

ST. CROIX RIVER CROSSING PROJECT SUPPLEMENTAL FINAL EIS
CHAPTER 13
POTENTIAL INDIRECT EFFECTS ANALYSIS

13.0 INTRODUCTION

This chapter summarizes the anticipated potential indirect effects (also referred to as “secondary” effects) of induced land development and subsequent effects resulting from the Preferred Alternative. The Council on Environmental Quality (CEQ) has defined direct and indirect effects as follows (40 CFR 1508.7):

“**Direct effects** are caused by the action and occur at the same time and place.”

“**Indirect effects** are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”

Potential indirect effects were discussed concurrently with direct effects throughout the SDEIS. Comments received on the SDEIS recommended that the discussion of indirect effects be aggregated in a single chapter to facilitate a comprehensive discussion of the issue. Therefore, this new chapter has been developed following those recommendations.

Cumulative effects, that is, accumulating effects occurring from not only the proposed project, but other public and private actions as well, are discussed in Chapter 14 of this SFEIS.

Potential Indirect Effects Related to Land Development

Analysis of potential indirect land use effects requires the determination of reasonably foreseeable land use changes that would result from the project. While specific quantitative methodologies have been adopted for estimating a number of direct project impacts (e.g. traffic noise analysis, air quality analysis) neither FHWA, Mn/DOT nor WisDOT have adopted specific quantitative methodologies for the assessment of indirect impacts. Research to date has indicated that no empirically valid and reliable measure of anticipated indirect impacts exists.¹ Rather, analysis of indirect impacts requires a rational assessment using a variety of qualitative and quantitative techniques. The focus of this analysis is to examine what is anticipated to occur based on known information and data, while avoiding drawing speculative conclusions. Geographically, the potential area for indirect land use effects associated with the project was defined as the area receiving regional mobility improvements as a result of the project, defined as

¹ Wisconsin Dept. of Transportation Division of Infrastructure Development Bureau of Equity and Environmental Services, *Report on the US Highway 12 Memorandum of Agreement (MOA) for Secondary Land Use Impact Methodology*, November 10, 2004.

the “area of influence.” For the purposes of the analysis conducted for the SDEIS, the “area of influence” was defined by the geographic extent to which improvements to congestion levels and/or mobility could be measured by the travel demand model (see Chapter 4). This area included Washington County (Minnesota), St. Croix County, southern Polk County and northern Pierce County (Wisconsin). Figure 13-1 illustrates the geographic extent of the “area of influence.” The analysis examined potential effects through 2030, as this is the timeframe for which mobility improvements can be determined through the travel demand model.

Questions addressed by the indirect effects analysis include the following:

- Would the project influence the types of development (residential, commercial, industrial) anticipated within the area of influence?
- Would the project influence the amount of development anticipated in the area of influence?
- Would the project influence the location of development anticipated in the area of influence?
- Would the project influence the timing of development anticipated in the area of influence?
- How does the type, amount and timing of development affect natural, cultural, social and economic resources in the area of influence?
- What are the factors that influence the beneficial and adverse qualities of these effects?

Data for this analysis was gathered from county comprehensive plans, local comprehensive plans, the Wisconsin Department of Administration and local government records. Quality of this data was limited by differing dates of county comprehensive plans and differing dates of background data as well as record keeping for building permit activity. Summaries of this data can be found in Chapters 5 (Social, Relocation and Economic Impacts) and 6 (Land Use Impacts) of the SDEIS. Specific data collected included the following:

- Existing and future land use
- Existing population and employment, future population and employment estimates
- Growth management strategies from local plans
- Land use regulation and ordinances such as zoning

Both quantitative and qualitative methods were used to evaluate the above questions. Specific methodologies used are discussed in each section below.

13.1 INFORMATION FROM THE SDEIS THAT REMAINS UNCHANGED

The following summary of potential indirect effects has not changed from the analysis conducted for the SDEIS. However, the presentation of this material has been revised to provide greater clarity.

13.1.1 Population and Land Use Trends

Historic (1970-2000) population counts for Washington County, Minnesota, and St. Croix County, Wisconsin, as well as adjacent counties, are shown in Table 13-1. County populations have been increasing during each decade with growth occurring at a substantially higher rate between 1990 and 2000 for all five counties. Recent 2004 population estimates by the U.S. Census Bureau indicate similar growth for the 2000-2010 decade for Chisago, Polk and St. Croix counties and potentially declining rates in Washington and Pierce counties.

**TABLE 13-1
HISTORIC POPULATION GROWTH, MINNESOTA AND WISCONSIN COUNTIES**

	1980 Total	Population Change since 1970	1990 Total	Population Change since 1980	2000 Total	Population Change since 1990	2004 Estimate*	Population Change since 2000*
Washington	113,571	30,263	145,896	32,325	201,130	55,234	210,270	9,140
Chisago	25,717	8,225	30,521	4,804	41,101	10,580	48,349	7,248
Polk	32,351	5,685	34,773	2,422	41,319	6,546	43,870	2,551
Pierce	31,149	4,497	32,765	1,616	36,804	4,039	38,615	1,811
St. Croix	43,262	8,908	50,251	7,137	63,155	12,904	68,122	4,967

Source: U.S. Census Bureau

*New information since publication of Supplemental Draft EIS.

Numbers of housing units constructed within each county (see Table 13-2) show a similar pattern of increases with substantially more housing units constructed between 1990 and 2000 than in previous decades.

**TABLE 13-2
HOUSING UNITS – YEAR STRUCTURE BUILT**

Geographic Area	Total Housing Units	Built Prior to 1970	Built 1970 – 1979	Built 1980 – 1989	Built 1990 – March 2000
Washington County, Minnesota	74,462	19,822	13,825	13,715	24,100
St. Croix County, Wisconsin	23,410	8,540	4,690	3,912	6,268

Source: 2000 Census – U.S. Census Bureau

Further, as shown in Table 13-3, residential growth in Washington and St. Croix counties is reflected in the conversion of vacant or agricultural land to residential use during the same time period.

**TABLE 13-3
COUNTY LAND USE BY PERCENT OF TOTAL AREA**

	1970		1973		1990		1993		1997	
	Acres	%								
Washington County, Minnesota ⁽¹⁾										
Vacant and Agricultural	209,992	78%	--	--	194,511	72%	--	--	165,931	62%
Residential	19,833	7%	--	--	31,483	12%	--	--	45,089	17%
St. Croix County, Wisconsin ⁽²⁾										
Vacant and Agricultural	--	--	353,309	75%	--	--	327,691	70%	--	--
Residential	--	--	13,664	3%	--	--	26,112	6%	--	--

⁽¹⁾ Source: *Washington County Comprehensive Plan* (1997 update), Metropolitan Council GIS (1997 data).

