since they consist of small quantities and no spills were noted.

Red Gate Road Corridor

Hazardous Wastes

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS] list) has been reviewed to ascertain whether the proposed project will involve any listed site(s). No CERCLIS sites were found within 1.6 kilometers (one-mile) of the proposed roadway. As a result of this review, it has been determined that the proposed undertaking will not require any right-of way or any easement from any site included in the July 2001 CERCLIS listing.

Non-Hazardous Wastes

An Environmental Site Assessment for special waste sites was conducted. In addition to confirming that the project will not involve any CERCLIS site, the assessment concluded that the project will not involve other special waste sites or that the involvement will be at an acceptable risk level. The impacts to and from special waste for this corridor is anticipated to be low.

C&NW/Dean Street Corridor

Hazardous Wastes

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS] list) has been reviewed to ascertain whether the proposed project will involve any listed site(s). As a result of this review, it has been determined that the proposed undertaking will require right-of-way from the Moline Foundry site included in the CERCLIS listing as of July 2001. In addition to the potential hazardous wastes, petroleum contamination is also of concern at this site.

If the Moline Foundry site is without a No Further Remediation letter (NFR) from the IEPA prior to the preparation of the final EIS, a Preliminary Site Investigation (PSI) will be performed to determine the costs to remediate the site for roadway development.

Non-Hazardous Wastes

The USTs within the proposed right-of-way at the G. Porter Company are a potential source of environmental impairment. Sampling and analysis of the soils adjacent to the USTs will be required to estimate the cost of development. Removal/closure of the tanks may be required. If the roadway right-of-way utilizes G. Porter Company property, the acquisition in this area should be by dedication to avoid ownership of a UST site. No other alignments are under consideration at this time.

This Environmental Site Assessment for special waste sites concluded that the build alternative is at a moderate to high risk due to the UST site at G. Porter Company within the proposed right-of-way and unresolved status of the Moline Foundry site.

4.3.13 Visual Resources

CC&P/Stearns Road Corridor

The proposed bridge over the Fox River does represent a visual intrusion, but depending upon the approach direction, the new bridge will appear immediately in front of the existing utilitarian railroad bridge and electrical transmission lines or it will be immediately behind them. The bridge location was sited with the intent of providing sufficient offset between it and the existing bridge (75 meters to the centerline) so a view of the existing bridge could be maintained uninterrupted for those who view it as part of the Trolley tour. Also, during the design phase the bridge will be designed to blend with the existing bridge by maintaining approximately the same lines horizontally and vertically.

Away from the bridge most of the existing immediate land use is commercial/industrial, including a quarry. The visual impacts on those activities from a road will be negligible. The roadway will travel by park/forest preserve areas. By the Blackhawk Forest Preserve just west of the River the view is currently interrupted by the Illinois Central (formerly the CC&P) railroad and the electric transmission lines. The road would extend these interruptions south. At the east end of the corridor the Tri-County State Park and Pratt's Wayne Woods have mixed passive and active areas. Visually the road will not represent a major new intrusion.

Red Gate Road Corridor

A new bridge across the Fox River for any of the proposed alignments represents a new visual intrusion into an area without any intrusions along the River and with undisturbed river banks due to the forest preserves. The design will attempt to minimize these disturbances by providing the lowest bridge that satisfies needed clearances and minimizing the disturbed areas along the banks. The bridges will also be designed with lines that attempt to blend into the surrounding area.

Once the roadway clears the river and immediate banks, it will be in general conformance to the surrounding residential land use. The exception to this is for the four lane options (Alignments A and B) along Army Trail Road and Illinois Route 25. The roadway presence will be increased beyond existing and will adversely impact some of the rural flavor of the area. C&NW/Dean Street.

The proposed bridge is in a developed area that includes Pottawatomie Park, a river walk, a railroad bridge and nearby commercial development. The bridge represents no new intrusion into the area, though it reduces the area within the park. The visual intrusion will be minimized by designing the bridge to conform to the style backdropped by the commercial activities along Main Street in St. Charles and of the existing Main Street bridge. The existing railroad bridge that will visually frame the new bridge is strictly of utilitarian design. Therefore, a new bridge may increase the visual flavor of the area. To minimize area and visual impacts, the roadway will use a stepped retaining wall design that lends itself to landscaping. This would represent an improvement upon the existing

railroad embankment. A review of *CIRCLIS* for July, 2001 did not indicte any addtional *CIRCLIS* listings for this corridor.

Away from the river the roadway will be hidden along the railroad or in primarily industrial areas. The visual impacts will be minimal.

4.3.14 Utilities

CC&P/Stearns Road Corridor
This corridor was located to avoid involvement with the Commonwealth Edison transmission line paralleling the IC tracks. Construction of the new road within this corridor will still require the relocation of a Commonwealth Edison transmission tower located near Stearns Road and west of Dunham Road. Aside from the cost, this relocation will not represent a major impact. No other utility conflicts or impacts are expected.

Red Gate Road Corridor
All the alignment options involve construction above the Williams Oil Pipeline where they are on Red Gate Road. For Alignment C this area extends under Red Gate Road to Illinois Route 25. A new road above the pipeline would adversely affect maintenance and repair operations; design protection or relocation could alleviate these problems. The solution will be developed in the Phase I design study. No other major utility conflicts or impacts are expected.

C&NW/Dean Street Corridor
The C&NW/Dean Street alignment will avoid impacts to the existing City of St. Charles electric utility. It will require the relocation of the Commonwealth Edison 34kV lines to the edge of the proposed right-of-way. The road will cross a number of municipal utilities, such as water and sewer. These lines will be protected and service maintained. There will be no major impacts on known utilities.

4.4 South Region

4.4.1 Socioeconomics

4.4.1.1 Land Use

The existing land use pattern and development trends for the Illinois Route 56/Oak Street Corridor are described in Section 2.4.1 (see Exhibits 2.4-1 and 2.4-2). The Village of North Aurora has identified areas near the western boundary of its planning jurisdiction and south of Illinois Route 56 (Butterfield Road) as their primary growth areas. Aurora has also identified an area for future growth east of the Fox River, between Illinois Route 56 and Interstate 88. Even without transportation improvements, development in these areas is forecast and planned to continue because of the availability of large tracts of land, proximity to municipal services and utilities, and market demand.

The Build Alternative would be constructed primarily within existing right-of-way for Illinois Route 56 (east of the Fox River) and Oak Street (west of the Fox River). This alternative would serve the existing and planned residential and non-residential land uses in proximity to the bridge and roadway improvements. These improvements would provide a major transportation link to employment, shopping, educational and recreational opportunities and make it possible to provide a variety of government services in a more cost effective and efficient manner.

Transportation improvements typically stimulate development on undeveloped property, due to improved accessibility and/or visibility (increased traffic). This stimulus is most strongly felt within one-quarter mile of the transportation improvements. Market pressures for development are already evident as indicated by current and planned construction activities within the Illinois Route 56/Oak Street Corridor. The improved access associated with the Build Alternative will enhance the market potential of these areas.

Between Hart Road and Wagner Road, traffic on Illinois Route 56 is projected to be higher with the Build Alternative than the No-Build Alternative. Cross roads south of Illinois Route 56/Oak Street are also projected to have higher traffic volumes with the Build Alternative. These cross streets serve large undeveloped parcels that are planned for commercial, office and industrial development by both Aurora and North Aurora.

Consistency with Plans

Aurora officials have indicated that the community supports the Illinois Route 56/Oak Street bridge and roadway improvements. One benefit they have identified is enhanced development potential for properties between Interstate 88 and Illinois Route 56. They consider this alignment a logical connection between the east and west sides of the Fox River because it follows an existing roadway, therefore requiring less property acquisition. Although City officials believe the roadway will reduce traffic volumes on existing bridges in Aurora, they are proposing another new crossing as a local improvement, the Sullivan Road Bridge. They are more concerned with congestion relief on a local scale than the regional potential of the Illinois Route 56/Oak Street

project.

The improved accessibility across the Fox River, coupled with projected traffic increases, enhances the future development potential of the undeveloped parcels within the Illinois Route 56/Oak Street Corridor. Growth in these areas is consistent with the policies of local governmental units as reflected in their Comprehensive Plans and Zoning Ordinances.

The Village of North Aurora's Comprehensive Plan identifies the lack of alternative crossings and the configuration of the State Street bridge and approach roadways as contributing to inefficient travel patterns and congestion in the center of the community. The Plan encourages the construction of an additional bridge across the Fox River, but does not identify a specific location. The Plan also encourages the reconstruction or rehabilitation of the existing State Street bridge to improve its ability to serve future traffic demand. Because of negative impacts to the Oak Street neighborhood, the Village of North Aurora passed a motion stating that the proposed Oak Street/Route 56 alignment is inconsistent with the Village's comprehensive plan (see Appendix A -- Coordination Documentation).

The proposed road provides another route for projected traffic and lessens the rate of increase in congestion on existing crossings in Batavia. Traffic on cross streets south of the corridor (toward Aurora) would be higher with the Build Alternative than with the No-Build. This reflects the land use plans of the local communities, which project growth between the Illinois Route 56/Oak Street Corridor and Interstate 88.

4.4.1.2 Displacement

For a discussion of displacement mitigation, please see Section 4.1.1.2.

Residential
The No-Build Alternative does not displace any residential or non-residential structures. The Build Alternative displaces five single-family residential structures to accommodate the proposed bridge and roadway improvements. No non-residential structures will be displaced as a result of implementing the proposed transportation improvements.

All five displaced residences are located near the west bank of the Fox River, on or near Oak Street. This area is within the incorporated boundary of North Aurora.

The Illinois Route 56/Oak Street Corridor is located predominantly within Aurora Township. A small portion at the eastern end of the corridor lies within Batavia Township. The Multiple Listing Service of Northern Illinois, Inc. reported that within the past year, an average of 85 single-family homes were listed for sale during each month in Aurora Township (Source: Multiple Listing Service of Northern Illinois for a period of November 1995 to October 1996- additional homes were probably available but not on the listing). Of this number, an average of 39 homes

were priced less than $100,000; 41 homes were priced between $100,000 and $199,999; and four homes were priced greater than $199,999. New growth occurring near Illinois Route 56, east of the Fox River, Oak Street, and surrounding communities in proximity to the corridor provide other nearby sources of available relocation housing.

Based on property tax records, it is estimated that a majority of the five homes that would be displaced are renter occupied. Within the municipal limits of Aurora and North Aurora, there were a minimum of 983 housing units for rent in 1990. Rental relocation housing is also available in the surrounding communities in Aurora and Batavia Townships and unincorporated portions of Kane County.

Non-Residential

Right-of-way acquisition to accommodate the proposed bridge and roadway improvements would displace commercial and other non-residential parking spaces and business signs. Most of these uses have frontage along Oak Street, west of the Fox River, but Bing Seasonal and Uncle Pat's Pub are east of the River, along Illinois Route 56. The table below lists the uses and estimated number of parking spaces displaced:

Table 4.4-1
Displaced Business Parking Spaces, Illinois Route 56/Oak Street *Corridor*

Business	***Total Approximate Number of Parking Spaces***	***Estimated Number of Parking Spaces Displaced***
Bing Seasonal	*16*	*7*
General Associates Inc.	*16*	*4*
Fox Valley Vet Clinic	*17*	*4*
Lincolnway Offices	*45*	*8*
Lutheran Church of the Good Shepherd	*55*	*13*
Professional Arts Building	*26*	*7*
Uncle Pat's Pub	*50*	*7*

Sufficient space exists to relocate displaced parking associated with Lutheran Church of the Good Shepherd and General Associates Inc. on-site. For other affected users, relocating parking and business signs or using retaining walls and/or shifts in the right-of-way will be evaluated to reduce impacts during the preliminary design phase.

4.4.1.3 Community Cohesion

Neighborhoods

The proposed improvement of Oak Street will increase the physical separation of the small neighborhood between Illinois Route 31 and the west bank of the Fox River (see Exhibit 2.4-2). Currently, there is vehicular and pedestrian access between areas north and south of Oak Street via Monroe Street. Right-in/right-out access to Oak Street would be provided, but vehicles would have to travel along Illinois Route 31 to move between areas. Pedestrian access between areas north and south of Oak Street will be maintained via the Fox River Trail, along the west bank of the Fox River. The displacement of five residences from this area, access limitations, and the physical separation provided by expansion of Oak Street will affect the character of this small neighborhood.

Residential displacements will not result from this alignment west of Illinois Route 31, but proposed roadway improvements will require portions of front, side, and rear yard areas for right-of-way. Homes that currently have access to Oak Street via the frontage road, between Cherry Tree Court and Walnut Drive, will have individual curb cuts on the new roadway.

The residential areas north and south of Oak Street share the use of two resources in this area: Highlands Park and Goodwin Elementary School and Park. Adults and children on both sides of the roadway utilize these facilities. The Build Alternative's proposed four-lane roadway section for Oak Street will be more of a barrier to pedestrian crossing than the existing section of two lanes plus (in some areas) a frontage road used primarily for local access. There are mitigation alternatives available to help minimize these impacts to community cohesion. A crossing guard is currently used at Sycamore Lane to assist students crossing Oak Street. The Gary D. Jewell Middle School is scheduled to open in the fall of 1998, north of Oak Street and east of Orchard Road. A possible mitigation measure would be to install crossing guards at the heavy crossing locations before and after school hours following construction of the proposed improvements. A second alternative would be to create a signalized intersection with pedestrian crossing heads at Sycamore Lane, subject to a warrant analysis in the design phase. In addition, space within the proposed right-of-way is available for future sidewalks to provide pedestrian access along Oak Street. The remaining land uses listed in this comment (Lutheran Church of the Good Shepard, the Blessed Sacrament Church, and North Aurora Community Center) will not experience changes to their access.

Central Business Districts

North Aurora considers the businesses on and near Illinois Route 31 as their central business district. This is an automobile-oriented corridor, so impacts to pedestrian movements would be minimal. Access to these businesses from both sides of the Fox River would be improved by providing a direct connection between Illinois Route 31 and the Illinois Route 56/Oak Street Corridor. The reduction in the rate of congestion increase on State Street would improve access to the restaurants and commercial uses along this roadway.

Institutions/Governmental

School Districts
School District #129 will benefit from improved bus access within its service area as a result of constructing the bridge and roadway improvements in the Illinois Route 56/Oak Street Corridor. District #129 serves both sides of the Fox River. This requires buses to use the State Street bridge in downtown North Aurora. District officials indicated that Oak Street and Illinois Route 56 are the two primary east/west roadways used for busing. The Illinois Route 56/Oak Street crossing will improve service by reducing the need to use the congested State Street crossing. In addition, a new school scheduled to open in 1998 is being constructed on or in proximity to Oak Street. The proposed improvements will directly serve this school (see Exhibit 2.4-2).

Batavia School District #101 also serves areas on both the east and west sides of the Fox River. The proposed bridge and roadway improvements would provide an alternative to the Wilson Street bridge, in downtown Batavia, for crossing the river and providing bus service to students on the far east and southern portions of the district within the study corridor.

Police Protection
The North Aurora Police Department is located at 25 E. State Street, adjacent to the Village Hall. Although direct access from Grant Street to Illinois Route 56 will be eliminated, travel distances to this roadway will be minimally increased. Travel distances to Oak Street will not be affected. The transportation improvements will result in improved response times when a squad unit requires backup assistance from another squad on the opposite side of the river.

Access to the west will not be changed since the existing bridge crossing is maintained. Access to the east would be provided by traveling south on Grant Street to the existing railroad crossing, north of Conco Street, then following Illinois Route 25 north to Illinois Route 56. This will slightly increase response times from the existing conditions due to an increase in travel distance.

Fire Protection/Health Emergencies
The North Aurora Fire Department currently serves areas east and west of the Fox River from one location at 2 E. Monroe. This station is immediately west of the State Street bridge. Department officials indicated that traffic congestion on the bridge and State Street often impedes their travel east. When this occurs, emergency vehicles must enter the oncoming traffic lanes to proceed. This has been the source of periodic accidents involving the emergency vehicles. Direct access to the east and west will be provided to the proposed bridge via Monroe Street.

The proposed bridge and roadway improvements provide three alternative means of accessing Illinois Route 56 and Oak Street: State Street to Illinois Route 31; Monroe Street; and State Street to Grant Street, to Illinois Route 25. All three connections to Illinois Route 56/Oak Street would provide access to areas east and west of the Fox River. With an alternative means of access to the corridor, and a reduction in the rate of congestion increase on State Street, response times east and

west of the Fox River will improve.

Park Districts/Recreation Areas
There are many park and recreational opportunities within the South Region (as shown on Exhibit 2.4-1). These facilities are located on both the east and west sides of the Fox River. Providing improved service across the Fox River will improve access for many residents in North Aurora, adjacent communities, and unincorporated Kane County. Adequate space will be provided within the future right-of-way for sidewalks and a bikeway. These improvements will provide a beneficial link to the Fox River Trail and regional bicycle system.

There are no parking facilities within Highlands Park. North Aurora Village officials indicated most motorists park along Sycamore Lane or the frontage road along the south side of Oak Street. The proposed roadway improvements eliminate this frontage road. Community cohesion will therefore be impacted by the introduction of a four-lane roadway, making pedestrian access to the park and adjoining neighborhoods more difficult.

4.4.1.4 Government Finance
Table 4.4-2 provides a summary of the direct property tax impacts that will result from decreases in the revenue base of taxing jurisdictions caused by implementation of the Build Alternative (primary taxing jurisdictions only. Some taxing jurisdictions were not included because the impacts were not significant). Right-of-way acquisition will total approximately nine hectares. Acquisition costs are influenced by negotiations and appraisals after specific right-of-way limits are established in final design. Based on area wide land costs, the assessed value is estimated to be $900,000 (see Section 4.1.1.4 for discussion of methodology).

If the entire preliminary estimate of acquisition costs were considered as displaced assessed value, the resulting impact on taxing districts would still not be significant. The total assessed value of all structures amounts to slightly more than $100,000. The final column in the Table 4.4-2 indicates the percent estimated property tax assessment loss by taxing jurisdictions directly attributable to right-of-way acquisition (this conservative approach overstates the impact). The highest tax loss percentage is associated with the North Aurora Fire Protection District. However, the proposed acquisitions represent a revenue loss of 0.68 percent within the Kane County portion of the district only. Therefore, there is no significant impact (note: because some taxing jurisdictions extend beyond Kane County, impacts may be overstated).

Property taxes and other revenues (sales tax) and fees generated from business activity, and new development enhanced by the proposed bridge and roadway improvements, will help to offset the actual reductions in assessed value. The cost of providing facilities and services to new development are typically paid by developers and user fees. The proposed transportation improvements will encourage development in areas that are planned and suited to accommodate growth due to proximity to existing infrastructure and services. The property tax reductions are not significant impacts affecting the fiscal operation or security of any taxing jurisdictions.

Table 4.4-2
Fiscal Impact on Taxing Districts, Illinois Route 56/Oak Street Corridor

Taxing Unit‡	Addition ROW* (hectares)	E.A.V. Land** ($)	Assessed Value of Structures ($)	1995 Tax Rates (per $100)	Revenue Loss ($)	1995 Total Assessed Taxes† ($)	Percent Tax Loss
Kane County	9	898,434	106,890	0.4988	5,015	26,405,241	0.02%
Kane County Forest Preserve	9	898,434	106,890	0.1204	1,210	6,373,679	0.02%
Aurora Township	8	799,267	106,890	0.2950	2,673	2,875,762	0.09%
Batavia Township	1	99,167	0	0.1318	131	560,025	0.02%
Aurora Township Road District	8	799,267	106,890	0.1132	1,026	1,103,513	0.09%
Batavia Township Road District	1	99,167	0	0.0803	80	341,199	0.02%
Marywood Fire District††	1	158,375	0	0.1382	219	36,259	0.60%
North Aurora Fire District	7	713,419	106,890	0.4213	3,456	509,450	0.68%
Messenger Library	6	627,572	106,890	0.1741	1,279	209,196	0.61%
Village of North Aurora	6	627,572	106,890	0.4887	3,589	587,215	0.61%
Fox Valley Park District††	8	812,587	106,890	0.4363	4,012	4,539,983	0.09%
Batavia Park District	1	85,847	0	0.4260	366	1,578,017	0.02%
Aurora West School District #129	8	740,059	106,890	4.2186	35,729	30,432,396	0.12%
Batavia School District #101	1	158,375	0	4.6373	7,344	19,702,730	0.04%

Sources: Kane County Clerk's Office, Tax Department; 1995 Kane County Abstract of Taxes

‡City of Aurora and its Library District omitted because land area impacted within these districts rounds off to less than one-half hectare

*Right-of-way required for construction (includes total parcel area of displaced properties - this may vary from figures provided elsewhere in the EIS but represent a reasonable estimate of impacts).

**$98,839 per hectare for agricultural and residential property plus $538,176 per hectare for commercial and industrial property multiplied by 0.333 (assessed valuation figure).

†Based only on tax base within Kane County. Some jurisdictions extend into other counties.

††Jurisdiction's boundary extends outside Kane County.

4.4.1.5 Employment

Within the overall context of the South Region, the proposed bridge and roadway improvements will help focus new employment opportunities within the Urban Development Corridor as planned by Kane County and local municipalities. Businesses that are currently located in this developed corridor will also benefit from the improved access to major transportation routes, business districts, customer bases, and public services. These factors can improve the viability of a business and, therefore, influence its decision to stay in the established communities along the Fox River.

No loss of employment is expected since no businesses are displaced.

4.4.1.6 Environmental Justice

The preferred Illinois Route 56/Oak Street Road alignment with its improvement is located in census tracts #8528.02, #8529.02 #8530.04 and #8530.01(see exhibit 2.4-3a). A review of the census data, field reviews and discussions with local officials indicate that there are no disproportionate impacts on the low-income and minority populations. The City of Aurora and census tract #8529.02 were identified as having a higher level of minority and low-income population than Kane County as a whole. None of the displacements are in this area.

The Banbury Nursing Home is on Banbury Road, near Schneider School. A senior housing center is located north of the East-West Toll way (I-88) along IL Route 31. In addition, North Aurora municipal officials indicated that the attached single-family units south of Oak Street, near Harmony Court, are designed and marketed to seniors. These two sites are located at such a far distance from the preferred alignment that impacts, if any, will be minimal.

Census tract #8529.02 south of IL Route 56 has a higher percentage of minority population than Kane County as a whole. However, they are lower, when compared to the Aurora minority population (See Table 2.4-5). Reviewing and evaluating of all available data and information regarding impact to this census tract indicates that there are no disproportionate human environment impacts on this area.

A rental apartment community (Butterfield Trails) north of IL Route 56 in North Aurora in census tract #8528.02 is subsidized with Section 8 federal funding (See Exhibit 2.4-2). Reviewing and evaluating of all available data and information regarding impact to Butterfield Trails indicates that there are no disproportionate impacts on this apartment.

4.4.2 Agriculture

A summary of impacts to farm operations for the Illinois Route 56/Oak Street alignment is presented in Table 4.1-3. Impacts to prime and state important farmland soils by conversion to roadway right-of-way are shown in Table 4.1-4.

While the primary area for Christmas tree production is north of the buildings on Marmion Academy, some trees are grown along Illinois Route 56 east of Hart Road. Approximately 0.2 hectare (0.5 acre) of area for tree production will be required for roadway right-of-way.

The Illinois Route 56/Oak Street alignment selected provides a crossing of the Fox River that minimizes impacts to agriculture. It does this by being along existing roadway right-of-way, except for the immediate area crossing the Fox River.

4.4.3 Special Lands

The preferred Illinois Route 56/Oak Street alignment will use 0.4 hectare (1.0 acre) from Highlands Park. However, in their October 3, 1995 letter to the Kane County Division of Transportation, officials of the Fox Valley Park District stated that "improvements at the thirteen acre park were purposely set back from Oak Street in anticipation of a future road widening" (see Appendix A-4(f) coordination). The Federal Highway Administration has reviewed the Fox Valley Park District's letter and determined that this statement is documentation of co-planning of park and roadway improvements. The setback established was 6 meters (20 feet) and the proposed roadway improvement fits within those limits. The preferred Illinois Route 56/Oak Street Alignment will not impact any of the amenities at this park nor affect access.

There are no parking facilities within Highlands Park. North Aurora Village officials indicated most motorists park along Sycamore Lane or the frontage road along the south side of Oak Street. The proposed roadway improvements eliminate this frontage road and associated parking. The new wider road will also make access more difficult for pedestrians from the south side of Oak Street.

Where the proposed road crosses the Fox River Trail and the Red Oak Trail on either side of the Fox River, the roadway will be on structure above the trail. There will be no loss of access for the trail.

4.4.4 Transportation

4.4.4.1 Roadway

Illinois Route 56/Oak Street will provide a Fox River crossing about 1.6 kilometers (1.0 mile) north of Interstate 88, immediately north of the existing crossing of Illinois Route 56, and 2 kilometers (3.2 miles) south of the Wilson Road crossing in Batavia (see Exhibit 1.4-1). Traffic in the area is increasing (see Exhibit 4.4-1 for existing Average Daily Traffic (ADT) and Exhibit 4.4-2 projected). Traffic volumes on Oak Street and Illinois Route 56 will increase with the Build Alternate with the largest increases at the Fox River crossing (20,000 to 34,000) and on Oak Street west of the Fox River (13,000 under the No-Build scenario to 25,000). This volume exceeds the typical capacity of 28,000 vehicles per day for a four lane roadway. Traffic volumes on nearby river crossings are not expect to change noticeably. Also, the other traffic volume changes are expected to be minor.

Development of the Illinois Route 56/Oak Street corridor will enhance the system by providing a direct connection from Illinois Route 56 west across the Fox River to Orchard Road and ultimately the East-West Tollway (Interstate 88).

Improvements along the Illinois Route 56/Oak Street will not impact access to the local roadway

system. The alignment of Illinois Route 56 is proposed to be straightened in the vicinity of the North Aurora Municipal Building. The existing Illinois Route 56 bridge across the Fox River will remain to maintain access to existing facilities along the roadway.

Access to properties adjoining the new road at Oak Street will be affected by the provision of a barrier median. Vehicles will no longer be able to turn left out of or into their property. Movements will be restricted to right-in/right-out.

4.4.4.2 Transit

The proposed Build Alternative will have no noticeable impact on bus service or other transit service. It neither complements nor detracts from any current operations or proposed. The Build Alternative does allow more flexibility in future bus service operations.

4.4.4.3 Non-motorized Transportation

The Build Alternative will be grade-separated over the Fox River Trail West and the Fox River Trail East. With full access maintained, there will be no net impact to these trails.

The Illinois Prairie Path crossing of Illinois Route 56 is currently at-grade east of the proposed improvement limits, where Illinois Route 56 is only two lanes. With the proposed Build Alternative, and Illinois Route 56 is a Strategic Regional Arterial, there will be increased need to widen Illinois Route 56 to four lanes. A secondary impact of the project would be a wider at-grade crossing for the path across a busier road.

The bridge crossing will provide a mixed use crossing. The net effect to all trails is that they will be maintained. In fact, they will be enhanced by new linkages provided by the new road.

4.4.4.4 Other Modes

The existing at-grade two lane crossing of the BNSF Railroad will be replaced by a four lane at-grade crossing. The BNSF has no objection to this proposal.

4.4.5 Cultural Resources

4.4.5.1 Standing Structures

The only property affected by the Illinois Route 56/Oak Street potentially eligible for inclusion on the National Register of Historic Places is the D. R. Sperry Company site at 112 Grant Street. The impact will be limited to revised access in the form of a new driveway. The State Historic Preservation Officer (SHPO) has determined that there is no effect to the site.

4.4.6 Geology

4.4.6.1 Bedrock and Surface Geology

Impacts to the bedrock are not expected as bedrock does not outcrop in the vicinity of the Illinois Route 56/Oak Street corridor. The Illinois Route 56/Oak Street corridor is almost entirely on existing roadways and through developed lands. Except for near the Fox River bridge crossings, changes to the surface geology and surface soils are not expected. Grading changes will include

minor cut and fill areas with potential impacts from erosion which will be mitigated with standard erosion control measures.

4.4.6.2 Mineral Resources

The impacts of the proposed roadway on mineral resources will be the exclusion of mining of sand and gravel and stone within and adjacent to the right-of-way. Since the majority of the corridor is through previously developed urban properties, the impacts of this exclusion are anticipated to be minor. Toward the eastern end of the proposed roadway, soils consist of fine grained tills not containing sufficient sand and gravel to provide commercial resources. Toward the western end of the proposed corridor, sand and gravel resources are present, but relatively thin and have not, to date, been developed as commercial resources. The glacial cover over the uppermost bedrock suggests that commercial development of stone quarries are not practical in this area.

At least 10 sand and gravel quarries are identified within a 16 kilometer (10 mile) radius of the proposed corridor, with the majority located 5 to 10 kilometers (three to six miles) west of the western terminus of the corridor. One stone quarry identified as Conco Western Stone is located within 1,600 meters (1 mile) south of the corridor along the east bank of the Fox River. The presence of numerous sand and gravel pits and one stone quarry within the 16 kilometer (10 mile) vicinity of the proposed corridor suggests that the minor area precluded from mining as a result of the road development will not adversely impact the availability of sand and gravel or stone.

4.4.6.3 Groundwater Resources

Groundwater Supply

Roadway excavation and construction is not anticipated to penetrate to the uppermost aquifer beneath the road bed. Shallow water table unconfined aquifers are limited to the immediate vicinity of the Fox Valley and valley train deposits and outwash along the banks of the river. The area of new impervious roadway pavement estimated at 0.075 square kilometer (0.029 square mile) is a fraction of a percent of the drainage area and groundwater recharge areas that supply the shallow aquifers along the margins of the Fox River Valley.

No restriction or impedance to the groundwater flow is anticipated considering the roadway section and proposed alignment. The Illinois State Water Survey and Illinois EPA indicate four public water supply wells within 600 meters (2,000 feet) of the Route 56/Oak Street corridor. These records also identify six private wells within 150 meters (500 feet) of the corridor. It is possible that one public water supply well and one or more private wells will require abandonment and relocation as a result of final roadway alignment selection.

Groundwater Quality

Groundwater quality data for wells from the Route 56/Oak Street corridor indicate some indicator and field parameters exceed Class I potable water supply standards. These exceedances of the water supply standards include arsenic, boron, iron, and manganese in shallow water supply wells. No known source of these exceedances were identified for the corridor in the IEPA records reviewed. An aquitard overlies the developed confined aquifer in the project area, which limits the potential

for impact to the uppermost aquifer. The corridor east of the Fox River is underlain by clay till as indicated on Exhibit 4.1-1 (Potential for Contamination of Shallow Aquifers, ISGS, 1984). The area adjacent to the Fox River and west of the river is underlain by some shallow sand and gravel or relatively shallow bedrock which has a limited cover of low permeable clay till, indicating some greater susceptibility to groundwater contamination.

Calculation of chloride loading from runoff of roadway deicing salt and the large relative size of the recharge area indicate that chloride levels will not increase over those levels currently present in the aquifers. No adverse impact is anticipated to the groundwater resource as a result of runoff from roadway deicing salt. Since this area has natural protection from contamination, no drainage ditch lining would be necessary.

4.4.7 Water Quality and Water Resources

4.4.7.1 Construction Impacts to Surface Water

The Illinois Route 56/Oak Street corridor crosses the Fox River and Indian Creek. The Fox River widens to 120 meters (400 feet) at the point of the proposed bridge crossing. Three piers will be placed in the river with one pier on each bank. Based on preliminary bridge designs, the total displacement in the river is approximately 50 square meters (540 square feet) for these three piers, causing the loss of approximately two percent of the river bottom at the crossing within the road right-of-way limits. Pier construction will be accomplished from barge where water depths allow and will include steel sheet pile cofferdam construction techniques. Therefore, temporary substrate loss during construction is the same as the permanent substrate loss due to pier construction.

The North Aurora dam is located on the Fox River approximately 60 meters (200 feet) downstream of this road corridor, reducing river flow velocities. The substrate in this area is silt due to high amounts of sedimentation (Taylor, et al., 1995).

Construction impacts due to turbidity increases would be limited due to the lack of aquatic organism habitat and the dam located immediately downstream. The river redhorse and greater redhorse are intolerant of turbid waters and silty bottoms. These species of fish feed on mollusks, which are also intolerant of pollution and degradation of water quality. These fish spawn in gravel beds and riffles in May and June (Harris, et al, 1993). Instream work, and work that would impact the Fox River, will be limited to the June 8 through February 29 of the project year, the non-spawning period. Strict adherence to erosion control measures coordinated with the IDNR and will follow, at a minimum, IDOT requirements for all on-shore activities will reduce erosion and thereby reduce the amount of sediment entering the Fox River.

Indian Creek is the only significant tributary crossing in this corridor. The crossing will be accomplished via a culvert extension of the existing Indian Creek culvert. High levels of suspended sediment were observed in the stream, with substrate consisting of silt and clay recently deposited from construction activities (a small lake and new homes) upstream. Given the high turbidity of the stream, construction activities that would increase turbidity would produce little or no impact on this stream.

4.4.7.2 Operational Impacts to Surface Water

The two streams impacted by operation of the Illinois Route 56/Oak Street corridor are the Fox River and Indian Creek. On the west side of the Fox River, the road corridor crosses two minor drainage swales. On the east side of the Fox River, the road corridor crosses one minor drainage swale and Indian Creek. The proposed roadway will not generate significant increases in peak flow rates to these systems. The central portions of this road corridor will drain directly to the Fox River bridge in new roadway drainage systems. Drainage ditches will be utilized east of Illinois Route 25 for stormwater conveyance. The existing water quality of Indian Creek has not been measured to date but is expected to be similar to the Brewster Creek watershed.

The projected pollutant loadings, including chloride, for the Fox River and Indian Creek will not exceed the Illinois General Use Water Quality Standards and will not impact existing fish, benthic and mussel populations. The greater redhorse and river redhorse were observed in the Fox River near this crossing. This increase in chlorides will not affect either species of the redhorse fishes observed upstream.

4.4.7.3 Measures to Minimize Harm

This corridor crosses the Fox River and Indian Creek. Minimization techniques include the location of this road near the surface water watershed divide and parallel to groundwater flow. Soil erosion and sediment control practices will be employed in accordance with IDOT Standard Specifications to minimize sediment transport. Since redhorse and greater redhorse fish species were found 1.2 kilometers (0.75 miles) upstream of the proposed corridor, strict sediment control measures will need to be undertaken in the construction area.

All river and stream banks disturbed by construction will be revegetated immediately following construction. Raw banks will be mulched or protected with blankets until the vegetation is established.

The Fox River bridge will include three piers in the river. Construction access will be from a floating barge where water depths allow. A steel sheet pile cofferdam or drive piles will be used to minimize sediment and stream bank bottom disturbance. The Indian Creek crossing will be accomplished by a culvert extension of the existing culvert to minimize water quality and aquatic resources impact. Vegetated ditches will be used for the portion of the corridor east of the Fox River that is tributary to Indian Creek to minimize water quality impacts from road surface runoff.

This project will require an NPDES permit as specified under Section 402(p) of the Clean Water Act since more that 2 hectares (5 acres) of ground will be disturbed. The permit coverage will probably be under the IEPA General Permit for Stormwater Discharges from Construction Site Activities (NPDES Permit No. ILR100000). The permit requires suitable erosion and sediment control measures will be used during construction. Requirements of the permit include the preparation of a Stormwater Pollution Prevention Plan.

4.4.7.4 Floodplains

The proposed Illinois Route 56/Oak Street corridor has a proposed transverse crossing of the Fox River floodplain (see Exhibit 2.4-5). The only construction within the designated floodway and below the 100 year flood elevation will be the construction of piers in the river. The bridge will be designed so that there will be no significant increase in flood elevations or stream velocities.

Illinois Route 56 is currently a transverse crossing of Indian Creek by culvert. There is no designated floodway. The proposed road will require the culvert to be extended. The extension will be designed to prevent any significant increase in flood elevations or velocities.