⁽²⁾ Source: *St. Croix County Development Management Plan* (March 21, 2000).

Demographers in Minnesota and Wisconsin expect these population trends in Washington and St. Croix counties to continue into the future as indicated in Table 13-4.

**TABLE 13-4
FUTURE POPULATION GROWTH BY COUNTY**

County	Population 2000	Future ⁽¹⁾ Population 2030	Change 2000-2030	Households 2000	Future Households 2030	Change 2000-2030
Chisago (MN)	41,101	69,520	28,419	14,517	27,620	13,103
Washington (MN)	201,130	344,280	143,150	71,462	138,680	67,218
Polk (WI)	41,319	52,257	10,938	16,254	22,803	6,549
St. Croix (WI)	63,155	106,026	42,871	23,410	42,799	19,389
Pierce (WI)	36,804	45,850	9,046	13,015	17,891	4,876

⁽¹⁾ Data sources differ: Metropolitan Council prepares forecasts of population for Washington County. Polk, Pierce and St. Croix County population forecasts were released by the Wisconsin Department of Administration in January of 2004. Chisago County projections prepared by State Demographic Center, MN Planning. Census data was used for population and household counts in 2000.

Additional discussion of population and land use trends can be found in Chapter 6 of the SDEIS.

13.1.2 Factors Affecting Induced Land Use Change

Regional transportation facilities have the ability to influence land use through improved accessibility, improved travel times to key destinations and controlled access. These factors can influence the type, location and timing of land use changes. However, a predictive quantitative model for estimating how these factors would specifically influence land use has not been developed, largely due to the complexity of overall factors that influence land use development. In addition to improved accessibility to transportation facilities, other factors include:

- **The state of the regional economy** – economic demand creating new jobs, household formation and home construction, financing, business location decisions, perception of available work force, suppliers and local markets, and property values;
- **Location attractiveness** – ease of access to jobs, shopping, services; natural amenities (physical features); ‘quality of life’ factors (schools, parks/recreational facilities, community identity); community character;
- **Price of land and housing**
- **Availability of developable land** – absence of physical barriers and a sufficient supply of willing sellers and/or area vacancy rates; absorption and backlog of existing housing/commercial space;
- **Local political/regulatory conditions** – taxes on business, property, sales; development incentives (such as tax abatement); regulatory environment (speed and ease of development review process); and
- **Land use controls** – local zoning and comprehensive plans; land use policies; other local controls such as permitting and nuisance ordinances.²

A recent Twin Cities study by the University of Minnesota Center for Transportation Studies concluded that over a 30-year period, there has been a statistically significant correlation between the locational choice of new housing development and transportation improvements as measured by access to arterial highways. However, the degree of correlation has varied over time, with a correlation coefficient value at its highest (0.38) in the 1980s to a low of 0.04 in the 1990s. (A correlation coefficient of 1.0 signifies a strong relationship between two variables.)³ The same study identified a strong correlation with the location of a town, village or city within the 24-county study area to the amount of housing construction.

A separate study by Robert Cervero in 2003⁴ demonstrated the correlation between increased travel speed and reduced trip time and development of all types (single family, multi-family, office, retail and industrial uses).

² These factors were listed as contributors to development trends, in addition to transportation access, in the NCHRP report, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, TRB 2002, page 59.

³ This study was titled *Highway Improvements and Land Development Patterns in the Greater Twin Cities Area, 1970-1997: Measuring the Connections*, published by the Center for Transportation Studies in 2002. It compared building permit data against accessibility to arterial highways in 241 Minor Civil Divisions (MCDs) in 24 counties in the greater metro area.

⁴ Cervero, Robert. “Road Expansion, Urban Growth, and Induced Travel- A Path Analysis.” *Journal of the American Planning Association*, (2003) 69 (2), 145-163.

These studies demonstrate that transportation facilities certainly influence the type, amount, timing and location of development; however, they also show that transportation facilities are not the sole factor, or even the major factor, influencing land development. Further, while statistical correlations are beginning to be understood, these studies have not resulted in a quantitative methodology for predicting the influence of a specific transportation facility or a proposed transportation project on development.

13.1.2.1 Discussions with Local Government and Planning Officials Regarding Land Use Trends

The analysis presented in the following sections is based on multiple formal and informal discussions in 2004 with local government and planning officials. Planners, town and village clerks and other local officials from communities in Washington County and St. Croix County were invited to participate in a meeting to discuss current and future land use patterns, to facilitate data collection on local building activity and to serve as a forum to discuss the proposed new river crossing's influence on these trends and patterns. The meeting was held on February 19, 2004 at the St. Croix County Government Center.

Discussion of Minneapolis/St. Paul metro area growth trends affirmed patterns of growth on the outer edges of the 13-county area, including Polk, Pierce and St. Croix counties in Wisconsin. While building permit data collected from the U.S. Census shows that the majority of building activity (78.4 percent of new housing starts) was undertaken within the seven-county area, which includes Washington County, a growing proportion was occurring in the remaining five "collar" counties, which includes the three Wisconsin counties mentioned above. Each community represented gave a report on rates of building permit issuance within their boundaries. Wisconsin communities noted steady rates of growth over the last few years, whereas Minnesota communities had a wide diversity of experience, from relatively rapid growth (Baytown Township), steady growth (e.g., May Township) and static/limited growth (Bayport). Information provided by the communities is summarized in Table 13-5.

While discussing the proposed river crossing's influence, meeting participants observed that given the existing area growth rates, it was not likely that the bridge would create a new 'population explosion' in St. Croix County. It was agreed that the bridge could organize or direct growth around access locations in towns, villages and cities. Some officials noted that the greatest influence over growth and development in western Wisconsin comes from the relative affordability of land and development costs in St. Croix County compared to Minnesota communities. Regardless, local land use plans and ordinances provide opportunities for growth to occur in these areas.

Most participants also agreed that improved mobility due to the proposed project may influence growth beyond the project construction limits, but whether there is a direct causal relationship remains unclear.