The net result is there will be no significant impact to the floodplains of the streams crossed by the proposed Illinois Route 56/Oak Street corridor.

4.4.8 Wetlands

4.4.8.1 Construction Impacts to Wetlands

The only wetland that will be directly affected by construction of the Build alternative is Wetland No. 14 (see Exhibit 2.4-6 for locations).

Wetland No. 14

Approximately 0.02 hectare (0.05 acre) of this wet shrubland will be filled for the widening of Illinois Route 56. This site has a FQI of 5.0, indicating poor natural quality. This wetland extends for a large distance south of the corridor. The total size of this wetland outside the corridor is undetermined. Due to the large size of this wetland, impacts to functional values of this wetland are very minimal. This wetland is associated with a small stream.

4.4.8.2 Operational Impacts to Wetlands

Four wetlands (Wetland Nos. 2, 4, 5, and 14) in the Oak Street/Illinois Route 56 study area are in close proximity to existing roads and currently receive surface runoff. Three of these four wetlands (Wetland Nos. 2, 4, and 5) are not expected to have operational impacts from the proposed road due to their distance from the project and their flow direction.

Wetland No. 14

The proposed drainage feature for this segment of Illinois Route 56 adjacent to Wetland No. 14 is vegetated swales. Runoff from the roadway will enter this wetland along with splash and spray. This wetland is already receiving runoff, splash and spray due to its proximity to Illinois Route 56. Therefore, the increase in runoff volumes is not expected to impact the overall function values of this wetland.

4.4.8.3 Avoidance Alternatives

This corridor was analyzed for alternates which would avoid wetlands. The alignment selected uses an existing road corridor. Development north and south of Illinois Route 56 and Oak Street limits minor shifts of the alignment to avoid wetlands. Shift of the alignments would cause displacement of at least one additional residence, as well as additional right-of-way acquisitions from the Marmion

Academy. Therefore, it was determined that the minimal impacts to wetlands on this project are unavoidable.

Avoidance options are limited as Illinois Route 56 is an existing road and the wetland extends into the right-of-way.

4.4.8.4 Measures to Minimize Harm

The proposed alignment of the Illinois Route 56/Oak Street corridor has minimized impacts to wetlands as much as possible. The use of an existing road corridor keeps impacts to an area already impacted by roads and developments. It is anticipated that construction activities will impact all wetland areas within the proposed right-of-way, therefore, the use of retaining walls, steeper side slopes or other such measures will not further minimize impacts. The use of vegetated swales east of the Fox River will filter runoff to some extent. Enclosed storm sewers in other locations along the route will collect runoff and route it to other streams, reducing the amount of roadway runoff directly entering the wetlands.

4.4.8.5 Compensation

Approximately 0.02 hectares (0.05 acres) of wetlands will be filled in the preferred Illinois Route 56/Oak Street corridor. As wetland impacts are unavoidable, compensation at a ratio of 1.5:1 is anticipated. Therefore, total mitigation required is 0.03 hectares (0.07 acres). The existing wetland extends beyond the right-of-way into private property zoned for residential development. If possible based upon the development schedule for the property containing the wetland and cost, the first option for mitigation explored will be an enlargement of the existing wetland on the private property. This will depend also upon the cost to add mitigation area to a private development.

If working with the owner proves not practical, it is anticipated that impacts will be mitigated at a local approved wetland bank to avoid the creation of a small, isolated wetland site near the proposed roadway. Replacement of this wetland will be in-kind. As this wetland has been excavated in the past, the in-kind replacement will create palustrine wetlands of potentially higher quality. Subsequent correspondence with the Illinois Department of Natural Resources has indicated that mitigation in an approved off-site bank would be acceptable.

4.4.9 Biology

4.4.9.1 Vegetation and Cover Types

Construction Impacts

The Illinois Route 56/Oak Street Corridor primarily consists of agricultural areas west of the Fox River and developed lands east of the Fox River within the Village of North Aurora. These two land uses represent 85 per cent of the area in the corridor and limit available habitat. The alignment follows existing roadway right-of-way from the western limit near Orchard Road to the eastern limit at Kirk Road. As a result, the remaining vegetation communities within 100 meters of the proposed roadway have been disturbed. These communities are generally remnants of large communities which have already been impacted by roadways and development and are confined mainly to edges

of larger vegetation parcels extending outside the right-of-way.

Table 4.4-3 indicates 6.6 hectares (16.5 acres) will be converted from vegetation communities to road right-of-way. The vegetation communities are depicted on Exhibit 2.4-6. Impacts related to roadway construction include conversion of land for pavement, embankments, drainage ditches and the clearing of vegetation.

Table 4.4-3
Cover Type Loss,
Illinois Route 56/Oak St. Corridor
(within 100 meter corridor)

Cover Type	Hectares
Upland Forest	3.2
Shrubland	0.2
Non-native Grassland	3.07
Forbland	0.04
Wetland Communities	0.01

The proposed project will not impact or bisect forested communities of high natural quality. Seven areas of upland forest, differentiated into three upland forest communities, occur in the corridor.

Approximately 0.2 hectares (0.5 acres) of the 6.8-hectare (17-acre) upland forest tract (E1, Exhibit 2.4-6) located southeast of the intersection of Illinois Route 56 and Hart Road are within the proposed right-of-way, and 0.1 hectares (0.25 acres) of this same tract falls within the proposed right-of-way of Hart Road. Any improvements to the intersection with Illinois Route 56 will most likely cause removal of this 0.34 hectare of forest edge.

A second upland forest north of the Illinois Route 56, identified as E1, is located approximately 336 meters (1,102 feet) east of the previous site. Approximately 0.23 hectares (0.58 acres) of this 0.3-hectare (0.8-acre) parcel falls within the proposed right-of-way and will most likely be removed.

An isolated parcel of wet mesic forest (Exhibit 2.4-6 E3) is located on the northwest corner of the Hart Road-Illinois Route 56 intersection. Approximately 0.13 hectares (0.3 acres) of this 0.3-hectare (0.8-acre) tract will fall within the right-of-way. This tract contains second growth trees of hackberry, green ash, wild black cherry, white oak, American elm, and Siberian elm as the dominant tree species, along with an understory of honeysuckle and garlic mustard.

Illinois Route 56 and suburban development have fragmented another wet mesic forest (E3) tract into three parcels. Approximately 1.24 hectares (3.1 acres) of these three remnants (total size roughly 9.36 hectares, 23.1 acres) will most likely be taken. The largest parcel located 204 meters (669 feet)

east of Illinois Route 25 south of Illinois Route 56 lies entirely within the existing right-of-way, which jogs south at this location. Portions of this forest remnant are immediately adjacent to Illinois Route 56, north and south of the roadway. It is anticipated that a portion of this fragmented tract that falls within the right-of-way will be directly converted from forest to road right-of-way. As the proposed improvement is taking existing edges of these remnant pieces of wet mesic forests, no additional edges will be created and no areas will be bisected.

A commercial tree plantation consisting of Austrian pine and Scotch pine is located north of Illinois Route 56, east and west of Hart Road. Only 0.1 hectare (0.25 acre) of the approximately 13 hectares (32 acres) plantation falls within the Hart Road right-of-way. Intersection improvements will take this 0.1 hectare tract. The tree plantation is buffered from Illinois Route 56 by an area identified as fencerow. Approximately all of the 0.46 hectare (1.1 acres) fencerow falls within the right-of-way and will be removed.

Approximately 0.18 hectare (0.45 acre) of shrubland areas will be taken in the proposed right-of-way. These shrublands (dominated by box elder and slippery elms) are located in linear strips along Illinois Routes 25 and 56. These shrublands are of low natural quality and provide minimal wildlife habitat. Impacts to these low quality shrubland communities will be minimal. The parcel on the west side of Illinois Route 25, north of Illinois Route 56, may be serving as a visual buffer between the residences and the railroad embankment.

Six separate non-native grassland areas are located throughout the corridor. Approximately 3.1 hectares (7.8 acres) fall within the right-of-way. These grasslands, dominated by smooth brome grass, fescue and reed canary grass, provide minimal wildlife habitat. Positive impacts may occur in the removal of reed canary grass, an aggressive weed, from portions of the project. While portions of these grasslands will be converted to pavement, the areas outside the pavement will be re-planted with higher quality species after construction is completed.

Approximately 0.04 hectares (0.1 acres) of forbland communities fall within the right-of-way of Hart Road south of Illinois Route 56. This community is dominated by native and Eurasian weed species. This 0.04-hectare of old field weeds will be converted to either pavement or maintained plant communities within the right-of-way.

Minimal impacts will occur to the plant communities associated with wetlands along the route. The plant communities associated with these areas are of low floristic quality. However, as these areas have been determined to be jurisdictional wetlands, impacts to these sites will be mitigated under the Section 404 permitting process.

Impacts to the remaining vegetation within the corridor consists of fencerows and trees planted along the existing roadways and parkways in the residential areas.

Operational Impacts

Operational impacts to the vegetation communities will be primarily increases in salt splash/spray and the periodic mowing of the unpaved portions of the right-of-way. Due to the urban nature of

this corridor, runoff will be collected throughout the paved and unpaved areas. Therefore splash and spray are the main direct operational impacts to be considered.

The forested and shrubland communities are adjacent to existing roads in the corridor. These plant communities are already subject to salt splash/spray. The potential impact is determined by the tolerance of the woody species and the magnitude and extent of salt spray. The upland forest communities (E1), dominated by white oak and red oak, are salt tolerant communities. Upland forest communities identified as E3 may see some change in composition within 9 meters (30 feet) of the road since hackberry, dominant species, is sensitive to salt spray. Moderate damage to sensitive species may occur up to 46 meters (150 feet) from the roadway.

Austrian pines in the tree plantation are tolerant species and no impacts are expected for this pine; however, scotch pines are sensitive to salt spray and moderate damage may occur up to 150 feet from pavement.

The shrublands remaining after construction will be subjected to additional salt spray, may result in a composition change in the shrublands, favoring species which are more tolerant to salt over those less tolerant, such as crabapple and multiflora rose.

Grasses are generally tolerant to salt and as the identified grasslands are already in close proximity to roadways, no additional impacts from salt are anticipated. Continued maintenance of the right-of-way during operation will prevent new growth of trees, shrubs, and weedy forbs thereby permanently converting some upland forests and shrublands to grasses and higher quality forbs increasing the size of these communities.

4.4.9.2 Impacts to Wildlife

The species of wildlife currently existing within the corridor are adapted to habitat edges and close proximity to humans. Therefore, this project will have minimal impact on the species of wildlife present. The existing habitat within the corridor is marginal for wildlife. Much of the habitat present receives constant or periodic maintenance which further reduces the habitat potential. Maintenance of the roadway during operation will have minimal effect on wildlife as this is currently on-going. The additional roadway miles created by the added lanes may slightly increase the potential for wildlife/vehicle collisions. This increase is expected to be minimal. As right-of-way acquisition will be contiguous to the existing right-of-way (with the exception of a small area on either bank of the Fox River), only edges of existing communities will be impacted. Therefore the remaining portions of the adjacent communities are expected to continue to support the limited amount of wildlife already present.

Birds

As no bird species of special concern utilize the corridor area for foraging or breeding, no impacts to these species will occur. The species of birds present within the corridor are adapted to an urban setting and therefore will not be significantly impacted by the project. In some cases, bridge structures provide additional breeding sites for urban species of birds. An increase in this type of habitat is expected to occur with this project.

Mammals

Several types of communities within the corridor, including agricultural land, provide suitable habitat for a variety of mammals. This corridor contains limited areas of upland forest, shrubland, and wetlands that can be used by small mammals. Many habitat generalists use a variety of habitat types and occur in disturbed areas and close to humans (Hofmann, 1996). Habitat for wildlife is provided in the forest preserve sites located north of the corridor (Les Arends and Red Oak Nature Center). The limited wildlife habitat within this corridor supports species adapted to proximity to humans. No species of special concern are located within the corridor. Therefore impacts to mammals will be minimal. Impacts would most likely occur during the post construction operational phase and would be more in the form of collisions with vehicles rather than habitat destruction.

Reptiles and Amphibians

The only area of potential habitat for amphibians or reptiles are the remaining fields and wetlands as well as areas adjacent to the Fox River. Construction activities will slightly reduce the amount of wetland habitat. However, in most cases, the remaining portions of these wetlands will continue to support the wildlife currently present. The project will increase the amount of roadway associated pollutants entering these wetlands. However, this would be limited to splash or spray as roadway runoff will be collected in curb and gutters into an enclosed storm sewer system.

4.4.9.3 Threatened and Endangered Plant and Animal Species

Federal Listed Species

No federal threatened and endangered species were observed within the Illinois Route 56/Oak Street corridor. Therefore, no impacts will occur to federal listed species as a result of the proposed project.

State Listed Species

Two fish species, the river redhorse and the greater redhorse have been observed north of the proposed corridor. There is no suitable habitat within the project corridor for these two fish species. Therefore, implementation of this proposed project will not impact these fish species.

4.4.9.4 Mitigation Measures

All land areas disturbed by construction will be restored to turf cover in accordance with "Guidelines for Use of Landscape Items" where appropriate. All trees and shrubs removed for construction will be replaced on a minimum 1:1 nursery stock basis wherever feasible and appropriate under IDOT guidelines. Replacement of dense stands of trees and shrubs will occur on a 3:1 seedling stock basis, wherever prudent and practical.

Grasses which are selected for replanting in the right-of-way should be native aggressive species which can compete with the aggressive reed canarygrass already present in the corridor. This will have a positive impact on the plant communities and in particular wetland communities. Removing reed canarygrass as well as its seed source will allow for less aggressive native species to grow and increase diversity within the plant communities.

In addition, control of erosion and sedimentation over the remainder of the project will be implemented. Final contract plans will include the IDOT "Special Provision for Erosion Control" and "Special Provision for Erosion Control Plan." Only the area needed for construction should be cleared and native cover maintained wherever possible. Prompt restoration of vegetative cover to disturbed areas and plantings of native grasses and trees along the roadway will help minimize impacts.

Special care will be taken during the construction of bridge piers in the Fox River. Measures to reduce the amount of sediment stirred up during construction will be implemented to avoid temporarily increasing sediment loads.

4.4.10 Air Quality

There will be no adverse impact to air quality as a result of the Build Alternative. Please see section 4.1.10 for a more complete discussion of Air Quality impacts.

4.4.11 Noise

Ten sites along the preferred Illinois Route 56/Oak Street alignment were selected as receptors for analysis. They were selected on the basis of proximity to traffic and traffic volumes. The sites were also selected as representative of the noise impacts to a Noise Sensitive Area (NSA) (see Exhibit 3.4-1 for the locations and Table 4.4-4). The NSAs selected fall under Activity Category B of the FHWA Noise Abatement Criteria (NAC) (see Section 4.1.11).

Traffic noise levels were estimated for the year 2020 for both the No-Build and Build Alternatives. The Build Alternative resulted in additional traffic volumes and speed limit changes. The existing speed limit between Randall Road and Illinois Route 31 would be increased from 50 kph (30 mph) to 70 kph (40 mph) and the speed limit on the bridge from 40 kph (25 mph) to 70 kph (40 mph).

The 2020 No-Build Alternative noise levels ranged from 58 dBA to 70 dBA. Seven of the ten receptors experienced an increase of 3 dBA or less between existing and No-Build noise levels. Two of the receptors (NSAs #8 and 10) had predicted 2020 No-Build Alternative noise levels which reached or exceeded the NAC. Table 4.4-4 is a summary of the noise analysis which includes a general description of the receptor locations.

Using the definition of a traffic noise impact described in Section 4.1.11, eight of the ten NSAs have a traffic noise impact.

Noise abatement measures were evaluated for the noise impacted areas considering both the feasibility of implementing abatement measures is affected by site constraints, the reduction in noise levels (dBA), and reasonable economic factors. For the noise-impacted areas, the feasibility of constructing a noise barrier was first evaluated considering site constraints. Noise barrier analysis was not done for two of the three impacted areas (NSAs #3, and 10) because of site constraints that would make a wall ineffective. In these cases, the site constraints were gaps in the noise wall for driveways. Therefore, no noise barriers are proposed. As was noted in Section 4.1.11, whereas landscaping or other site line interruptions could be used along the ~~proposed~~ corridor, they do not reduce noise levels.

Table 4.4-4
Illinois Route 56/Oak Street Corridor
Noise Sensitive Area (NSA) Impact Summary

NSA#	Receptor Description	No of units per Receptor	Existing dBA Level	dBA Level with 2020 No-Build	dBA Level with 2020 Build	Build - Net Increase over Existing (dBA)	Impact? Yes or No
1	Residences, north side of Oak Street west of Randall Road	3	63	65	65	2	No
2	Highlands Park, north side of Oak Street, east of Randall	1	60	62	65	5	No
3	Residences, east of Randall Road	25	60	62	67	7	Yes
4	Residence, west of IL Rte 31	22	57	59	65	8	No
5	Church, west of IL Rte 31	1	57	59	65	8	No
6	Residence, east of IL Rte 31	1	56	58	67	11	Yes
7	Residences and two apartment buildings, west of Banbury	19	62	63	64	2	No
8	Residences, east of Banbury	9	64	65	64	-	No
9	Residences, east of Wagner	3	62	64	64	2	No
10	Church, east of Kirk	1	67	69	68	1	Yes

Noise abatement measures were evaluated for the remaining two noise-impacted areas considering both the achievable noise reduction and economic reasonableness. OPTIMA, the abatement module of STAMINA, was used to determine potential noise reductions for various noise wall configurations. A summary of the findings for the impacted receptors follows:

Table 4.4-5
Illinois Route 56/Oak Street Corridor
Results of Noise Abatement Analysis

NSA #	No. of Units per Receptor	Barrier Height In Meters (Feet)	Barrier Length In Meters (Feet)	Cost* ($270/Sq. M)	Reduction Potential dB(A)	Likely To Be Implemented	If No Reasons Why
6	1	5.5 (18)	50 (165)	$74,000	7	No	1

Notes:
* The cost includes preliminary analysis/design, final design and related construction costs.
1 - Not economically reasonable or feasible based on cost compared to benefit.

4.4.12 Special Wastes

Hazardous Wastes

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e., the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS] list) has been reviewed to ascertain whether the proposed project will involve any listed site(s). No CERCLIS sites were found within 1.6 kilometers (one-mile) distance of the proposed roadway. As a result of this review, it has been determined that the proposed undertaking will not require any right-of way or any easement from any site included in the CERCLIS listing as of July, 2001.

Undetermined Waste Status

A site which involves types of potential contamination other than petroleum is the D. R. Sperry site located just north of the right-of-way and east of the Fox River. It was recommended in the 1995 IDOT PESA that any construction excavation be maintained above the water level (1.1 meters (3.6 feet) depth in the northwest corner of River Road and Route 56, near the D. R. Sperry facility. Confirmation testing regarding the presence of heavy metals in the soil and groundwater and retesting for VOCs are recommended (due to the time elapsed since the previous investigation) prior to final design approval and land acquisition.

Non-Hazardous Wastes

This Environmental Site Assessment and Preliminary Environmental Site Assessments (PESA) conducted by IDOT have concluded that the build alternative will involve waste sites. Excavation in the vicinity of the Speedway gasoline station at Randall Road may involve petroleum contamination in the proposed right-of-way from the LUST. Current monitoring results should be reviewed prior to land acquisition near this site. If the right-of-way involves the area surrounding the USTs at the Shell gasoline station at Illinois Route 25 or the Amoco gasoline station at Kirk Road, the property should be acquired by dedication.

4.4.13 Visual Resources

The No-Build Alternate will not change the visual setting in the region. The new Fox River crossing will represent some visual interruption in the area, but the new bridge will be designed to complement the existing bridge. This could include using an arch bridge with a limestone facade. As for the approach to the road, the area is either suburban or converting and the roadway improvement will represent no net visual impact. In fact, it will be compatible with that setting.

4.4.14 Utilities

While the proposed road will cross municipal utilities, such as water and sewer, there will be no major impacts to known utilities.

CHAPTER FIVE
SECTION 4(f) EVALUATION

This Section 4(f) Evaluation documents the application of the protection afforded to all public parks, recreation areas, wildlife refuges, or historic sites that will be used as a result of any of the proposed Fox River crossings. Because of the unusual structure of this project (i.e., multiple river crossings proposed under one document and the potential for an agency having involvement with more than one crossing), this Section 4(f) Evaluation is structured by the agency having the primary jurisdiction over the resource involved. Since the historic sites are typically privately owned, they are addressed outside of an agency. Under the jurisdictional agency, each property will be described, the impacts discussed, avoidance alternatives highlighted, and minimization/mitigation measures described. Coordination efforts with the respective agencies have been ongoing and will continue through final design to minimize impacts. Exhibit 2.1-5 provides an overall picture of the public parks, recreation areas and wildlife refuges in the project area. Exhibits 2.2-4, 2.3-6, and 2.4-4 provide larger drawings of these resources on a regional basis.

5.1 Description of the Proposed Action

The proposed action is the construction of new bridge crossings of the Fox River with approach roads connecting to logical termini for up to five corridors. The proposed east-west crossings by the five corridors have independent functional utility. Thus, depending upon funding and other programming determinations, any combination of the five could be built. While more complete descriptions of the proposed crossings can be found in Chapter Three - Alternatives, including aerial photos, general descriptions of each follow.

Bolz Road Alignment (see Exhibits 1.2-1 and 3.2-1)
The Bolz Road alignment is an east-west four lane roadway with median approximately 9.0 kilometers (5.6 miles) in length. The proposed road passes through portions of the Villages of Algonquin, Carpentersville and Barrington Hills as well as unincorporated areas of Kane County. The western terminus is on Huntley Road west of Randall Road, approximately 400 meters (1300 feet) northwest of the Huntley/Boyer intersection. From Huntley Road the corridor traverses primarily undeveloped properties or new subdivisions, crossing Boyer Road, Randall Road, Sleepy Hollow Road, and Illinois Route 31 on its way to the Fox River; the new subdivision: these subdivisions provided a dedicated right-of-way to accommodate the new Bolz Road. After crossing the river, the corridor parallels existing Bolz Road, crossing over Williams Street, intersecting Amarillo Road and Illinois Route 25 to the eastern project terminus at Illinois Route 62.

CC&P/Stearns Road Corridor (see Exhibits 1.3-1 and 3.3-1)
The CC&P/Stearns Road alignment is an east-west four lane roadway with median approximately 7.3 kilometers (4.6 miles) in length. The CC&P/Stearns Road corridor extends from Randall Road at approximately McDonald Road eastward, parallels the Illinois Central (formerly the Chicago

Central & Pacific) tracks on the south to intersect McLean Boulevard and pass under Illinois Route 31 before crossing the Fox River. On the east side of the river the road connects to Illinois Route 25, proceeds northeasterly along Illinois Route 25 across the Illinois Central (IC) tracks and then proceeds on new alignment eastward across Dunham Road to link up to Stearns Road in DuPage County. This roadway is located primarily in unincorporated Kane County, but also involves the City of St. Charles, the Village of South Elgin, the Village of Wayne and a portion of DuPage County.

Red Gate Road Corridor (see Exhibits 1.3-1 and 3.3-2)
The Red Gate Road corridor is located primarily in unincorporated Kane County, but portions are also in the City of St. Charles, the Village of Wayne and unincorporated DuPage County. It is centered on Red Gate Road and extends eastward from Randall Road in Kane County to provide a link via other roads to Illinois Route 59 in DuPage County. Within the corridor three alternate alignment options are being studied because of varying impacts associated with each; the decision on which alignment will be pursued depends upon an evaluation of all impacts once the comments to the Draft EIS are evaluated. The alignments are: the North Alignment (Alignment A); the Middle Alignment (Alignment B); and the South Alignment (Alignment C).

Alignment C was the first option studied. This alignment provides a direct connection between Red Gate Road on the west bank of the Fox River and Army Trail Road on the east bank. Early on it was recognized that the historic districts in Wayne would be adversely affected by widening a two lane rural road to a four lane road, so this alignment was scaled back through Wayne to a two lane road improvement. The length of this alignment is 6.4 kilometers (4.0 miles). Recognizing that options were still needed because this alignment bisected the Fox River Bluff West Forest Preserve (a.k.a Severson Forest Preserve) and included possible impacts to the historic districts, an additional two options were developed.

Alignment A totally avoids the Fox River Bluff West Forest and Fox River Bluff East Forest Preserve by curving north of the forest preserves. Alignment B does not extend as far north and requires forest preserve property. The trade-off between the two alignments is a row of houses (fourteen houses) versus forest preserve property. Both alignments connect to Illinois Route 25 approximately 400 meters (1300 feet) north of Army Trail Road. The two options then proceed north on Illinois Route 25 across the Illinois Central track, where they share the CC&P/Stearns Road alignment eastward. These options are proposed 9.3 kilometer (5.8 mile) four lane roadways with medians.

Since the publication of the *Draft Environmental Impact Statement and Section 4(f) Evaluation (DEIS)*, it has been determined that the Red Gate Road (Alignments A, B, and C) Corridor will not be carried forward as a viable alternative and has been dropped from consideration. In a letter to the Illinois Department of Transportation dated February 25, 1999, the Federal Highway Administration stated that "based on the latest year 2020 traffic projections, a four-lane facility would be required at this location. A four-lane facility in the Red Gate Road corridor would have unmitigatable significant impacts." As a result, the no-build alternative was selected. The discussion which follows remains in the *Final Environmental Impact*

Statement and Section 4(f) Evaluation (FEIS) **in order to substantiate the documentation of the process of corridor evaluation. The Red Gate Road Corridor preference is the no-build alternative.**

C&NW/Dean Street Corridor (see Exhibits 1.3-1 and 3.3-3)
This corridor is located primarily within the City of St. Charles. The western terminus of the C&NW/Dean Street corridor improvement is Dean Street, just west of Randall Road. From there, the corridor runs east on Dean Street, across Randall Road to the intersection with the Union Pacific (formerly the C&NW) railroad tracks near 17th Street. The corridor then parallels the Union Pacific Railroad (formerly the C&NW) tracks across the Fox River until it intersects with Illinois Route 64 at 11th Avenue, one kilometer (0.6 miles) east of the Fox River. The proposed improvement is 3.0 kilometers (1.9 miles) of two lane roadway.

Subsequent discussions between Kane County and the St. Charles Park District have demonstrated this corridor not to be viable. The proposed alignment crosses through Pottawatomie Park. This park represents a fully utilized 4(f) resources without a viable avoidance option. The Park District has indicated that they have no intention of allowing a roadway to be developed across the park. Under the provisions of Section 4(f) of the Department of Transportation Act and recognizing laws regarding eminent domain, this corridor is not viable. The C&NW/Dean Street Corridor preference is the no-build alternative.

Illinois Route 56/Oak Street Alignment (see Exhibits 1.4-1 and 3.4-1)
The Illinois Route 56/Oak Street alignment is a four lane with median roadway approximately 8.5 kilometer (5.3 miles) in length. The proposed road passes through portions of the City of Aurora and the Village of North Aurora. The western terminus is Orchard Road. From the intersection of Oak Street with Orchard Road, the roadway continues east approximately along Oak Street to Illinois Route 31. From there it crosses the Fox River on new alignment to connect to Illinois Route 56 east of Illinois Route 25. At this point the improvement extends east along Illinois Route 56 to approximately Kirk Road.

5.2 Illinois Department of Natural Resources

5.2.1 Description of Section 4(f) Properties

Tri-County State Park
Tri-County State Park is located at the juncture of Kane, DuPage and Cook Counties (see Exhibit 2.3-6). This Illinois Department of Natural Resources property was initiated in 1990 through a partnership with the Forest Preserve District of DuPage County to facilitate the District's Northwest Territories initiative. Tri-County State Park occupies 213 hectares (527 acres). The park is contiguous to Pratt's Wayne Woods, a DuPage County forest preserve. In fact, the DuPage County Forest Preserve District is responsible for most of the day to day operations of the Tri-County State Park under an agreement with the Illinois Department of Natural Resources.

Additionally, there is no clearly delineated boundary between the two properties. Site restoration and planning for a visitor/interpretive center are underway. The proposed center and entrance are over 300 meters (1000 feet) east of the eastern terminus for this project.

5.2.2 Impacts on Section 4(f) Properties

Tri-County State Park
An early proposed alignment for the CC&P/Stearns Road alignment and Red Gate alignments A and B (this involves an area where they share alignment) used approximately 1.4 hectares (3.5 acres) of Tri-County State Park property to realign Stearns Road (see Exhibit 5.1). Approximately 0.5 hectare would have been available as surplus, but would have been isolated by the road and of little overall value.

The revised alignment for the CC&P/Stearns Road alignment uses 0.14 hectare (0.4 acre) from a corner,(see Exhibit 5.2). It does require the displacement of five additional occupied single family house.

5.2.3 Summary of Alternative Alignments to Avoid Section 4(f) Property

Tri-County State Park
The CC&P/Stearns Road alignment under consideration (likewise, Red Gate Alignments A and B) connects to existing Stearns Road from the north to avoid wetlands, including the Brewster Creek Fen south of the Illinois Central Railroad tracks. This north alignment also allows the intersections of Illinois Route 25/Dunham Road/Stearns Road to be realigned to correct an operations and safety problem.

Total avoidance for a new road north of Stearns Road requires using tighter curves and shorter tangents (see Exhibit 5.3). However, this revised alignment is not under consideration because the tighter curves compromise the safety and operations of the road Avoidance by a southern shift or a lesser shift to the north would compromise the realigned Illinois Route 25/Dunham Road/Stearns Road. Alignment shifts to the south would have impacts to Pratt's Wayne Woods.

5.2.4 Measures to Minimize Harm

Tri-County State Park
Discussions with the Illinois Department of Natural Resources (see Minutes of Meeting of February 28, 2001) have indicated that they were more interested in the net impact to their holdings than the simple replacement of land. The proposed buffering by detention facilities and wetlands to reduce impacts to Brewster Creek East Branch and the additional bicycle paths, both on and off their property, result in a net enhancement to their properties, more than simple replacement of land would.

5.3 Kane County Forest Preserve Areas

NOTE: The Red Gate Corridor and the C&NW/Dean Street Corridor have been dropped from further consideration and therefore the following discussion of impacts from these corridors are moot. Any material on these corridors has been kept for historical reasons. See Chapter 3 for further discussion of the decision to drop the corridor.

5.3.1 Description of Section 4(f) Properties

Algonquin Shores Forest Preserve
The Algonquin Shores Forest Preserve is north of Bolz Road between the Fox River on the west and Williams Street on the east (see Exhibit 2.2-4) and consists of approximately 10 hectares (24 acres). The area is a mix of meadow and woodland with pockets of wetlands, occupying the eastern side of the Fox River banks. The only improvement to the forest preserve is the Fox River Trail, which passes through the property.

A portion of the Algonquin Shores Forest Preserve was acquired with assistance from the Land and Water Conservation Fund (Project # 17-00826). This 6.2 hectare (15.36 acre) acquisition known as Fox River Glen is north of the proposed alignment and will not be used by any proposed alignment. The Fox River Shores Forest Preserve is located immediately south of Bolz Road stretching for 0.8 kilometer (0.5 mile) along both banks of the Fox River to approximately Lake Marian Road (see Exhibit 2.2-4).

Blackhawk Forest Preserve
The Blackhawk Forest Preserve is located on the west bank of the Fox River south of the Village of South Elgin at a bend in the river (see Exhibit 2.3-6). In 1995, Blackhawk Forest Preserve was expanded by approximately 1.3 hectares (3 acres) with the acquisition of the residential property adjoining the river just south of the Illinois Central tracks, bringing the total holding to 115 hectares (284 acres). This forest preserve includes boat/canoe facilities, picnic shelters, and bicycle and horseback riding trails along the Fox River Trail. The Fox River Trail crosses the Fox River at this point on a pedestrian/bicycle bridge which links the Blackhawk Forest Preserve with the Tekawitha Forest Preserve on the east (and south) bank of the river. The preserve is currently non-contiguous with a number of private holdings fragmenting it. West of the original part of the Blackhawk Forest Preserve and downstream along the Fox River is the addition sometimes referred to as the River Bend Forest Preserve.

Fox River Bluff West Forest Preserve (a.k.a. Red Gate Forest Preserve)
The 26 hectare (65 acre) Fox River Bluff West Forest Preserve is located between Illinois Route 31 and the west bank of the Fox River (see Exhibit 2.3-6), with Novak Park Subdivision and Farmington Subdivision as its north and south borders, respectively. Fox River Bluff West was acquired by the Forest Preserve District in 1985.

Fox River Bluff West Forest Preserve was formerly farmland. The original farmhouse, separate utility buildings and an inoperable silo are located near the intersection of Red Gate Road and

Illinois Route 31 on the forest preserve property. The Kane County Forest Preserve District is planning to have these structures removed. Improvements to the site include parking facilities and trails.

Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve)

The 14 hectare (34 acre) Fox River Bluff East Forest Preserve is located between the Fox River and Illinois Route 25 with Fox River Estates Subdivision and Pearson Lane as its approximate north and south borders, respectively (see Exhibit 2.3-6). Fox River Bluff was purchased in 1991. Parking is available and amenities at this forest preserve include trimmed footpaths, a site manager, and a farmhouse and utility buildings, which are accessible to the public. Fishing is allowed. This forest preserve has access to the Fox River Trail along Weber Road.

Fox River Trail

The Fox River Trail is a multi-purpose, non-motorized trail made up of county forest preserve land, local parks, rail-to-trail conversions, local streets, and sidewalks that form a 52.3 kilometer (32.5 mile) greenway along the Fox River in McHenry, Kane and Kendall Counties. Within Kane County the Fox River Trail exists on one and sometimes both riverbanks for the entire length of Kane County (see Exhibit 2.1-5). The Fox River Trail is connected to the Illinois Prairie Path in Elgin, Geneva, Batavia and Aurora, and to the Great Western Trail in St. Charles.

The majority of the Fox River Trail is owned and maintained by the Forest Preserve District of Kane County. The Fox Valley Park District owns and maintains the portions of the trail within Batavia and Aurora Townships, and the St. Charles Park District owns and maintains that portion within the City of St. Charles. The Fox River Trail is a joint venture project with the Illinois Department of Natural Resources (IDNR). In joint venture projects, IDNR's role is to facilitate development of trails that will be managed by local units of government. The Department of Natural Resources writes in their State Trail Plan that the Fox River Bike Trail is an "outstanding model" of joint venture projects and that, "This popular facility and associated economic activities are regularly showcased for others to emulate." In many areas, the Fox River Trail is located within another Section 4(f) resource (i.e., forest preserve or park property).

Illinois Prairie Path

The Illinois Prairie Path is a 88 kilometer (55 mile) hiking, biking, equestrian, and nature trail in Cook, DuPage and Kane Counties. The trail follows the right-of-way of the former Chicago, Aurora and Elgin Railway, an electric commuter line which suspended operations in 1957 and abandoned the property in 1961. The right-of-way forms a horizontal 'Y' shape: starting on the east at First Avenue in the Village of Maywood, the trail proceeds west to the City of Wheaton where it branches north to Elgin and south to Aurora. There are also side spurs off the north and south branches to Geneva and Batavia respectively (see Exhibit 2.1-5). In 1971, the trail was designated a recreation trail in the National Trail System, the first trail in Illinois so designated.

In January of 1972 the Illinois Department of Conservation (now the Illinois Department of Natural Resources) acquired the Kane County segments of the old Chicago, Aurora and Elgin Railway and at first leased, and later sold, the property to the Forest Preserve District of Kane County and the Fox Valley Park District as part of the Illinois Prairie Path. In Kane County, the Illinois Department of Natural Resources' interests in the Illinois Prairie Path have been transferred to the Forest Preserve District of Kane County - 35 hectares (86 acres), the Fox Valley Park District - 0.4 hectare (1 acre), and the Sanitary District of Elgin - 0.05 hectare (0.1 acre). Most municipalities along the trail also cooperate in the maintenance of the path.