**TABLE 13-5
RESIDENTIAL BUILDING PERMIT ACTIVITY 1995 TO 2003,
SAMPLING OF ST. CROIX COUNTY, WISCONSIN AND WASHINGTON COUNTY, MINNESOTA COMMUNITIES**

Municipality/ Location	Number of Residential Units Permitted by Year								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Wisconsin									
Town of Somerset Population (2003): 2,957	N/A	N/A	N/A	N/A	N/A	30+ (data incomplete)	88	73	92
Village of Somerset Population (2003): 1,874	5	15	14	18	23	20	93	74	65
City of New Richmond Population (2003): 6,952	76	90	52	183	94	60	165	166	216
Town of St. Joseph Population: 3,600	29	26	26	46	37	39	28	26	36
City of Hudson Population: 11,510	133	151	159	190	272	254	272	235	263
Village of Roberts Population: 1,230	0	2	1	0	0	25	69	74	46
Minnesota									
May Township ⁽¹⁾ Population: 2,928	18	18	18	18	18	18	21	9	18
Marine on St. Croix Population: 602	N/A	N/A	N/A	N/A	N/A	N/A	5	1	6
New Scandia Township Population: 3,692	N/A	N/A	N/A	N/A	28	21	30	33	33
City of Afton Population: 2,839	N/A	N/A	10	9	N/A	N/A	N/A	14	15

Source: Data reported by Cities, Villages and Town to SRF Consulting Group, 2003.

N/A = Not Available

⁽¹⁾ This is an average number of permits. Data was not more specific.

TABLE 13-5 continued
BUILDING PERMIT ACTIVITY 1995 TO 2003, WISCONSIN AND MINNESOTA COMMUNITIES

Municipality/ Location	Number of Residential Units Permitted by Year								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Minnesota									
West Lakeland Township Population: 3,547	43	80	57	89	81	47	36	23	17
Stillwater Township Population: 2,553	N/A	N/A	N/A	N/A	N/A	N/A	9	5	5
City of Bayport Population: 3,162	N/A	N/A	N/A	N/A	N/A	N/A	3	4	4
Baytown Township Population: 1,533	N/A	N/A	N/A	N/A	N/A	N/A	1	1	1
City of Oak Park Heights Population: 3,957	N/A	N/A	N/A	N/A	N/A	N/A	0	0	8
City of Stillwater Population: 15,143	N/A	N/A	N/A	N/A	N/A	N/A	214	276	91
City of Grant Population: 4,026	N/A	N/A	N/A	N/A	N/A	N/A	12	10	4

Source: Data reported by Cities, Villages and Town to SRF Consulting Group, 2003.
N/A = Not Available

13.1.2.2 Effects of Reduced Accessibility on Residential Growth

The *St. Croix County Development and Management Plan* (adopted in 2002) assumed that a new river crossing would be constructed by 2020. Therefore, the socioeconomic assumptions used in the travel demand forecasts for the St. Croix River Crossing, which are based in part on that plan, includes the assumption of a new bridge.

A quantitative methodology was developed for this project to estimate the potential growth-related effects of reduced accessibility based on the hypothesis that residential development in 2030 may be at a lesser level if a new bridge is not built and congestion on the existing bridges causes a reduction in accessibility to jobs. Used in the converse, this methodology can help us understand the influence of improved accessibility on residential development.

The “Accessibility-Based Growth Redistribution Scenarios” technique was developed to test the effect of reduced river-crossing access on development levels in the areas of western Wisconsin included in the travel demand forecasting model, including southern Polk County and northern Pierce County, and all of St. Croix County. Since the base year 2030 forecasts are assumed to include the new river crossing, the technique needed to work from the premise that growth would be lower if the bridge was not built (instead of the more-intuitive analysis of increasing development due to increasing accessibility).

A detailed discussion of the methodology can be found in Section 6.2.2.3 of the SDEIS. This discussion cautions that the methodology assumes a fully elastic relationship between development location and access to jobs, which is known not to be statistically valid based on the research discussed in Section 13.1.2 above. Therefore, to ascertain the probable, or likely, influence on land development, the results of this methodology must be considered in this context. Although research to date does not clearly state an exact proportional reduction, the correlation results of the 2002 Twin Cities Growth Study suggest a much lower portion of the results may be appropriate.

Table 13-6 shows the resultant effect of reduced accessibility on the population estimates for the Minnesota and Wisconsin portions of the area of influence⁵. The reduced-accessibility scenario estimates a population shift of 25,587 persons from the western Wisconsin portion of the modeling area to Minnesota assuming the fully elastic relationship between travel time to work and location of residence. The year 2030 population estimate for the Wisconsin portion of the travel demand model was 167,200 persons, thereby reducing the estimated year 2030 population under this scenario to 141,613 persons. The year 2000 population level used in the travel demand forecasts for the Wisconsin portion of the study area was 95,976 persons.

Figure 13-2 shows the locations where the lack of improved mobility would affect growth projections according to this methodology. The modeling showed that the most significant influence would be felt in the area of the Town of St. Joseph where no growth would occur between 2000-2030. This result in particular demonstrates how the accessibility-based growth

⁵ Specific estimates for individual communities can be found in the *St. Croix River Crossing Project Technical Memorandum for Travel Demand Forecasts* dated June 17, 2004 and found in the Supporting Technical Memoranda Volume of the 2004 St. Croix River Crossing SDEIS.

model overstates the influence of unimproved mobility, as existing development patterns since 2000, and the expectations of local government officials and real estate experts is that residential development will continue in the area despite lack of improvement at the St. Croix River Crossing.

The reduced-accessibility model shows less influence in the areas of Somerset and New Richmond, and the least amount of influence adjacent to the I-94 corridor, although the resultant increase in congestion due to continued diversion of traffic from TH 36/STH 64 to I-94 would cause a reduction in accessibility and growth along that corridor as well. Correspondingly the results show an equal increase in population in Minnesota communities, as population for the project area as a whole was assumed to be a constant, and “reduced accessibility” scenarios of a single transportation facility would affect only locational choice, not regional growth, which would be based on the larger forces of the regional economy, regional birth/death rates and other regional factors.

**TABLE 13-6
WISCONSIN MODEL AREA ACCESSIBILITY-BASED DEMOGRAPHIC
FORECASTS**

	Base Growth Assumptions		Reduced-Accessibility Scenario Growth Assumptions	
	Western Wisconsin Model Area	Washington County Minnesota	Western Wisconsin Model Area	Washington County Minnesota
2000 Population	95,976	201,130	95,976	201,130
2030 Population	167,200	336,300	141,613	361,888
Population Growth (2000 to 2030)	71,224	135,170	45,636	160,758
Population Growth Difference from Base Growth Assumptions	N/A	N/A	-25,587	25,587

13.1.3 Potential Indirect Effects to Type of Land Development

Potential changes in the types of land development (residential, commercial, industrial, agricultural) anticipated as a result of the proposed project were evaluated through discussion with land use experts, local government officials, and real estate experts.

Observations of land use patterns adjacent to controlled access transportation facilities such as those proposed in the Wisconsin segment of the Preferred Alternative reveal that commercial uses tend to cluster immediately adjacent to controlled access points (interchanges). At these locations, commercial uses can take advantage of the visibility afforded by the transportation facility and offer travelers ease of access to the commercial facility and efficient return to the roadway. Types of commercial uses most frequently found adjacent to interchanges along highly traveled corridors include travel-oriented services such as gas stations, restaurants, hotels and recreational facilities. The generally observed area affected by access extends up to ½ mile from the interchange intersections.⁶

⁶ Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects, TRB 2002, p.62.

Industrial activities dependent on trucking to provide supplies or deliver products also benefit from ease of access to transportation facilities that provide reliable mobility to other markets. Visibility to roadway travelers is not required to achieve the benefit and therefore may select more cost-efficient land further away from the interchange. However, industrial activities are also highly dependent on the availability of municipal utilities. Lack of public water and wastewater facilities greatly restricts industrial development in rural areas.

Improved mobility to job locations may also improve the attractiveness of rural areas for residential development, encouraging conversion of agricultural land to residential uses. An evaluation of this potential influence is discussed in Section 13.1.2.2 above.

Potential Effects to Land Use Types in Minnesota

Land use types are not expected to change substantially along TH 36 or TH 95 into downtown Stillwater as a result of the Preferred Alternative. Existing land use adjacent to these corridors includes highway related commercial uses (retail, office, service) and medium density residential uses. Existing development trends have demonstrated continuing commercial development of undeveloped parcels in the western portion of this segment near Norell Avenue, as well as redevelopment of underutilized parcels. This pattern is not expected to be influenced by the intersection operation improvements proposed at the Oakgreen Avenue/Greeley Street intersection. Increased traffic volumes along TH 36 will continue to support highway-oriented commercial use and redevelopment of underutilized lands or aging commercial structures.

Commercial uses in downtown Stillwater are not expected to change as a result of the Preferred Alternative. As discussed in Chapter 5 of the SDEIS, commercial uses in downtown Stillwater are largely oriented toward tourists visiting the area and local residents in Houlton and Stillwater. The closure of the Lift Bridge to vehicular traffic and redirection of regional through traffic to the new river crossing to the south would relieve traffic congestion in downtown Stillwater but still allow access to the commercial services used by local residents and tourists. Signage from TH 36/STH 64 will direct visitors to downtown Stillwater in support of this commercial activity. The fact that downtown Stillwater is a unique destination and is not dependent on through-traffic suggests that land uses in this area are not vulnerable to changes in regional through-traffic patterns.

Potential Effects to Land Use Types in Wisconsin

Land uses in the Town of St. Joseph are largely agricultural and rural residential with retail and industrial uses concentrated in Houlton. Cities and villages within the area of influence exhibit higher land use densities and a greater diversity of land uses. Other rural areas in the project area outside of incorporated city and village limits exhibit land use patterns similar to the Town of St. Joseph. Comprehensive plan policies for many communities in the area indicate a desire to develop a diversity of land uses to advance each respective community's self-sufficiency. The goal of attracting more diverse land uses is identified by the Village of Somerset, the Town of Somerset, the City of New Richmond and the City of Hudson. These plan policies suggest that land use change of this nature is anticipated and desired regardless of construction of a new St. Croix River Crossing.

As discussed in Chapter 4 of this SFEIS, STH 35/64 under the Preferred Alternative will change from an unlimited access roadway under existing conditions to a controlled access roadway with a single interchange. Vehicle access to the highway will be allowed only at the proposed STH 64/35/CTH E interchange.

Research examined and observation of other interchanges in similar situations suggests that the high volumes of traffic anticipated on STH 64, and controlled access to this facility would create a demand for travel-related commercial activity at the location of the proposed interchange with STH 35 and CTH E. Town of St. Joseph leaders also indicate they would consider rezoning of land in proximity to this interchange to allow commercial development. This would represent a change from current agricultural/rural residential zoning currently found in this location. The area potentially affected by this change is identified in the Town's official Land Use Plan and is confined to the southeast quadrant of the proposed realignments of CTH E and an earlier proposed STH 35 alignment. Changes in land use from agricultural/rural residential to commercial in other portions of the Town would not be supported by current land use policy.

Similarly, conversion of agricultural or rural residential land to commercial uses outside of municipal limits is not supported by the *St. Croix County Development and Management Plan* as this plan recommends focusing commercial and industrial development in existing villages and cities.

Areas with Limited Indirect Effects

Geographic areas not anticipated to experience indirect land use effects due to changes in transportation access from the project include:

- **Downtown Stillwater, Minnesota and Houlton, Wisconsin:** Although the Preferred Alternative will result in a bypass of downtown Stillwater and the non-incorporated community of Houlton, Wisconsin, economic analysis (see Chapter 5) indicates that commercial land uses in these areas are not anticipated to appreciably change as a result of the project.
- **Adjacent to STH 35/64 Corridor in Wisconsin:** Access control for the Preferred Alternative in Wisconsin will deter highway-type commercial development along the corridor (see Section 6.2.2.1 of the SDEIS). As a result, new commercial development immediately adjacent to the STH 35/64 highway corridor would likely occur only at interchange areas such as the STH 64/STH 35/CTH E interchange area, discussed above.
- **Washington County, Minnesota:** With the exception of some new development along the TH 36 corridor discussed above, Washington County is projected to continue to grow and develop in a similar fashion whether or not the Preferred Alternative is implemented. The prevailing land use plan and zoning for Washington County would likely concentrate most urban density development in existing centers (such as Stillwater, Oak Park Heights and communities along the western boundary of the County, from Hugo to Cottage Grove to Woodbury).

- **Pierce County, Wisconsin:** The presence of I-94 as a major transportation corridor crossing the St. Croix River just to the north of Pierce County already provides enhanced mobility and access to the Twin Cities area. A new crossing of the St. Croix is not anticipated to impact land use patterns in Pierce County because the I-94 corridor provides greater convenience and travel time savings than the Preferred Alternative corridor.

13.1.4 Potential Indirect Effects to Numbers of Residential Units Developed

Minnesota

Changes to the amount of residential development adjacent to the project area are not anticipated to change substantially with the construction of the Preferred Alternative as neither mobility nor accessibility are substantially changed in this portion of the project. The Preferred Alternative will not result in substantial changes to accessibility to this area, and noise and visual impacts are not expected to discourage existing residential uses. Proceeding north along TH 95, residential uses above the bluff to the west of the roadway and planned park uses to the east of the roadway are not anticipated to change as a result of the Preferred Alternative.

Improved access to Wisconsin is not anticipated to influence additional residential development in Minnesota communities as proportionately few Washington County residents currently commute to jobs in western Wisconsin. Therefore, the increased access from residences in Minnesota to jobs in western Wisconsin is not anticipated to affect residential development patterns.