5.3.2 Impacts on Section 4(f) Properties

Algonquin Shores Forest Preserve
The Bolz Road alignment passes over this preserve in the area where the Algonquin Shores and Fox River Shores Forest Preserves meet. The roadway will use 0.86 hectare (2.12 acres) of Algonquin Shores Forest Preserve property. Of this, approximately 0.24 hectare (0.60 acre) is for the relocation of Angelina Place. The actual crossing over the preserve will be elevated on bridge structure 9-11 meters (30-35 feet) over the property. While design has not been finalized, it is anticipated that two piers will be placed within the forest preserve on the east bank of the river. Access on the Fox River Trail will not be impeded as the roadway will be on structure above it.

Blackhawk Forest Preserve
The preferred CC&P/Stearns Road alignment will use 0.8 hectares (2 acres) of land from the Blackhawk Forest Preserve and will isolate 0.6 hectares (1.4 acres) of the forest preserve between the Illinois Central (former CC&P) tracks and the proposed road. The roadway will pass over the Fox River Trail within the forest preserve on a bridge structure, thereby maintaining continuity of the trail.

Fox River Bluff West Forest Preserve (a.k.a. Red Gate Forest Preserve)

Red Gate Road - Alignment A
This proposed alignment avoids any use of Fox River Bluff West Forest Preserve land.

Red Gate Road - Alignment B
This alignment crosses the north section of the Fox River Bluff West Forest Preserve. This alignment will use approximately 1.1 hectares (2.75 acres) of forest preserve property to construct the proposed section of roadway. Additional forest preserve property (approximately 0.8 hectare or 2 acres) on the north side of the proposed roadway will be separated from the remaining forest preserve to the south.

Red Gate Road - Alignment C
The proposed alignment will bisect the Fox River Bluff West Forest Preserve. Approximately 1.1 hectares (2.75 acres) of the forest preserve will be used to construct the proposed section of roadway. In addition to the visual intrusion, bisecting the forest

preserve will disrupt the existing habitat by creating an obstacle to wildlife that may currently traverse the entire property.

Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve)

Red Gate Road - Alignment A

This proposed alignment avoids use of Fox River Bluff East Forest Preserve land.

Red Gate Road - Alignment B

This alignment crosses the north edge of Fox River Bluff (a.k.a. Severson) Forest Preserve. Approximately 2 hectares (5 acres) from the north edge of the property will be used to construct the roadway.

Red Gate Road - Alignment C

This alignment avoids use of any of the Fox River Bluff East Forest Preserve.

Fox River Trail

As mentioned in the discussion of the Algonquin Shores Forest Preserve, the Fox River Trail is within this forest preserve where the Bolz Road alignment crosses it. Because the proposed road is on structure above the trail, the proposed crossing does not affect the use of the trail. Therefore, there is no use of the trail by the Bolz Road alignment.

Likewise, the CC&P/Stearns Road alignment crosses the trail in the Blackhawk Forest Preserve. The proposed road does not affect the use of the trail because it is on structure above the trail. Therefore, there is no use of the trail by the Bolz Road alignment.

All of the Red Gate Road alignment options cross the trail. At the proposed crossing location, the trail is independent of any other park or potential 4(f) property. Because the crossings are on structure above the trail, this involves no use of the trail by these alignments.

In the vicinity of the C&NW/Dean Street alignment and the Illinois Route 56/Oak Street alignment, the trail is under the jurisdiction of the St. Charles Park District and the Fox Valley Park District, respectively. In the proximity of the C&NW/Dean Street alignment the trail is on a public street and the street will be maintained. Therefore, there is no use.

While there is no use of the trail, the involvement with the trail will be part of the discussions with the agency responsible for the trail at a proposed crossing. The IDNR, as coordinating agency for the trail, will also be invited to participate in discussions on the trail.

Illinois Prairie Path

The CC&P/Stearns Road alignment and Red Gate alignments A and B cross the path at a new location. The existing structure over Illinois Route 25 will be removed and a new structure is proposed for the path over the new road. Even though facilities are being replaced, this is still being considered a use of a Section 4(f) property.

5.3.3 Summary of Alternative Alignments to Avoid Section 4(f) Property

Algonquin Shores Forest Preserve
Alternative alignments for the Bolz Road corridor were studied that avoid or minimize the use of Section 4(f) property. Total avoidance of Section 4(f) property is not possible in this area along the Fox River due to the Kane County Forest Preserve's extensive holdings of property along the Fox River. The park is contiguous and extends to the north 1,000 meters (3,300 feet) from the proposed alignment and to the south 2,600 meters (8,500 feet). Alignment shifts of these magnitudes are not possible without compromising the safety of the design and impacting the existing residential areas north and south of the forest preserve. At the location of the proposed Bolz Road crossing of the Fox River, the forest preserve narrows to approximately 100 meters (330 feet). This is the narrowest point up and down the river in the immediate vicinity.

Blackhawk Forest Preserve
On the west bank area of the Fox River the CC&P/Stearns Road alignment must be south of the Illinois Central (formerly the CC&P) tracks to avoid the South Elgin Sedge Meadow (a high quality irreplaceable wetland) on the east side of the river and the McLean Boulevard (aka Day's) Fen on the west side of the river - both are north of the tracks. Avoidance to the south is not practical because of the extent of the forest preserve holdings (see Exhibit 2.3-6).

Fox River Bluff West Forest Preserve (a.k.a. Red Gate Forest Preserve)
Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve)
The avoidance discussion for these forest preserves is the same since they are across from each other on opposite sides of the Fox River. The Red Gate Alignment A avoids the forest preserves by being located north of them. Alignment A was developed as an avoidance alternative to Alignment B. The trade-off between these two alignments is 4 hectares (10 acres) of land used versus the displacement of 14 single family houses.

Red Gate Alignment C avoids the Fox River Bluff East Forest Preserve, being south of it, but bisects the Fox River Bluff West Forest Preserve. Total avoidance to the south was considered in the development of alignments, but dropped because of the inability to develop a continuous route east of Illinois Route 25.

The actual decision on which alignment to select for the Red Gate Road Corridor depends upon an evaluation of the tradeoffs (i.e., forest preserve property, residential displacement, and wetlands impacts) that will be made before completion of the final EIS.

Illinois Prairie Path
Avoidance of the path by the CC&P/Stearns Road alignment or Alignments A and B of Red Gate Road is impractical because of the length and continuous lineal configuration of the facility.

5.3.4 Measures to Minimize Harm

All measures to minimize harm described below are tentative and will be refined as a result of further coordination with the Kane County Forest Preserve before the completion of the final EIS.

Algonquin Shores Forest Preserve
The measures to minimize impacts include the location of the proposed crossing of this forest preserve. The Bolz Road crossing is in the area where the Algonquin Shores and Fox River Shores Forest Preserves are joined by a common property line, which is narrower than any area immediately north or south. Through the forest preserve the roadway will be on a bridge to minimize land used and to maintain access across the property. Two piers (with footings and piles) will likely be constructed on the forest preserve property. Aesthetics of the bridge across the Fox River adjoining the Fox River Shores Forest Preserve will be coordinated with the Kane County Forest Preserve District in the design phase in an attempt to minimize any visual impact.

Blackhawk Forest Preserve
The CC&P/Stearns Road crossing through the Blackhawk Forest Preserve includes the crossing of the Fox River Trail. The roadway will cross the trail on structure above, so there will be no use of the trail. Aesthetics of the bridge across the Fox River adjoining the Blackhawk Forest Preserve will be coordinated with the Kane County Forest Preserve District in the design phase in an attempt to minimize visual impacts.

Fox River Bluff West Forest Preserve (a.k.a. Red Gate Forest Preserve)
Fox River Bluff East Forest Preserve (a.k.a. Severson Forest Preserve)
Red Gate Road Alignment B uses the northern portion of the Fox River East Bluff (a.k.a. Severson) Forest Preserve. The roadway would be elevated in this section and, therefore, would not function as a barrier to wildlife migration. This alignment also avoids the displacement of 14 residences north of the forest preserves, unlike Alignment A. Alignments A and C do not use property from the Fox River Bluff East Forest Preserve.

Aesthetics of the bridge across the Fox River adjoining these forest preserves will be coordinated with the Kane County Forest Preserve District in the design phase in an attempt to minimize visual impacts.

Illinois Prairie Path
The existing structure over Illinois Route 25 will be removed and a new structure is proposed for the path over the CC&P/Stearns Road alignment. The approaches to the structure and areas adjoining construction will be restored to maintain the path. Some realignment and new connections to the path are under consideration. These modifications will maintain the path without any adverse impacts and will be developed in cooperation with the Illinois Department of Natural Resources.

5.4 [Text deleted]

5.5 Dundee Township Park District

5.5.1 Description of Section 4(f) Properties

Hickory Hills Site
The Hickory Hills site is located in direct line of the Bolz Road alignment between Illinois Route 62 (Algonquin Road) and Illinois Route 25 in unincorporated Kane County (see Exhibits 3.2-1 and 2.2-4). The approximate size of the parcel is 8.3 hectares (20.6 acres). The site is owned and maintained by the Dundee Township Park District and was purchased with monies from the Land and Water Conservation Fund (LWCF) in 1970.

The site is mostly unimproved with the exception of a baseball diamond and playground equipment. These amenities are used by area residents and students of the adjacent Woodland School located immediately south of the Park District property. There is no direct roadway access to the site and no parking facilities provided to the park site. The nearest parking is the Woodland School parking lot south of the park. Access to the park site from the north can be gained by walking through a field from the back of the Barrington Hills residential development off of Autumn Trail.

5.5.2 Impacts on Section 4(f) Properties

Hickory Hills Site
The preferred Bolz Road alignment will use 2.69 hectares (6.64 acres) along the northern boundary of the Hickory Hills park site. The area that will be acquired is park grass land and is unimproved.

5.5.3 Summary of Alternative Alignments to Avoid Section 4(f) Property

Hickory Hills Site
Alternative alignments were studied that avoid or minimize the use of the Hickory Hills Park property. The roadway could be realigned further to the north to completely miss the Section 4(f) property. However, doing so would create safety problems due to excessive reverse curves. Furthermore, total avoidance of the site to the north or south is not possible without the displacement of houses in Barrington Hills. Such a realignment to the north would displace at least 8 single family houses. To the south, the alignment would either go through the school site or displace approximately 60 single family houses in a Carpentersville subdivision.

5.5.4 Measures to Minimize Harm

Hickory Hills Site
Kane County will provide replacement property exceeding the assessed market value and the functional value of the property to be acquired. In exchange for the property to be acquired, the Dundee Township Park District will receive: 4.01 acres of adjoining property west of the park; 5.40 acres of adjoining property east of Hickory Hills Park; a 3,000 square foot residence and 10.14 acres along Illinois Route 31 west of the Fox River.

The conversion the Land and Water Conservation Funds property was accepted via a 32 point agreement dated June 21, 2000 (see Volume 3 - Coordination Documentation) between the Dundee Township Park District and Kane County. A public hearing was conducted on this issue by the Dundee Township Park District on May 24, 2000. A March 1, 2001 conversation and review by the Illinois Department of Natural Resources as the administrator of the Land and Water Conservation Fund in Illinois (see Volume 3 - Coordination Documentation) indicated that, based upon the above, when the conversion is imminent it would be acceptable to them.

5.6 Village of Wayne

NOTE: The Red Gate Corridor has been dropped from further consideration and therefore the following discussion of impacts from this corridor is moot. Any material on this corridor has been kept for historical reasons. See Chapter 3 for further discussion of the decision to drop the corridor.

5.6.1 Description of Section 4(f) Properties

Misty Meadows Park
This 0.09 hectare (0.23 acre) park located in the northeast quadrant of the Dunham Road/Army Trail Road intersection is the property of the Village of Wayne (see Exhibit 2.3-6 and 3.3-2). In 1992, the property was donated to the village through Wayne's Historic and Rural Preservation Program (HARP) for use as a park. The property is unimproved with the exception of a sign giving the name of the park.

5.6.2 Impacts on Section 4(f) Properties

Misty Meadows Park
Only Alignment C of the Red Gate Road Corridor is in proximity to this park. The proposed alignment upgrades the intersection of Dunham Road and Army Trail Road. Right and left-turn storage lanes will be provided, resulting in the use of approximately 0.01 hectare (0.03 acre) from Misty Meadows Park.

5.6.3 Summary of Alternative Alignments to Avoid Section 4(f) Property

Misty Meadows Park
Neither of the Red Gate/Illinois Route 25/Stearns Road alignments (Alignments A and B) directly affect this park. Eliminating the need for right-of-way from this park for Alignment C or altering Alignment C to minimize impacts to this park would result in the need to use more land from the Oak Lawn Farm Historic District at the intersection of Dunham Road and Army Trail Road.

5.6.4 Measures to Minimize Harm

Misty Meadows Park
No practical measures to minimize harm to the park have been identified. Measures to minimize harm will be discussed in further coordination with the Village of Wayne before the completion of the final EIS should Alignment C of the Red Gate Corridor become a recommended alternative.

5.7 St. Charles Park District

NOTE: The C&NW/Dean Street Corridor has been dropped from further consideration and therefore the following discussion of impacts from this corridor moot. Any material on this corridor has been kept for historical reasons. See Chapter 3 for further discussion of the decision to drop the corridor.

5.7.1 Description of Section 4(f) Properties

Pottawatomie Park
Pottawatomie Park is a 19 hectare (47 acre) site owned by the St. Charles Park District (see Exhibits 2.3-6 and 3.3-3). The park is roughly bounded by the Union Pacific Railroad (formerly the Chicago & NorthWestern) on the south, the Fox River on the west, Second Avenue on the east and the Pottawatomie Golf Course (which is also owned and maintained by the St. Charles Park District) on the north. In addition to the Pottawatomie Community Center, amenities at Pottawatomie Park include two pavilions, picnic grounds, two tennis courts, two outdoor swimming pools, three playgrounds, ice skating, softball field, 18 hole miniature golf course, amphitheater, two concession stands, Park District maintenance facility and two paddle wheel boats owned and operated by Anderson Enterprise. The River Walk, a pedestrian path on the east bank of the Fox River, passes through Pottawatomie Park. The City of St. Charles is proceeding with plans to construct a bike trail crossing on the Union Pacific Railroad Bridge which will provide a link to the River Walk and across the Fox River to Illinois Route 31.

5.7.2 Impacts on Section 4(f) Properties

Pottawatomie Park
The C&NW/Dean Street alignment will use 0.5 hectare (1.1 acres) at the southern edge of Pottawatomie Park. No amenities of the park will be affected, nor will access be affected.

5.7.3 Summary of Alternative Alignments to Avoid Section 4(f) Property

Pottawatomie Park
This corridor is constrained by two electrical power sub-stations, an industrial corridor and the Andrew Weisel House (listed on the National Register of Historic Places) on the south side of the railroad tracks. A two lane roadway north of the railroad appears to be the only physically viable alignment.

5.7.4 Measures to Minimize Harm

Pottawatomie Park
A retaining wall (either stepped or full) will be used to minimize the amount of Pottawatomie Park used. Landscaping will be used as a visual screen of the retaining wall. Aesthetics of the bridge across the Fox River adjoining the Pottawatomie Park will be coordinated with the St. Charles Park District in the design phase in an attempt to minimize visual impacts. Features that could be considered as part of the wall design include: step location, height and offset; wall materials, colors, and textures; and landscaping. Additional measures to minimize harm will be discussed with the St. Charles Park District before the completion of the final EIS if the C&NW/Dean Street Corridor becomes a recommended alternative.

5.8 Fox Valley Park District

5.8.1 Description of Section 4(f) Properties

Red Oak Trail (a.k.a. Fox River Trail East)

The Red Oak Trail begins on the east bank of the Fox River at the Illinois Route 56 bridge and travels north through the Red Oak Nature Center and Glenwood Park Forest Preserve where it connects with the Batavia Spur of the Illinois Prairie Path before meeting with the Fox River Trail just north of Fabyan Parkway in Batavia. The Red Oak Trail is part of the 25.8 kilometer (16 mile) 'Red Oak Loop' which includes parts of the Fox River Trail West, Red Oak Trail, and the Aurora and Batavia branches of the Illinois Prairie Path.

Monies from the Land and Water Conservation Fund were used to acquire abandoned railroad right-of-way for the Red Oak Trail (Project Number #17-00761). The Kane County Forest Preserve District, Fox Valley Park District and Batavia Park District were involved in this project.

Fox River Trail (a.k.a. Fox River Trail West)

In downtown Aurora the Fox River Trail is located on the west bank of the Fox River. From there it travels north through the City of Aurora, the Village of North Aurora, the City of Batavia, and many other communities in Kane County. The Fox Valley Park District owns and maintains Fox River Trail within its jurisdictional boundary. On the west bank of the river, the trail is known as Fox River Trail West to distinguish it from the Red Oak Trail on the east, which is also known as Fox River Trail East. These designations do not necessarily continue outside of the Fox Valley Park District.

5.8.2 Impacts on Section 4(f) Properties

Fox River Trail (a.k.a. Fox River Trail West)
Red Oak Trail (a.k.a. Fox River Trail East)

The Illinois Route 56/Oak Street roadway will be carried on a bridge structure over the Fox River and both trails. The net effect is no use of the trails and no change in access to the trails.

5.9 Cultural Resources

The determination of eligibility for inclusion on the National Register of Historic Places (NRHP) for properties affected by this project and Determination of Effect was completed in March of 1999. [Text deleted]. The disposition of the properties that had been considered is found in Table 5-1.