Wisconsin

The accessibility-based growth scenario exercise suggests that without improved mobility into western Wisconsin under a No-Build condition, an estimated 25,587 persons, or approximately 10,661 households (assuming an average year 2030 household size of 2.4 persons), would locate in eastern Minnesota rather than in western Wisconsin. Using this analysis in the converse, the Preferred Alternative shifts an estimated 10,661 housing units from eastern Minnesota to western Wisconsin. However, current household forecasts, growth estimates and land use plans do not include these additional households. Research on the influence of transportation facilities and land development suggests a substantially lower relationship.

13.1.5 Potential Indirect Effects to Location of Land Development

Minnesota

As the Preferred Alternative is not expected to influence the type or amount of land development in Minnesota, it is also not expected to influence the location of development. Construction of the Preferred Alternative will not displace existing development, nor is it anticipated to shift the location of development in Minnesota.

Under the accessibility-based No-Build growth scenario, as discussed above, approximately 10,661 households would be shifted from western Wisconsin to eastern Minnesota. The scenario indicates that these households would be spread throughout eastern Washington County.

Wisconsin

As discussed above in Section 13.1.2.2 of this SFEIS, the reduced-accessibility growth scenario showed that the improved mobility of the Preferred Alternative had the greatest influence in the Town of St. Joseph and the immediate surrounding area, a moderate influence in proximity to Somerset and New Richmond and the least amount of influence along the I-94 corridor.

Current St. Croix County policy as identified in the *St. Croix County Development Management Plan* is to encourage development to occur contiguous to existing urbanized areas, rather than in rural settings.

13.1.6 Potential Indirect Effects to Timing of Land Development

In general, timing of land development is influenced by economic trends, availability of land, capacity of the development and construction industry, administrative capacity of local governments or agencies issuing development approvals, and timing of supporting infrastructure; therefore specific predictions regarding the influence of improved mobility on the timing of land development are difficult. However, construction of the Preferred Alternative will not affect any of these factors.

In the Wisconsin portion of the area of influence, where improved mobility could affect the location and amount of residential development in particular, development has been occurring since 1990 at a steady rate. Assuming all other factors are constant, the improved mobility provided by the Preferred Alternative may promote earlier or increased development in some areas. Discussions with local officials, however, indicate that administrative capacity to process development approvals and financing for other infrastructure improvements are considered limiting factors in the rate of development.

13.1.7 Potential Indirect Effects to Natural, Social and Cultural Resources Resulting from Additional Land Development

Land development in general, if not properly managed, can result in a number of impacts to the natural, social and cultural environments. Agencies consulted during the preparation of the SDEIS and this SFEIS, as well as others participating in the project's Stakeholder Resolution Process, have raised the following concerns⁷:

Water quality/supply: Concerns have been raised that land development can affect ground water quality through poorly managed wells or sanitary treatment systems, while surface water quality can be affected by increased storm water runoff and deficient treatment systems; water supply can also be affected by development activities.

⁷ Letters from federal, state, and local agencies regarding concerns on these issues can be found in Chapter 17 of this SFEIS.

Wetlands: Concerns have been raised that degraded surface and ground water from development may affect the quality of wetlands.

Wildlife habitat: Concerns have been raised that development can result in fragmentation of wildlife habitat, leaving insufficient area to support wildlife populations, either in terms of population or diversity; residential development may locate in upland areas near wetlands or surface water (due to the amenity) reducing available upland habitat near water sources.

Parkland and recreation areas: Concerns have been raised that increased populations can place additional burdens on park and recreation areas to serve a larger number of visitors requiring more infrastructure and more programming; the quality of the park setting or the ability to provide some recreation activities (such as hunting) may also be reduced by adjacent development.

Mussels and fisheries: Concerns have been raised that the quality of mussel and fish habitats can be reduced by degraded water quality from development and increased recreational users.

Cultural resources: Concerns have been raised that unidentified or unprotected archaeological resources can be damaged or destroyed by development activities. Architectural resources may be demolished due to economic pressures to redevelop, or may experience effects due to adjacent development, particularly in rural settings.

Administrative resources: Concerns have been raised that additional development and increased populations can provide additional administrative burdens on agencies, reducing their ability to effectively carry out their responsibilities to protect these and other similar resources.

13.1.8 Factors Influencing Type and Degree of Potential Effects

While the improved mobility and controlled access of the Preferred Alternative can make areas more attractive to land development, control of development rests with local governments at the county, town, village and city level. Local governments control the location, type and density of land use through zoning ordinances, division of parcels, provision of utilities, organization of development sites through subdivision ordinances, and regulation of wells and sanitary systems through development approvals. Shoreland ordinances limit development in proximity to rivers and other water bodies. Wetlands are protected by federal, state and local regulations.

These local development controls can vary from community to community, emphasizing different concerns, mandating differing requirements, and requiring a variety of administrative procedures. Their intent is to protect resources valued by the community and to shape the physical landscape to reflect the vision that a community has established for itself.

Comprehensive plans document the vision, goals and priorities established by communities through a public process and approved by elected officials. The status of area comprehensive plans as well as zoning and subdivision ordinances was discussed in Chapter 6 of the SDEIS.

As local governments have the ability to control the type, amount, location, and timing of development as well as the specifics regarding building placement, erosion control during construction, well drilling and sanitary sewer construction, they have the ability to ultimately control many of the potential effects listed in Section 13.1.7 of this SFEIS.

13.2 CHANGES IN THE SETTING OR TECHNICAL ANALYSIS SINCE THE SDEIS

With the exception of the design revisions along TH 36 west of Osgood Avenue (see Chapter 3 of this SFEIS) no changes in the setting or technical analysis have occurred since the publication of the SDEIS for the proposed project.

13.3 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

13.3.1 Anticipated Impacts to Land Development

Three geographic areas potentially affected by improved mobility or access changes under the Preferred Alternative were identified:

- **TH 36 Corridor in Washington County, Minnesota:** Increased traffic volumes in this corridor associated with improved river crossing capacity might support new development or redevelopment of some business establishments in the commercial areas adjacent to TH 36.
- **STH 64/35/CTH E interchange area in St. Croix County, Wisconsin:** The new STH 64/35/CTH E interchange location and design could increase the potential for future conversion of agricultural land to commercial use in the area adjacent to this interchange.
- **St. Croix County and Polk County, Wisconsin:** Based on the reduced-accessibility growth scenario analysis discussed above, indirect land use effects from improved mobility for home-work trips would be limited primarily to portions of St. Croix County and Polk County, Wisconsin (see Section 13.1.2.2 of this SFEIS).

While increased development could affect the natural, social and cultural resources as described in Section 13.1.7 of this SFEIS if development is not properly managed, the existing county and local plans and policies, as well as other applicable land use and development regulations will assist in mitigating potential negative impacts. These local plans are seeking to attract and manage new growth while preserving the unique qualities of their communities.

13.3.2 Consistency with Existing Plans

Both Washington and St. Croix Counties are planning for growth in the next 15 to 20 years, continuing the gradual trend of urbanization of the past twenty or more years. This future growth is anticipated regardless of any changes that may result from a new St. Croix River Crossing. The recent public process used to create the *St. Croix County Development Management Plan* (2002) included considerable public discussion regarding the amount of residential growth, particularly involving conversion of agricultural land to residential use. The plan reflects an agreement that it is appropriate that growth occurs, particularly in the western part of the county where the quality of agricultural land is poorer.

In Minnesota, the Preferred Alternative is consistent with existing land use plans for the cities of Stillwater and Oak Park Heights, for Washington County, and with the Metropolitan Council's *Regional Development Framework*. In Wisconsin, it is also consistent with the *St. Croix County Development Management Plan* and local comprehensive plans for the Village of Somerset, the Towns of Somerset, St. Joseph and Hudson as well as the City of New Richmond. The *Washington County Comprehensive Plan* and the *St. Croix County Development Management Plan*, in particular, include a new St. Croix River Crossing in their planning efforts.

The Town of St. Joseph wishes to retain its rural character but still accommodate growth. The Village of Somerset projects growth based on the wastewater treatment plant capacity. The City of New Richmond has planned sequential annexations of land to accommodate growth but has clearly stated its desire to retain the scale and feeling of a small town with rural surroundings.

City and county plans in western Wisconsin acknowledge that rapid and sustained growth is occurring and would continue to occur with or without a new St. Croix River Crossing. Planning officials in these communities note that tremendous growth has occurred despite the uncertainty regarding a new river crossing, citing quality of life factors as well as competitive land prices as factors encouraging development in western Wisconsin. The improved mobility provided by the Preferred Alternative will potentially affect the timing and/or the amount of growth that occurs in western Wisconsin; however it is difficult to separate that effect from the other substantial influences occurring simultaneously in the area.

13.3.3 Probable Impacts of Increased Development on Natural, Social and Cultural Resources

While the potential negative impacts to natural, social and cultural resources resulting from land development as discussed in Section 13.1.7 of this SFEIS are possible, the probability of those impacts is directly related to the land use management policies and regulations of local governments. As a substantial growth trend is already apparent in these areas, the potential for impacts to water quality, wetlands, wildlife habitat and cultural resources is already present in the area of influence. To the degree that the Preferred Alternative adds to the amount of development anticipated, the potential amount of impact also increases; however, it does not increase the probability that negative impacts will occur with development.

In discussions regarding potential indirect effects, local governments have indicated a desire and willingness to manage growth in such a way as to protect natural resources and rural character. Current comprehensive plans also support a desire to avoid negative impacts, and recommend strategies and measures through which such impacts can be avoided or minimized.

13.4 MITIGATION MEASURES

It is FHWA policy to provide mitigation when the impacts for which the mitigation is proposed directly result from the proposed action, and the proposed mitigation represents a reasonable public expenditure. The policy emphasizes that the full range of mitigation – avoidance, minimization and compensation – be considered. FHWA does not have the authority to commit federal funds to the mitigation of impacts not directly attributable to transportation projects or the action of others not within FHWA control. Refer to Section 15.4 of this SFEIS for a discussion of the Preferred Alternative mitigation package.

It is also FHWA policy to identify measures outside the jurisdiction of FHWA and state DOTs to alert agencies and officials of the potential benefits of these measures. These measures cannot be committed to in the Record of Decision for the project as they are beyond the authority of FHWA and the DOTs, but are discussed in Section 13.5 of this SFEIS to encourage cooperative and collaborative efforts to protect resources in the project area.

13.4.1 Proposed Mitigation Measures to be Implemented with the Preferred Alternative

The indirect impacts analysis in Chapter 13 of this SFEIS has demonstrated that:

- Substantial growth trends are already apparent in western Wisconsin despite uncertainty regarding the construction of a new river crossing;
- The influence of improved mobility provided by the Preferred Alternative on the amount of growth anticipated is uncertain;
- Potential negative impacts resulting from land development are not within the control of FHWA and the DOTs but rather are within local government control; and
- Local planning efforts have anticipated the bridge crossing and have adopted policies to protect area resources.

In anticipation of growth-related concerns regarding the proposed St. Croix River Crossing, planning assistance has been provided to St. Croix Valley communities. Previous planning assistance activities are summarized below in Section 13.4.1.1 of this SFEIS. Additional discussion of these items can be found in Section 6.3.2.1 of the SDEIS.

13.4.1.1 Previous Planning Assistance Provided in Anticipation of a New River Crossing

St. Croix County Development Management Plan

The current *St. Croix County Development Management Plan* was funded in part by WisDOT and WisDNR as a coordinated planning effort for the 1995 Final EIS Preferred Alternative for the St. Croix River Crossing project as well as other transportation projects in St. Croix and Pierce counties.

Metropolitan Council Development Design Study

The Metropolitan Council commissioned the *St. Croix Valley Development Design Study* in August 1999 to develop innovative growth and site design options as examples for communities in Washington County, Minnesota, and St. Croix County, Wisconsin, to respond to growth concerns. The study provided design tools for communities to use in accommodating current and future development in ways that are efficient in using land and other resources and are oriented to pedestrian- and transit-friendly development.

13.4.1.2 Mitigation Items Identified Since the SDEIS

In discussing comments received on the SDEIS, a number of additional needs were identified by the Stakeholder Group to address the anticipated potential indirect effects of land development and subsequent effects resulting from the Preferred Alternative. These additional needs included: updating zoning and subdivision ordinances to reflect current conditions and visions for land use planning; creation of a St. Croix County stormwater ordinance; adoption of innovative tools such as cluster developments or transfer/purchase of development rights; St. Croix Valley water quality study; St. Croix Valley wildlife habitat studies; St. Croix County cultural resources survey update; St. Croix County comprehensive plan update; adequate infrastructure to ensure protection of key resources; and adequate staffing to properly review development proposals. In the fall of 2005, a cooperative process was developed to address the concerns of the Stakeholder Group and others. This process included meetings with, and input from, Stakeholder Group members and local government staff (see Section 16.1.4 of this SFEIS).