TABLE 5-1 Status Summary of IHPA Coordination for Cultural Resources			
Resource (Corridor)	**Eligibility**	**Adverse Effect**	**Concurrence with Action**
Perry-Lathrop House 19N 045 Illinois Route 31 (Bolz Road)	Grounds and structure determined to be eligible for inclusion on NRHP.	Adverse effect from proposed action	Final action will be postponed until plan development proceeds.
36W 927 Red Gate Road (Red Gate Road)	Eligible	Alignment dropped; no further evaluation necessary	
36W 788 Red Gate Road (Red Gate Road)	Eligible	Alignment dropped; no further evaluation necessary	
36W 612 Red Gate Road (Red Gate Road)	Eligible	Alignment dropped; no further evaluation necessary	
Red Gate Farm 36W 368 Red Gate Road (Red Gate Road)	Eligible	Alignment dropped; no further evaluation necessary	
Silver Fox Farm 5N 754 Illinois Route 31 (Red Gate Road)	Eligible	Alignment dropped; no further evaluation necessary	
Oak Lawn Farm Historic District (Red Gate Road)	On NRHP, including grounds in the nominating form	Alignment dropped; no further evaluation necessary	
Moline Corporation (C&NW/Dean Street)	Eligible	Alignment dropped; no further evaluation necessary	

5.9.1 Perry-Lathrop House (19N 045 Illinois Route 31) (Bolz Road Corridor - Exhibit 2.2-4a)

Description of Section 4(f) Properties

Listed in 1995 on the Kane County Register of Historic Places, this two story brick Greek Revival residence was erected in 1850. The house rests on a cobblestone foundation, and the gabled roof of the structure is set off by prominent returns and a wide frieze. Regularly spaced fenestration punctuates the walls and consists of six-over-six light, double-hung sashes that are accented with limestone lintels and lug sills. Upper-story windows are flanked by functional wooden shutters. Originally constructed of dark masonry, the house has been painted white, and a hip roof porch entry addition with bracket supports shelters a centrally-located door in the west facade. A one story frame addition extends from the rear of the structure.

Impacts on Section 4(f) Properties

This structure sits opposite Lathrop Lane on the east side of Illinois Route 31 approximately 150 meters (500 feet) north of the centerline of proposed Bolz Road. As proposed, the widening of the north leg of Illinois Route 31 will impact the property on which the Perry Lathrop House rests. The house will be 20 meters (66 feet) from the edge of the proposed Illinois Route 31 pavement. Widening Illinois Route 31 will result in the acquisition of 0.08 hectare (0.21 acre) of property in front of the house. The proposed right-of-way strip will be 11 meters (37 feet) by 75 meters (247 feet).

Summary of Alternative Alignments to Avoid Section 4(f) Property

Alternative alignments were studied that avoid or minimize the need for property in front of the Perry-Lathrop House. However, this impact results from the need to widen Illinois Route 31, an existing road, as part of intersection improvements necessary for operations and safety. Alignment shifts to avoid the property would adversely affect other areas. Illinois Route 31 cannot be shifted west to avoid the historical property without adversely affecting the economic viability of the Lathrop Livestock Transportation Center. The alignment of Bolz Road cannot be shifted north without affecting the same businesses. The alignment of Bolz Road cannot be shifted to the south without displacing three (3) single-family residential structures along Forest Drive.

Additionally, segments of future Bolz Road west of the Lathrop property have been built by the Village of Algonquin (words deleted) as part of ongoing residential development in the area. Any realignment would place the road through recently-developed neighborhoods.

Measures to Minimize Harm

Several measures will be implemented during the design of the north leg of the intersection of Bolz Road and Illinois Route 31 to minimize harm to the historic Perry Lathrop House and surrounding property. The use of retaining walls to confine the proposed widening along Illinois Route 31 will be avoided due to the undesirable aesthetics associated with such structures. Right-of-way acquisition in front of the house will be minimized and softened by using one or more of the following measures:

- Use combination concrete curb and gutter with drainage structures and storm sewer instead of bituminous shoulders draining into ditches.

- Tighten the area where the ditch would flow and flatten the slope from the roadway toward the house within a temporary grading easement. This would minimize the need for permanent right-of-way acquisition.

- Design a landscape plan within the impacted area to complement the historic house and replace the removed vegetation.

The foregoing measures will be undertaken in consultation with the SHPO.

5.9.2 [Text deleted]

5.9.3 36W 927 Red Gate Road, St. Charles Township
(Red Gate Road Corridor - Exhibit 2.3-7b)
Description of Section 4(f) Properties
This two story brick Greek Revival house has a gabled roof and rises from a stone foundation. The eaves of the roof have wooden bracket supports, while a stone chimney projecting off the east wall breaks the roof line. The entrance facade consists of evenly-spaced openings: two windows and the main door (including sidelights) occupy the first floor; three windows line the second story; and a semi-circular, vented opening rest within the gable peak. Most windows consist of modern, albeit historical-looking, nine-over-nine light, double hung sashes with limestone lintels and lug sills. A modern, two story, side gable frame addition extends from the west wall and features a one story porch addition with a shed roof. According to the Illinois Rural Survey for Kane County, which was completed in 1987, this property is historically known as "Gallagher's Crabtree Country House." Despite the alterations, this residence appears to retain enough integrity to warrant being considered eligible for the National Register of Historic Places (NRHP).

Impacts on Section 4(f) Properties
The widening of existing Red Gate Road that is necessary under all of the alignments would use approximately 0.2 hectare (0.5 acre) of the northern edge of the property along Red Gate Road. Two structures are on the property: the residence and a barn/utility building. The barn/utility is located on the northwest corner of the property and would be displaced by the Red Gate/Illinois Route 35/Stearns Road alignment. The barn/utility building was not mentioned as a contributing element in the Historic Resources Survey. The residence is within 6 meters (20 feet) of the proposed right-of-way. Since the alignment is being dropped from further consideration, therefore, there will be no impact to the property.

5.9.4 36W 788 Red Gate Road, St. Charles Township
(Red Gate Road Corridor - Exhibit 2.3-7b)
Description of Section 4(f) Properties
Located on a prominent site along the north side of Red Gate Road, this estate is further distinguished by extensive wooden fencing. The two story gabled ell house on the property rises from a stone foundation and was reportedly built circa 1860. Although the Illinois Rural Survey conducted in 1987 noted that the dwelling originally displayed Italianate detailing, this structure has since undergone significant remodeling including porch additions, new fenestration and aluminum siding. As for the outbuildings associated with this property, many were constructed circa 1920, including a large, banked dairy barn with a gambrel roof, two silos and a transverse crib with an elevator cupola. These are all located along a circular drive. Other outbuildings include modern intrusions, such as two horse barns.

Impacts on Section 4(f) Properties
The widening of existing Red Gate Road for all of the alignments would use approximately 0.4 hectare (1 acre) of the south edge of this 23 acre property. All of the structures on this property

are over 30 meters (100 feet) north of the proposed improvement. Since the alignment is being dropped from further consideration, there will be no impact to the property.

5.9.5 36W 612 Red Gate Road, St. Charles Township

(Red Gate Road Corridor - Exhibit 2.3-7b)

Description of Section 4(f) Properties

Located on the north side of Red Gate Road this two story brick side gable residence has Neo-Classical Revival characteristics that include a two story, full-width portico with colossal, carved pilaster supports and a dentiled cornice. A central, bayed, classical entryway with pilaster supports is flanked on each side by a single window, both carrying brick segmental arches with stone keystones and lug sills. Three openings are symmetrically placed at the second level, and a rounded, one story portico shelters a west entry while a one story wing extends from the main blocks east wall. Admittedly, modern windows existing throughout the structure and aluminum siding within the gable peaks somewhat lessen the structure's integrity. The 1987 Illinois Rural Survey describes this as a modern, 1930s structure, rebuilt to duplicate the original house that had been at that site. Despite its so-called "modern" character, this residence is a fine example of the 1920s-1930s Neo-Classical Revival style.

Impacts on Section 4(f) Properties

The proposed Red Gate Road widening would use frontage area only (approximately 0.2 hectare or 0.5 acre) from the site. The proposed roadway improvements are over 30 meters (100 feet) south of the structure. Since the alignment is being dropped from further consideration, there will be no impact and no further evaluation is necessary.

Red Gate Farm, 36W 368 Red Gate Road, St. Charles Township

(Red Gate Road Corridor - Exhibit 2.3-7b)

Description of Section 4(f) Properties

Listed on the Kane County Register of Historic Places in 1989, this farmstead is known as Red Gate Farm. Reportedly functioning as a crop farm as early as 1860, the property gained its primary significance in 1929 after Col. Edward J. Baker purchased and converted the site into a farm for world champion horses. The structure and the grounds, with its contributing elements, are eligible for inclusion on the National Register of Historic Places (NRHP).

Impacts on Section 4(f) Properties

Since the alignment is being dropped from further consideration, there is no impact and no further evaluation is necessary.

5.9.6 Silver Fox Farm (5N 754 Illinois Route 31, St. Charles Township)

(Red Gate Road Corridor - Exhibit 2.3-7b)

Description of Section 4(f) Properties

This two story Prairie Foursquare is constructed of brick and has a pyramidal roof sheathed with wooden shingles. The front facade of the house is symmetrical and includes a hip roof open porch supported by brick piers. Second story fenestration consists of three windows, above which is a pyramidal roof dormer. Masonry sills underscore windows and line the brick porch balustrade.

A one story brick wing extends from the south wall of the main block and has a similar hip roof and hip roof dormer. This residence is a fine example of a Prairie Foursquare in a rural setting.

Impacts on Section 4(f) Properties

Alignment A - North Alignment

This alignment would pass over 200 meters (600 feet) north of the structures on this property. None of the property from the 1.56 hectare (3.86 acre) lot on which these structures sit would be required for the proposed roadway project. There is no effect.

Alignment B - Middle Alignment

The right-of-way required for the proposed roadway improvement of this alignment would be within seven meters (23 feet) of the structure from the east (Illinois Route 31 improvements) and 35 meters (115 feet) from the north (new facility). Although the alignment avoids a direct impact to the structures, it does disrupt the utilization of the surrounding farmland.

Alignment C - South Alignment

The alignment would follow the existing Red Gate Road from Randall Road to Illinois Route 31, which is approximately 305 meters (1,000 feet) south of the structure and avoids all right-of-way. There is no effect.

Impacts on Section 4(f) Properties

Since the alignment is being dropped from further consideration, there is no impact and no further evaluation is necessary.

5.9.7 "Oak Lawn Farm Historic District," (Dunham Road/Army Trail Road, St. Charles Township)

(Red Gate Road Corridor - Exhibit 2.3-7b)

Description of Section 4(f) Properties

The showpiece of this district is prominently located at 5N 648 Dunham Road on a large corner lot. The dwelling consists of a two-and-one-half story residence rising from a coursed stone foundation and featuring masonry walls. As is characteristic of the Chateauesque style, the roof line of the structure is interrupted by numerous elements including gables, spires, corner turrets and stepped chimneys with pots. Windows throughout the residence are arched and carry decorative heads. Designed and built for Mark Dunham, Esq. (a prominent, late nineteenth-century farmer/horse breeder) Dunham Castle is the western-most structure included within the "Oak Lawn Farm Historic District." Listed on the NRHP on 7/26/79, the district also includes those structures located at 5N 497 Dunham Road and 33W 169-373 Army Trail Road.

Impacts on Section 4(f) Properties

Alignments A and B - North Alignment and Middle Alignment

Neither of these alignments tie into Army Trail Road and therefore, they would have no effect on this National Register district.

Alignment C - South Alignment
The alignment requires upgrading the intersection of Dunham Road and Army Trail Road with turn lanes for safety and operational reasons. Approximately 0.2 hectare (0.4 acre) of the District property would be used to construct the proposed roadway. None of the structures would be used. As the Red Gate Corridor is being dropped from further consideration, there is no impact and no further evaluation is necessary.

5.9.8 Moline Corporation (Dean Street, St. Charles)
(C&NW/Dean Street Corridor - Exhibit 2.3-7c)
Description of Section 4(f) Properties
This large, industrial complex - historically known as the Moline Corporation - consists of a number of brick buildings and is located north of Dean Street and the Union Pacific Railroad tracks (formerly the Chicago & NorthWestern Railroad). The factory's most notable structure, which appears to have been the main office, is characteristic of the Italian Renaissance style. Since the structure is vacant, the front entrance has been boarded-up; moreover, the building is cordoned off with a chain link fence. The office rests on a concrete foundation and is topped with a hip roof covered with red barrel tile. The most distinctive feature of the building is the entryway, which is flanked on each side by a Doric column. The windows have lug sills and are shaded by cloth awnings; a projecting cornice is distinguished by wide brackets. Although the integrity of this Italian Renaissance structure is questionable, the buildings of the Moline Corporation represent a important part of the industrial development of the City of St. Charles. The SHPO has determined that the complex is eligible for inclusion on the NRHP. However, since the corridor is being dropped from further consideration, the issue is moot.

This property was purchased in January 1997 with the intent of developing a business park. Preliminary development plans indicate the demolition of all buildings except the office area with entryway.

Immediately adjoining the Moline Corporation and surrounded by it is the Janes & Kirtland Plant. The SHPO has determined that this site is not eligible for inclusion on the NRHP,. No further discussion of impacts to the property or measures to minimize harm is therefore required.

5.10 Coordination
Coordination for Section 4(f) was initiated on July 17, 1995 in a letter to all of the officials with jurisdiction over publicly owned park, recreation or refuge lands within the project limits (see Appendix A-4(f) coordination). The letter requested significance determinations for all potentially used publicly owned park, recreation or refuge lands. A follow up meeting was held on August 23, 1995 to clarify the intent of the letter and to explain the Section 4(f) evaluation process (see Appendix A-4(f) coordination for meeting minutes).

Only the Forest Preserve District of Kane County has more than one holding of the park, recreation or refuge lands used by the proposed project. In a meeting on September 21, 1994, Mr. Jon Duerr of the Forest Preserve District of Kane County stated that the District's policy/goals for

the forest preserves along the Fox River are: (1) to obtain open space along the Fox River, and (2) create a recreation corridor (including a continuous bike path) along the Fox River (see Volume 3-4(f) coordination for meeting minutes).

The Dundee Township Park District has reviewed the potential impacts and subsequent offers to them for potential impacts. Their current position is refusal of the proposal to accept land of equivalent value and function as reflected in the appraisal provided for the land used. Subsequent discussions of a roadway realignment and a modified mitigation/replacement package have produced an agreement dated June 21, 2000 between the Park District and Kane County (see Volume 3-4(f) coordination for the agreement).

In response to coordination on the project, the St. Charles Park Board of Commissioner passed a resolution on May 13, 1997 opposing the C&NW/Dean Street alignment because it "would have a significant adverse impact on the usability, aesthetics and historic character of Pottawatomie Park."

The Illinois Historic Preservation Agency has reviewed a preliminary findings on the impacts to architectural resources (see Volume 3 -Historic Preservation coordination for letter of 1/29/97). They indicated some additional work is needed to determine the impacts. This work is ongoing. In a letter dated March 3, 1999, the IHPA stated that the proposed intersection improvement (alignment C) at Army Trail Road and Dunham Road would have an adverse affect on the Oaklawn Historic District.

The Illinois Historic Preservation Agency has also reviewed a draft report on archaeological sites and concurs with its findings (see Volume 3-Historic Preservation coordination for letter of 12/2/97). No archaeological sites associated with Federally recognized Native American tribes were found in the study corridors. No prehistoric mounds or cemeteries are located in the areas of project impact. No archaeological sites subject to Section 4(f) of the National Transportation Act are located in the project area. Also, a data recovery plan concurred to by the SHPO prior to construction will be sufficient to preserve the historic nature of the sites.

In a letter dated May 20, 1999, the Illinois Department of Transportation (IDOT) stated that the property at 37W 103 McDonald Road (on the CC&P/Stearns Road Corridor) and the "Janes & Kirtland Plant" do not meet the criteria for inclusion on the National Register of Historic Places (NRHP) and require no further work. The letter also stated that the Perry-Lathrop House (Bolz Road Corridor) and the property at 36W 368 Red Gate Road, and its associated structures (Red Gate Road Corridor) appear eligible for listing on the NRHP. IDOT received the concurrence of the SHPO in these determinations on June 2, 1998.

CHAPTER SIX
COORDINATION AND COMMITMENTS

6.1 Summary of Coordination with Federal and State Agencies

In review of their procedures in processing environmental documents and then monitoring the steps necessary to secure a Section 404 permit under the guidelines of the Clean Water Act, the Federal Highway Administration (FHWA) realized that the process as structured required duplication of effort, extended the time necessary to implement a project, and allowed for possible delays as issues that could have been addressed earlier were suddenly brought up just as the project should have been proceeding. As a result, FHWA in cooperation with the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service, established the Concurrent NEPA/404 Process. In this process these agencies cooperate at critical steps throughout the life of a project to ensure efficiency. The sponsoring highway agency, and local and state regulatory and resource agencies (including the Metropolitan Planning Organization - MPO) are invited to participate and provide their technical expertise.

The process is founded on developing consensus at critical stages throughout the project. These stages are called concurrence points. The concurrence points agreed upon are:

1. Purpose and Need
2. Alternatives Carried Forward
3. Selected Alternative.

In conformance with the Concurrent NEPA/404 Process outside coordination was handled within the framework of meetings on concurrence points. Besides the concurrence points, the Process encourages scoping to: identify public and agency concerns; facilitate efficient environmental documentation by assembling cooperating agencies, identifying permit requirements and reviews that should be scheduled concurrently; define issues and alternatives that should be studied in detail and those that require less attention; and save time by focusing on all the relevant issues.

6.1.1 First Scoping Meeting

The first scoping meeting was held May 26, 1993 (see Coordination -Appendix A for minutes) with representatives U.S. Army Corps of Engineers, Illinois Historic Preservation Agency, Division of Water Resources (currently part of Illinois Department of Natural Resources-Office of Water Resources), Illinois Nature Preserves Commission, Illinois Natural History Survey, DuPage County, Northeastern Illinois Planning Commission (NIPC), Illinois Department of Conservation (currently Illinois Department of Natural Resources), U.S. Fish and Wildlife Service, Illinois Geological Survey, Chicago Area Transportation Study, and U.S. Environmental Protection Agency. The involved parties were provided a background package prior to the meeting.

At this meeting the scope of project with probable range of proposed alternatives and schedule were presented. One of the primary purposes was to establish the principal criteria against which corridors would be evaluated. A definition of a purpose and need was proposed as a starting point. Limits of corridor improvements were also discussed to ensure compatibility with purpose and need and with logical termini.