The outcome of these discussions was an additional set of mitigation items totaling \$2.7 million as described below. Details regarding the implementation of these mitigation items as well as funding mechanisms and administrative oversight was documented in an agreement among WisDNR, WisDOT, Mn/DOT, and FHWA titled the Growth Management Memorandum of Understanding (MOU) (see Appendix I of this SFEIS). The MOU states the goal of these mitigation items is to promote natural, cultural and historic resource protection in the St. Croix River watershed, thus helping to preserve water quality and scenic values and identifies the WisDNR as the agency best suited to lead the activities covered under the MOU. The WisDNR will be assisted by the Growth Management Advisory Team consisting of representatives from the National Park Service, WisDOT, St. Croix Basin Water Resources Planning Team, St. Croix County, the Town of St. Joseph, UW-River Falls, Minnesota Center for Environmental Advocacy, Wisconsin State Historic Preservation Officer and other interested groups. The additional mitigation items are described as follows:

Water Resources Planning/Protection - \$1.2 Million

- **Active assistance and support** for future applications from the St. Croix Basin Water Resources Planning Team to the U.S. Environmental Protection Agency (EPA) Targeted Watersheds Grant Program to implement high priority phosphorus reduction strategies.
- **Soil and Water Modeling and Monitoring.** \$400,000 is provided to the WisDNR to assist the Basin Team in soil and water modeling and monitoring of Lake St. Croix to help develop and implement phosphorus reduction strategies.
- **Study of Sanitary Wastewater Treatment Facility Needs.** \$400,000 is assigned to STH 64 Corridor Communities in St. Croix County to study sanitary wastewater treatment facility needs or upgrade/expansion alternatives that accommodate projected population growth while protecting human health and water resources. As an alternative to, or in concert with, the activities described above, a broad regional evaluation of domestic wastewater disposal issues may be conducted.
- **Planning, Ordinance Development and Implementation of Local Stormwater Management Programs.** \$400,000 is assigned to STH 64 Corridor Communities for purposes of planning, ordinance development, and implementation of local stormwater management program(s) to protect surface water quality.

Local Government Planning/Zoning Support - \$1.0 Million

Funding provided in this item is to expand the Town of St. Joseph and St. Croix County's capacity and effectiveness in local planning, zoning and educational programs to improve their abilities to manage growth. Specific activities are allocated as follows:

- \$200,000 for the Town of St. Joseph and \$750,000 for St. Croix County to hire or contract for project staff and consultant services to assist in revising and/or developing local comprehensive plans, neighborhood plans, ordinances and other planning tools that will result in natural resource enhancement, pollution prevention, protection for historic properties, or other environmental protection.
- \$50,000 to UW-River Falls to help establish and implement natural resources and historic properties protection efforts of the Western Wisconsin Intergovernmental Collaborative (WWIC), whose purpose of this organization is to enhance the quality of life in Pierce, Polk and St. Croix Counties of Wisconsin by providing a long-term collaborative forum for its governmental jurisdictions, including villages, towns, cities and counties . The grant will supplement, but not replace, local government member financial support for the WWIC.

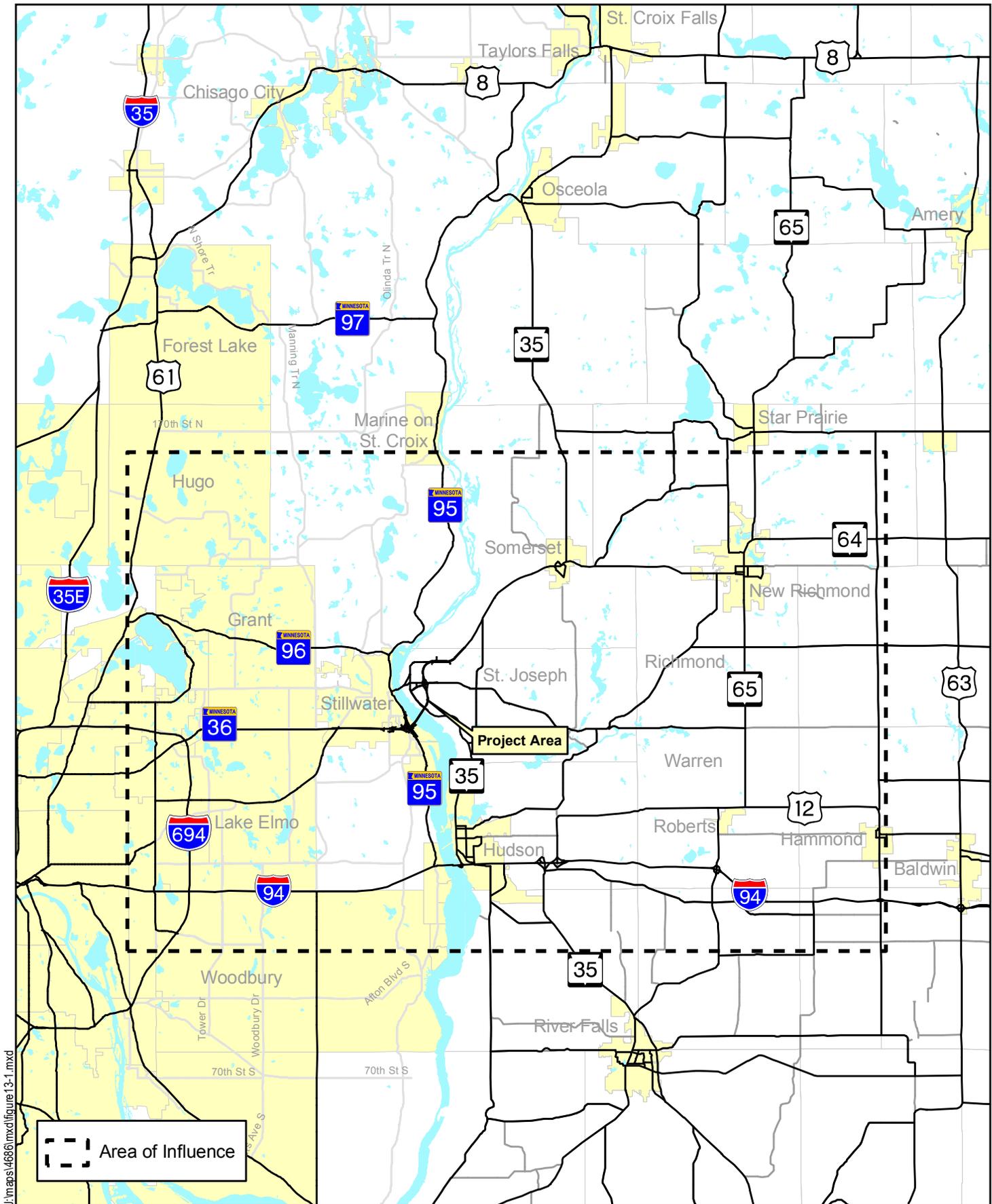
Greenspace Protection Program - \$500,000

\$100,000 for the Town of St. Joseph and \$400,000 for St. Croix County to develop and adopt plans, policies, educational outreach programs, and/or ordinances to protect open space consistent with the natural resource protection goals as identified in their comprehensive plans, including but not limited to programs such as the purchase of fee title, the purchase/transfer of development rights or the purchase of conservation easements.

13.5 POTENTIAL PLANNING TOOLS AVAILABLE TO LOCAL GOVERNMENTS

The mitigation described in Section 13.4.1.2 of this SFEIS addresses potential negative impacts to area resources from accelerated growth in St. Croix County influenced by the Preferred Alternative. In addition, potential impacts to natural and cultural resources can be managed through the planning tools of local governments. Planning authority for such measures in both Minnesota and Wisconsin is discussed in Section 6.1.4.1 of the SDEIS. Communities with adopted comprehensive plans, zoning ordinances and other resource protection measures are also listed in Table 6-10 of the SDEIS. The planning tools available to local governments include:

- Comprehensive plans: Policy documents developed by local communities to guide land use and infrastructure decision making.
- Zoning/subdivision ordinances: Land development controls that regulate land use, parcel subdivision, utility provision, building placement and other site alterations.
- Utility plans/extraterritorial planning: Policy documents that guide extension of municipal utilities in an orderly manner to support land development.
- Stormwater/erosion control ordinances: Land development controls that guide provision of stormwater control and treatment during construction activities and subsequent increases in impervious surface.
- Sanitary (water supply/wastewater treatment) ordinances: Land development controls that ensure that groundwater is adequately protected from wastewater contamination.
- Shoreland ordinances: Land development controls that protect surface water quality and shorelines from erosion through management of land uses and site development adjacent to rivers and lakes.
- Historic preservation ordinances: Land development controls that allow for the designation and protection of historic sites at the local level.
- Planned Unit Development: A provision in local zoning and subdivision ordinances to allow for flexibility in land uses and/or site development in order to preserve or protect significant natural or cultural features on the site.
- Cluster development ordinance: Zoning ordinance overlays which allow for clustering of residential units in one portion of a large development site to allow for the preservation of the remainder of the site as open space.
- Transfer of Development Rights (TDR): Zoning ordinance overlays which allow the transfer of development rights from one parcel to another for the purpose of preserving all or portions of the originating site as undeveloped open space.
- Purchase of Development Rights (PDR) programs: Financial programs which allow local governments or agencies to purchase development rights either through easement or fee title, on a property for the purpose of preserving all or portions of the parcel as open space.



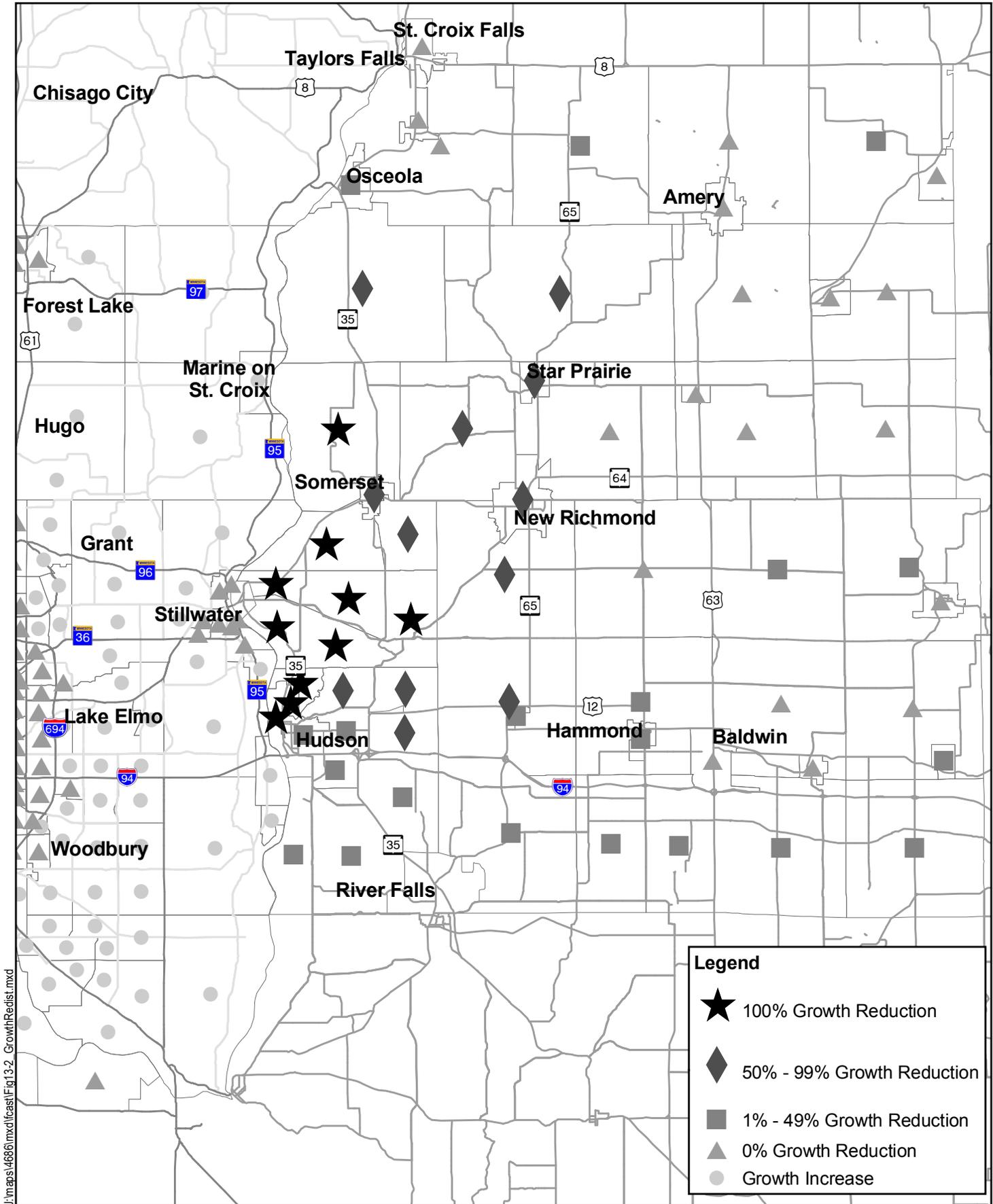
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Area of Influence - Indirect Effects Analysis

St. Croix River Crossing Project

Figure 13-1

2005 Supplemental Final Environmental Impact Statement



Maximum Growth Redistribution

St. Croix River Crossing Project

Figure 13-2

2006 Supplemental Final Environmental Impact Statement