Besides the primary criteria, a list of "fatal flaws" that would render a corridor unacceptable to the County if they could not be avoided were identified. These flaws included:

- Impacts to fens or similar high quality wetlands that cannot be replaced and therefore construction permits would not be issued;
- Direct involvement with CERCLIS (i.e., Superfund) sites due to the high liability potential;
- Impacts to dedicated Illinois Nature Preserves;
- Impacts to threatened and endangered species (particularly federally listed).

6.1.2 Second Scoping Meeting

The second scoping meeting was held on December 1, 1993. Individuals invited to the previous meeting or who previously attended were sent invitations along with the *Corridor Analysis Document* that presented the known options with major impacts. Also in the *Corridor Analysis Document* were preliminary recommendations for dropping corridors because of impacts unacceptable to the County or because the corridor was found not to satisfy the proposed purpose and need for the project. The purpose of the meeting was to develop consensus on the dropping from further evaluation corridors that did not satisfy purpose and need or those corridors that had unacceptable impacts. Those in attendance included representatives from the Illinois Natural History Survey, U.S. Fish and Wildlife Service, Kane County Regional Planning Commission, Illinois Nature Preserves Commission, Chicago Area Transportation Study, U.S. Environmental Protection Agency, Dundee Township Park District, McHenry County Highway Department, Kane County Forest Preserve, N.W. Kane Airport Authority, DuPage County Development Department, Kendall County Highway Department, NIPC, Fox Valley Park District, DuPage County Division of Transportation, and the St. Charles Park District. The background material with invitations was also sent to representatives of the Illinois Environmental Protection Agency, the Illinois Department of Energy and Natural Resources - Hazardous Waste Research & Information Center, Illinois State Water Resources Survey, Division of Water Resources, DuPage County Forest Preserve, Illinois State Geological Survey, Illinois Commerce Commission, U.S. Army Corps of Engineers, and National Park Service.

Besides the fatal flaws discussion from the first scoping meeting, it was established that Kane County could drop a corridor for other impacts if all corridors with similar impacts were also dropped. Other impacts that were deemed unacceptable were major housing displacement and major economic disruption. Reservations about wetland impacts, especially for the CC&P/Stearns Road corridor were expressed by U.S. Fish and Wildlife Service. Since the U.S. Army Corps of Engineers was not represented, a follow up meeting was necessary.

The follow-up meeting was held on January 19, 1994 (minutes of the meeting are presented in Appendix A). Those in attendance included representative from U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers.

The culmination of these efforts was the final *Corridor Analysis Document* which reduced the number of corridors under study to five. The corridors to be advanced were reduced to Bolz Road, CC&P/Stearns Road, Red Gate, C&NW/Dean Street, and Mooseheart/Illinois Route 56. The CC&P/Stearns Road Corridor was kept with the requirement that an extensive hydrology study be undertaken to assess the impacts to the sensitive wetlands in the corridor. To produce conclusive data this study was expected to last a minimum of two years.

6.1.3 Concurrence Point 1 - Purpose and Need

On March 2, 1995 a meeting was held to seek concurrence on the Purpose and Need Statement and to prepare for Concurrence Point 2 by a limited presentation of the corridors still under study. At this time the Purpose and Need presented focused on land use issues and on traffic congestion (see Appendix A for minutes of meeting). Representatives were there from the Illinois Department of Natural Resources - Impact Analysis Section and the Natural Heritage Section, Illinois Historic Preservation Agency, and Pace (the suburban bus operator).

6.1.4 Concurrence Point 2 - Alternatives to be Carried Forward

On April 18, 1995 a meeting was held on Concurrence Point 2. Prior to the meeting an Alternatives Status Report was mailed with the invitation. The meeting opened with a request to those who have not responded to Concurrence Point 1 to please do so. Representatives were there from U.S. Fish and Wildlife Service, Kane County Forest Preserve, Chicago Area Transportation Study, DuPage County Planning Department, Kane County Development Department, Illinois Department of Conservation (currently the Illinois Department of Natural Resources), and Pace.

The alternatives presented included the No-Build, Congestion Management System (CMS), and each of the proposed build alternative corridors.

On April 27, 1995 a follow-up meeting was held with U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (see minutes in Appendix A) to request a formal response.

On July 19, 1995 another meeting was held to attempt to secure closure on concurrence points 1 and 2. This meeting was held after the public meetings of May 1995. In attendance were representatives of CATS, U.S. EPA, Fish and Wildlife Service, Army Corps of Engineers, Pace and the Illinois Department of Conservation. Concurrence was received from U.S. EPA, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service with the caveat that it could be rescinded because of new relevant data.

6.1.5 Technical Advisory Committee and Technical Memorandum

A significant number of comments and concerns raised by Resource Agencies in reviewing the DEIS for the CC&P/Stearns Road Corridor led to the formulation of a Technical Advisory Committee (TAC) by the FHWA to guide and review additional technical studies to be summarized as a Technical Memorandum. The following agencies representatives were solicited for service of the TAC: Kane County, United States Army Corps of Engineers, USEPA, USF&WS, Illinois Department of Natural Resources, Illinois Department of Transportation-Bureau of Design and Environment, Illinois State Geological Survey, Illinois Nature Preserves Commission, and the FHWA. The first TAC meeting was held on July 26, 1999 and focused primarily on the scope and methodologies of additional studies. Subsequent meetings of the TAC were held on September 27, 1999, April 25, 2000, and June 22, 2000. The *Technical Memorandum* was issued to IDOT for review on July 31, 2000 and to Resource Agencies for comment on October 10, 2000. A final TAC meeting was held on January 11, 2001 to discuss comments and concerns on the Technical Memorandum.

Copies of minutes to all of the above noted TAC meetings and comment letters received are included in Appendix 12 of the Final *Technical Memorandum*.

6.1.6 Concurrence Point 3 - Selected Alternative

The Concurrence Point 3 was held on May 17, 2001. After a presentation on the three remaining corridors (Bolz Road, CC&P/Stearns Road, and Illinois 56/Oak Street), the impacts and the proposed mitigation, U.S. Fish and Wildlife Service, U.S. EPA and US Army Corps of Engineers agreed that these three could be the selected alternative.

6.2 Public Involvement

6.2.1 First Series of Public Meetings

In May and June of 1993 shortly after the first scoping meeting, public meetings were held in the South, Central, and Northern Regions. The purpose of the meetings was to introduce the public and officials to the project and solicit their opinions and insights into the potential corridors. There were exhibits, a video explaining the project, and staff available to answer questions. A total of approximately 250, excluding staff associated with the project, signed in.

General concerns were expressed about whether the project or any of the corridors are warranted and questions raised whether there were less intrusive options than building new roads. More specific concerns focused upon intrusion into parklands and impacts to wetlands, as well as displacements.

6.2.2 Second Public Meeting

The second public meeting was held on February 16, 1994 at a location in the Central Region with invitations and publicity distributed throughout the study area. This meeting was held when consideration was being given to dropping corridors from further study. The purpose of this meeting was to present the corridors with their known impacts so the public could comment before finalizing the recommendations of the draft *Corridor Analysis Document*.

In general, a recommendation to discontinue further study of a corridor evoked no negative response. Shortly before the meeting, a press conference was held announcing a new compromise alignment developed outside of the study in lieu of the proposed Red Gate alignment under study. The compromise corridor generated new opposition from those who lived along the compromise alignment. The major proponents of the C&NW/Dean Street corridor and the CC&P/Stearns Road corridor were those who lived near the proposed Red Gate corridor. Otherwise, most of the comments were similar to those received in the first public meeting.

6.2.3 Third Series of Public Meetings

The third series of public meetings was held in May of 1995. Separate meetings were held in the North, Central and South Region. A combined total of approximately 1400 signed the attendance sheets with 1100 attending the Central Region location. At these meetings only the five corridors that were being advanced for further study were presented.

The major controversy in the South Region focused on the Mooseheart alignment. Much of the opposition to this alignment focused on possible impacts to the Red Oak Nature Center. The Bolz Road corridor did not evoke much response.

In the Central Region the opposition was strongly focused on the Red Gate Road alignment variations and the impacts to adjoining houses, forest preserves and community cohesion. C&NW/Dean Street also generated opposition from those who lived nearby.

6.2.4 Public Hearings

A series of public hearings was held in July 1998 at four locations within Kane County. The hearing locations were selected to ensure that each of the North, Central, and South Regions was represented, and that persons, businesses, and institutions potentially affected by each proposed bridge corridor had reasonable access to the public hearing process. A mass mailing was used to increase public awareness of the hearing, besides radio and newspaper coverage. Display advertisements were purchased in many of the local newspapers, including the Spanish language newspaper - *El Conquistador*. The hearings were held in an "open house" format, with no formal presentation given. Rather, exhibits related to the overall project and to each individual corridor were displayed, with consultants on hand to answer questions as the attendees reviewed the

exhibits. Only the five corridors that were being advanced for further study were represented at the hearings.

At each hearing, sign-in sheets were used to record the name, address, and affiliation (if any) of each person attending. A total of 1,081 persons signed in at the four hearings, with the largest number these (662) attending the Wredling School hearing. Pre-printed comment forms were available for attendees who wished to submit written comments, and court reporters were on hand to transcribe oral comments.

The North Region hearing was held at the Randall Oaks Golf Club in West Dundee. Much of the commentary at this hearing focused on the Bolz Road Corridor, with the majority of comments in opposition to the corridor for a variety of reasons.

In the Central Region, hearings were held at Wredling School in South Elgin and at the Geneva Public Works Building. These hearings were marked by strong support for the CC&P/Stearns Road Corridor for its potential to alleviate existing traffic congestion, and by strong opposition to the Red Gate Road Corridor for its potential impacts on the natural environment and on established communities and historic properties. The comments were generally in support of the C&NW/Dean Street Corridor for its potential to alleviate traffic congestion in downtown St. Charles. The CC&P/Stearns Road Corridor received many comments strongly supporting the bridge as an alternative to the Red Gate Corridor. Much of the support, however, for the C&NW/Dean Street and CC&P/Stearns Road corridors appears to have come from persons expressing opposition to the Red Gate Road Corridor.

The South Region Hearing was held at Mooseheart Academy in North Aurora. Comments at this hearing were focused almost exclusively on the Illinois Route 56/Oak Street Corridor. A consistent theme of these comments was concern for the road's impact on the North Aurora community.

Details of the public hearings, including reproductions of each sign-in sheet, as well as each written and oral comment, can be found in Appendix A - Record of Public Hearings. Representative comments and responses to those comments can be found in Appendix A.

6.2.5 Environmental Justice

The Fox River Bridges have been under continuous study since the 1989.

First, as part of a feasibility study to identify potential bridge sites conducted by the Chicago Area Transportation (CATS) in cooperation and coordination with all political leaders of Kane County. Under this feasibility study a regular news article was published and widely distributed. Also, many published public meetings were held in conjunction with this study.

Second, the Fox River Bridges were studied as part of a corridor document developed in 1992.

Four widely advertised public meetings were held close to the respective corridors, which were well attended by elected officials and the public at large. A total of approximately 430 people attended the public meetings. In addition, two special meetings were held with Kane County Board members, which were open to the public and which received extensive media coverage. One result of this study was that the Summit Street Corridor in City of Elgin was dropped from further consideration due to the unacceptable impacts to a minority population and a historic neighborhood.

Third, as part of the EIS development since 1995, a mailing list of over 1100 people has been developed and three public meetings were held at the respective corridors with wide media coverage. The attendance at one of these public meetings was over 1100 people. A newsletter was developed, over a three year period, three times approximately 1000 copies were sent to interested parties. In addition, this project has been discussed at various village board meetings and media coverage has been extensive. Also, numerous individuals and businesses were individually contacted and the details of the projects were discussed with them.

Finally, as part of the DEIS public release, an advertisement regarding upcoming public hearings was advertised twice in July of 1998 in "El Conquistador", a local Spanish newspaper, to inform the minority population of the public hearing. A postcard informing the public of the upcoming public hearings were sent to people on the mailing list. Reviews of attendees indicate many diverse surnames including Spanish surnames (see Appendix A).

All the public meetings or hearings were accessible to the physically disabled and Telephone Deafness Device (TDD) phone numbers were provided.

6.3 Recreational Land Coordination - Section 4(f)

The primary entities involved in the recreational land coordination for this project were: the Kane County Forest Preserve District, the Dundee Township Park District, the St. Charles Park District and the Fox Valley Park District. Other participants included the DuPage County Forest Preserve District, the Illinois Department of Natural Resources and the National Park Service. All of these entities were invited to each of the scoping meetings and were invited to participate in the Concurrence Point process. The documentation for this involvement is included in Volume 3 - Coordination Documentation - in the section on 4(f) properties and in the sections on scoping and concurrence points.

The Kane County Forest Preserve position has been that lands affected are all important and they would rather not see impacts to any of their properties. Also, the Fox River is a significant natural resource (aside: many of the Kane County Forest Preserves border the Fox River) and any degradation as a result of the proposed crossings is a significant loss (see letter of May 15, 1995 in Volume 3). They also stated that the Fox River Bluff West (a.k.a Red Gate) Forest Preserve was not acquired with the intent of providing a future roadway right-of-way. When asked about

possible trade-offs in impacts from alternate alignments for the Red Gate corridor, they have remained noncommittal.

The Dundee Township Park District has been involved in extensive coordination because of the potential impacts to the Hickory Hills site along the Bolz Road corridor. Their position is that any impacts to the site (purchased with Land and Water Conservation Fund monies) cannot be mitigated; an alternate site must be developed (see letters of December 11 and December 20, 1995 in Volume 3). An intergovernmental agreement has been reached between Kane County and the Dundee Township Park District (see coordination documentation) agreeing to the alternate site for mitigation that should satisfy the terms of conversion of Land and Water Conservation property. The Illinois Department of Natural Resources (IDNR) will need to approve the agreement when it is time to implement it. The IDNR has indicated that if the agreement meets the terms of the Land and Water Conservation fund for conversion and is acceptable to the Dundee Township Park District, they will approve it as administrator for the Land and Water Conservation Fund.

The St. Charles Park District involvement focuses on Pottawatomie Park. On May 13, 1997, the St. Charles Park District Board of Commissioners passed a motion condemning the proposed C&NW/Dean Street crossing.

Participation of the Fox Valley Park District focused on their opposition to the Mooseheart alignment for its potential impacts to the Red Oak Nature Center. They have also noted that development in Highlands Park along Oak Street was intentionally set back to allow a potential widening of Oak Street (see letter of October 3, 1995 in Volume 3). The implication of this is that some limited roadway encroachment into the park was planned for and therefore is not an adverse impact to the park.

The DuPage County Forest Preserve District and the Illinois Department of Natural Resources are actively involved because of potential impacts from the CC&P/Stearns Road corridor on the Tri-County State Park and Pratt's Wayne Woods. The Department of Natural Resources is planning additional development of the Park with the addition of their Region 2 offices, a visitors' center and trail development. The proposed CC&P/Stearns Road will have no effect on the center because it terminates east of it (Record of Conversation -April 4, 1997 in Volume 3). Coordination with IDNR will be maintained as the plans develop because of the involvement with the Tri-County State Park.

The National Park Service was copied on the material developed as part of the project scoping and concurrent NEPA/404 process.

6.4 Commitments

Commitments are measures adopted to minimize harm to the environment. These measures may fall into two classes standard and specific measures. Standard measures are those required by laws, regulations, or policies of jurisdictional government agencies. This class of standard

measures manifests itself as permits and laws. The second class includes specific measures, or other project-specific actions, that have been determined to be necessary, appropriate, or have been agreed to based on discussions with interested parties to address a particular need. These commitments recognize the concerns of groups that may not have regulatory authority in their requests. This class of commitments can include additional coordination as the project develops. The following discussion is concerned with the second class of commitments that Kane County binds themselves to promote this project. The following is a list of commitments.

- As a part of the Congestion Management Study, Pace requested the right to review any proposed plans to ensure compatibility with existing or proposed bus service. When Phase I plans are developed, Pace will be provided copies of the relevant portion for their input.

- Groundwater is shallow and important to the wetlands along the CC&P/Stearns Road corridor east of the Fox River. The roadway ditches, storm sewers and granular backfill along utility corridors will be designed so as not to lower groundwater levels where wetlands may be adversely impacted.

- For all corridors in areas of near surface granular materials, drainage ditch lining shall be used, if drainage ditches are used, to reduce the potential for infiltration of spills and other runoff contaminants. This is not an issue for the Illinois Route 56/Oak Street corridor because the near surface granular materials do not occur.

- Instream work or work that would impact the Fox River will be limited to the dates of June 8 through February 29 of the project year, outside of the spawning season for the greater redhorse and the river redhorse for those corridors where this may be relevant, i.e. all corridors except the Bolz Road Corridor, due to the distance where the fish had been and the intervening dams.

- Prior to the start of construction, a population survey of live non-invasive mussel species will be conducted in streams to be crossed. In the event that any live specimens of the elktoe mussel or other non-invasive species are found, a mussel relocation program will be developed in consultation with the Illinois Department of Natural Resources.

- As plans for the corridor are developed, ongoing coordination will take place with Pace and Metra to ensure the maximum practicable inclusion of Travel Demand Reduction (TDR), Operational Management Strategies (OMS), and mass transit extensions and improvements in the project.

- A system of Stormwater Management ponds will be built to comply with, as a minimum, the Kane County Stormwater Management Ordinance and where feasible, to extend residence time to promote sediment removal and dilute the release of the accumulated deicing agencies. Ponds will be lined to diminish interaction with groundwater.

- Kane County in cooperation with the Kane County Forest Preserve will implement the CC&P/Stearns Road Environmental Corridor Plan. The steps that the County will pursue in the implementation are:

  - Generate a Plan and vision statement
  - Land Acquisition
  - Immediate Management Assistance for Acquired Properties
  - Construction
  - Interim Management
  - Transfer properties to Kane County Forest Preserve District

- Wetland mitigation for direct impacts will be provided in accordance with the more stringent of the USACOE and IDNR requirements and policies.

- Erosion and Sediment Control during construction shall comply with the requirements of the Kane County Stormwater Ordinance. The construction plans for each phase shall have the Erosion and Sediment control plans reviewed by the Kane County Nature Resources Department.

- Compensatory Storage for fill within the regulatory floodplain will be provided in accordance with the more stringent requirements of the Kane County Countywide Stormwater Ordinance or IDNR-OWR policies.

- Coordination will be carried out with the SHPO prior to the construction of any corridor where potential archaeological sites exist to allow the documentation of the site.

- Coordination will be carried out with the SHPO as plans for the Bolz Road Corridor are developed to allow coordination on minimizing the impacts to the Perry Lathrop property.

- For the CC&P/Stearns Road Corridor, coordination will be maintained throughout the development of the project with the Kane County Preserve, Illinois Department of Natural Resources and the DuPage County Forest Preserve for the development of bicycle routes.

- The Illinois Department of Natural Resources will be contacted for LAWCON processing prior to the conversion of the Hickory Hills site to proposed roadway usage.

6.4.1 ENVIRONMENTAL JUSTICE

Kane County is committed to assign a specific person, fluent in Spanish, as a liaison person to work with the minority population to help communicate their special needs to Kane County. In addition, Kane County will assign a specific person as liaison person to work with the businesses along the CCP/Stearns Road Corridor to help facilitate their special needs.

The following strategies will be implemented to help ensure continuous employment of the minority population impacted by the construction of the preferred alignment in the CCP/Stearns Road Corridor.

Minimization of employment impacts

- Transitional Purchase of needed Right-Of-Way from Midwest Groundcovers: The purchase and taking of needed right-of-way by Kane County will span at a minimum one growing season. This will allow Midwest Groundcovers the opportunity to relocate to a new location with the least impact to their employees.

- Continue to allow Midwest Groundcovers access to Brewster Creek and as a reasonable water supply, so their remaining nursery can stay viable. This access should continue as long as remaining land is being used as a nursery and without adverse impacts to the Brewster Creek eco system.

- Assist the Midwest Groundcovers in relocating to the new location with the least impact to their continuous business and employees.

Mitigation of employment impacts.

- Kane County's liaison will help to coordinate with potential employers to hire any displaced Midwest Groundcovers' employees and to identify any special requirements of the employees for maintaining their employment

- Assist in funding public transportation; such as the PACE vanpool program, to provide transportation from downtown Elgin to the new Groundcovers for a period of two years to help facilitate their move.

CHAPTER SEVEN
LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM THE FINAL ENVIRONMENTAL IMPACT STATEMENT WAS SENT

7.1 Federal Agencies

U.S. Environmental Protection Agency, Region V
Advisory Council on Historic Preservation
U.S. Department of Agriculture, including
    Kane-DuPage Soil Water Conservation District
U.S. Department of Interior, including
    Fish & Wildlife Service, Chicago Metro Office
U.S. Department of Transportation
    Federal Railroad Administration
U.S. Army Corps of Engineers

7.2 State Agencies

Illinois Department of Natural Resources, including
    Office of Mines and Minerals
    Office of Water Resources
Illinois State Geological Survey
Illinois Natural History Survey
Illinois State Water Survey
Illinois Nature Preserves Commission
Illinois Environmental Protection Agency
Illinois Historic Preservation Agency
Illinois Transportation Archaeological Research Program
Illinois State Clearinghouse
Illinois State Library

7.3 Local Agencies

Planning Agencies

Chicago Area Transportation Study
Northeastern Illinois Planning Commission

Municipalities

Village of Algonquin
City of Aurora
Village of Barrington Hills
Village of Bartlett
Village of Carpentersville
Village of North Aurora
Village of South Elgin
Village of Wayne

Library Districts

Algonquin Area Public Library
Aurora City Public Library
Barrington Public Library
Dundee Township Public Library
Messenger Library, North Aurora
St. Charles Public Library

Counties/County Engineers

DuPage County Board
DuPage County Division of Transportation

Transit Agencies

METRA
Pace
Regional Transportation Authority

Forest Preserves and Park Districts

DuPage County Forest Preserve
Kane County Forest Preserve District
Dundee Township Park District
Fox Valley Park District
St. Charles Park District

Townships

Aurora Township
Batavia Township
Dundee Township
Elgin Township
St. Charles Township

7.4 Others

Environmental Law and Policy Center
Burlington Northern Santa Fe Railroad
Canadian National/ Illinois Central Railroad
Union Pacific Railroad
Lee Barrett
Billita Jacobsen
Friends of the Fox River
Openlands Project

CHAPTER EIGHT
LIST OF PREPARERS

The persons listed below were responsible for preparing this Environmental Impact Statement (EIS), technical reports, or background studies relevant thereto.

FEDERAL HIGHWAY ADMINISTRATION

Name	Qualifications	Primary Responsibilities
Dennis W. Johnson	Environmental Engineer, FHWA, Region 5 Illinois Division	FHWA review (until 1998)
J.D. Stokes	Chicago Metro Office	FHWA review (1999 -2000)
Kevin McLaury	Engineering Team Leader	FHWA review
J.D. Stevenson	Environmental Engineer	FHWA review (2001)
John G. Rohlf	Engineering Team Leader	FHWA review (1998)
J. P. Varma	Transportation Engineer	FHWA review

KANE COUNTY DIVISION OF TRANSPORTATION

Name	Qualifications	Primary Responsibilities
Jeffrey Dailey	Director, Kane County, Division of Transportation	Kane County review
M.Mark Bagherpour	B.S. Civil Engineering; Christopher B. Burke Engineering, Ltd (CBBEL). From 2000 to present	Technical Administration, general content, review and project coordinator

IDOT DISTRICT 1

Bureau of Local Roads and Streets

Name	Qualifications	Primary Responsibilities
Nancy L. Magnus	IDOT, Bureau Chief, Bureau of Local Roads and Streets	Project Management and coordination
M. Mark Bagherpour	BSCE, Federal Aid Program Engineer Until 2000	Project management, general content and coordination

IDOT CENTRAL OFFICE

Bureau of Design and Environment

Name	Qualifications	Primary Responsibilities
Kathleen S. Ames	M.S., Environmental Engineering; B.A., Biology; IDOT, 1973 to present	General content and impact review
Michael Bruns	B.S., Thermal and Environmental Engineering; IDOT, 1972 to present	Noise analysis review
Susan E. Dees	B.S., Zoology; IDOT, 1994 to present; 5 years prior biological/environmental experience	Natural resources coordination, analysis and review
Amy S. Karhliker	B.A., Anthropology; IDOT, 1996 to present	Surface water, water quality, floodplains, contributing review
Richard J. Nowack	B.S., Biology; Registered Landscape Architect, IDOT, 1975 to present	Natural resources coordination, analysis and review
Charles Perino	Ph.D., Plant Taxonomy, M.S., Plant Taxonomy; B.S., Geology; IDOT, 1982 to present; 10 years prior biological/environmental experience	Wetlands resources coordination, analysis and review

Name	Qualifications	Primary Responsibilities
John L. Rowley	B.S., Agriculture Education; IDOT, 1983 to present; 25 years prior agricultural experience	Agriculture coordination, analysis and review
Barbara H. Stevens	M.A., Economics; IDOT, 1979 to present	Socioeconomic impact, analysis and review.
John A. Walthall	Ph.D., Archaeology; M.A., Anthropology; B.A., Anthropology; IDOT, 1978 to present; 12 years prior archaeological experience	Cultural resources coordination, analysis and review
John R. Washburn	M.A., Environmental Science; B.A. and B.S., Geology; IDOT, 1968 to present	Special Waste, Geology and Hydrogeology, analysis and review
Walt Zyznieuski	M.A., Environmental Studies; IDOT, 1994 to present, 14 years prior environmental experience	Air quality analysis review

IDOT DISTRICT 1

Bureau of Programming

Name	Qualifications	Primary Responsibilities
William M. Barbel	Environmentalist, Civil Engineering; IDOT, 1964 to 1998	General content environmental impact and mitigation policy and procedures, review and coordination, until 1999
David A. Niemann	Ph.D., Botany (Plant Ecology) M.S., Botany; B.S., Ornamental Horticulture; IDOT, 1989 to present; 2 years prior botanical/environmental experience	Environmental studies, natural resource coordination, analysis and review, hazardous waste From 1999
Michelle Mahoney	B.S., Civil Engineering; IDOT, 1992 to 1999	Air quality analysis and noise analysis review

Name	Qualifications	Primary Responsibilities
Rocco Zucchero	B.S., Organization, Leadership & Supervision; IDOT, 1992 to 1998	Historic preservation coordination, analysis and review

CONSULTANTS

Name	Qualifications	Primary Responsibilities
M. Michael Okrent	B.S., Civil Engineering; M.S., Transportation; Alfred Benesch & Company, 1993 to present; 19 years prior engineering experience	Consultant - project manager, general content and noise impact analysis particularly the CC&P/Stearns Road and C&NW/Dean corridors
Elizabeth A. Challinor	B.A., Anthropology; Alfred Benesch & Company, 1993 to 1998; 5 years prior environmental experience	Cultural resources, general report writing and coordination
Linda Saltiel	B.S., Civil Engineering; Alfred Benesch & Company, 1995 to 1998	Air quality analysis
Danika Erickson	B.S., Environmental Planning; Alfred Benesch & Company, 1999 to 2001; 3 years prior environmental experience	General report writing and coordination
Wayne Swafford	B.S., Civil Engineering; M.S. Civil Engineering, Teng & Associates, Inc.; 1988 to 1998: 12 years prior experience	Project manager, IL Rte. 56/Oak Street corridor
Yong Kim	B.S., Civil Engineering; Teng & Associates, Inc., 1991 to present; 24 years prior experience	Project engineer, Alternatives Analysis Rte. 56/Oak Street Corridor
Kevin Nelson	B.S., Civil Engineering; Crawford, Murphy & Tilly, Inc., 1983 to present	Project manager, Red Gate corridor
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Name	Qualifications	Primary Responsibilities
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Eric Grzeskowiak	B.S., Civil Engineering; McDonough Associates, Inc., 1995 to present	Project Engineer, Bolz Road Corridor
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Michael R. Goldberg	B.S., Urban Geography, M.S. Urban and Regional Planning; Planning Resources Inc.,	Socioeconomic Analysis Report
Richard G. Berggreen	B.S. and M.S., Geology; STS Consultants, 1987 to present	Project Principal for wetland, biological resources, water quality and hazardous materials issues
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Craig S. Rawlinson	B.S., Geology, M.S. Engineering Geology; STS Consultants 1991 to present	Project Manager for Stearns Corridor groundwater modeling
Cynthia Bonczkiewicz	B.S., Physical Geography, M.S. Civil Engineering; STS Consultants, 1977 to present	Project Coordinator and summaries of biological resources issues

Name	Qualifications	Primary Responsibilities
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Galina V. Georgiew	B.S. and M.S., Geological Engineering; STS Consultants, 1989 to present	Consultant, Hazardous materials technical reports, all corridors
Robin C. DiNardo	B.S., Chemistry; M.S. Environmental Science; STS Consultants, 1993 to present	Water quality technical report, all corridors
Linda L. Huff	B.S. Chemical Engineering; M.B.A., President of Huff & Huff, Inc. 1979 to present	Review of Noise Analysis, Bolz Road and IL56/Oak Street Corridor, Editorial review and coordination of water quality issues, salt spray studies - CC&P/Stearns Road Corridor
Michael R. Svehla, Jr.	B.S. Mechanical Engineering, Huff & Huff, Inc. 1991 to present	Noise Analysis, Bolz Road and IL56/Oak Street Corridor
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James C. Novak	B.S., Geography and Environmental Studies; Huff & Huff, Inc., 1997 to present; 6 years prior environmental manager experience	Biological resources, all corridors. Editorial review and coordination of wetlands issues
Amy I. Moon	B.S., Environmental Science; M.S. Biology; Huff & Huff, Inc. 1996 to present	Biological resources, all corridors. Editorial review and coordination of water quality issues
Bruce R. Hensel	B.S., Geosciences, M.S. Geosciences; Natural Resource Technology	Groundwater modelling. CC&P/Stearns Road corridor

Name	Qualifications	Primary Responsibilities
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Kerry Leigh	M.S. Landscape Architecture, Registered Landscape Architect,National Certificate in Horticulture; CBBEL	Developed florsitics studies and assessments of wetlands for CBBEL for the CC&P/Stearns Road Corridor
Darren Olson	B.S. Civil Engineering; CBBEL	Hydraulic and hydrologic studies for CBBEL for the CC&P/Stearns Road Corridor

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CHAPTER TEN
GLOSSARY

This section is presented to aid the nontechnical reader in reviewing this Environmental Impact Statement. Generally, when technical terms are introduced the first time in the document, they are defined. However, the definitions are not repeated with every subsequent usage. While the definitions below are not technical, they will facilitate understanding on the part of the reader.

ADT (Average Daily Traffic) The average traffic volume on a road on a typical day.

Attainment/Nonattainment Indicates whether the U.S. Environmental Protection Agency has determined that an area complies with the NAAQS (see definition).

CATS (Chicago Area Transportation Study) The agency charged with preparing the official traffic projections for the Chicago Metropolitan Area.

CERCLIS (Comprehensive Environmental Response Compensation and Liability Information System) A nationwide inventory of known hazardous waste sites having a high national priority for remediation. Sites on the list are commonly referred to as "Superfund Sites."

Cumulative Impacts See Secondary and Cumulative Impacts

dBA (decibels A-scale weighted) A unit of measurement of noise that corresponds to the sensitivity of the human ear. On federally funded highway project for most outdoor uses when the noise levels approach or exceed a dBA of 67, noise abatement must be evaluated for feasibility and effectiveness.

Environmental Justice A term that is an outgrowth of Civil Rights Protection afforded to Minority and Low Income Populations. As applied in a typical project it means that the project must not adversely affect a disproportionate number of low income or minority groups.

Farmland of Statewide Importance Farmland that is valuable for the production of food, feed, forage, fiber and oilseed crops. This classification indicates land that is not as productive as Prime Farmland (see Prime Farmland).

Floodplain/Floodway The floodplain is the area bordering a stream or river that is on average inundated by water at least on average once every hundred years. The floodway is that portion of the floodplain near the stream or river that must be maintained to prevent a significant increase in floodwater elevation or velocity.

FQI (Floristic Quality Index) An index developed by Wilhelm (1993) to assess the ecological integrity of communities. Measured by performing an inventory of the plant communities in an area. An FQI below 10 indicates an area is considered severely degraded, from 10 to 19.9

indicates some natural character and an FQI of 20 or more indicates natural characteristics. When an FQI of 20 or greater is combined with a Mean C (see definition) of 3.0 or larger, the area represents an environment asset.

INAI (Illinois Natural Area Inventory) Refers to the state inventory of locations with noteworthy natural features. This designation does not imply ownership or special protection by the state.

ISTEA (Intermodal Surface Transportation Efficiency Act of 1991) The federal transportation bill that, among other things, provided the funding for the Fox River Bridge Crossings study.

LUST Leaking Underground Storage Tank

Mean Coefficient of Conservatism (or Mean C) An index of plant communities similar to the FQI, except it places greater importance on native species. See FQI for further application.

NAAQS (National Ambient Air Quality Standards) This is a series of standards set on various air pollutants to protect human health.

NEPA (National Environmental Policy Act of 1969) This law set the national policy requiring a systematic assessment of environmental impacts before committing to a course of action for federal actions.

NIPC (Northeastern Illinois Planning Agency) The agency in charge of compiling existing and preparing projections of socio-economic data for the Chicago area to assist in land use planning. Also reviews federally funded actions for consistency with regional land use plans.

NPDES (National Pollution Discharge Elimination System) The federal system designed to protect water quality by regulating discharges to water bodies. It includes industrial and construction discharges.

NRHP (National Register of Historic Places) This is a national register established with the intent of protecting sites of national historic significance.

Prime Farmland Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is also available for that usage (i.e., it excludes urban built up land and water). A classification developed by the U. S. Department of Agriculture.

RCRA (Resource Conservation and Recovery Act) A national act that established a program for controlling hazardous waste generation, storage, treatment and disposal.

ROD (Record of Decision) The official Federal Highway Administration (FHWA) document prepared after the completion of an Environmental Impact Statement that: presents the basis for the selected alternative; summarizes any mitigation measures that will be incorporated into the project; and documents any required Section 4(f) approval.

SHPO (State Historic Preservation Officer) The State official in charge of protecting sites of historic significance. If a project potentially affects a site on the NRHP (see definition) or that may be potentially eligible for inclusion, the SHPO will be advised to see that all reasonable and prudent measures are undertaken to protect the historic significance of the site.

Secondary and Cumulative Impacts Two separate types of impacts that may occur as indirect impacts of the proposed project. Secondary Impacts are those reasonable foreseeable nonhighway actions that result in response to the project. For example, a roadway project may change land use to a more intensive use, such as commercial development, in response to improved access. Cumulative impacts are the total impacts on specific environmental resources anticipated as a result of the proposed project and other developments in the area. Cumulative impacts can cause what seems to be a minor impact to become part of a significant impact. For example, salt from the proposed roadway will be additive with salt from nearby developments in its impact on aquatic wildlife.

Section 4(f) Refers to the special review process and protection afforded to publicly owned parks, recreation areas, or wildlife and waterfowl refuge. It also applies to land of an historic site of national, state or local significance. Named after Section 4(f) of the Department of Transportation Act of 1966. This process and protection is currently contained in 49 USC 303.

Special Lands For this project the term refers to lands that are protected as publicly owned parks, recreation areas, or wildlife and waterfowl refuge. It also refers to other lands that may have involved the use of Land and Water Conservation Funds (LAWCON) in their purchase or development.

SRA (Strategic Regional Arterial)A system of designated roads to supplement the capacity of the freeway system. The system was developed with the understanding that major expansions of the freeway system in the Chicago Metropolitan area are infeasible and that the capacity of the arterial roadway system should be maximized.

UST Underground Storage Tank

Wetlands Land that is saturated by surface or groundwater below the surface at a frequency and duration to support vegetation adapted to saturated soils. Also typically includes hydric soils (soils that are usually wet and where there is little or no free oxygen).