TOWN OF ST. JOSEPH
COMPREHENSIVE PLAN

PREPARED FOR THE TOWN OF ST. JOSEPH, WI

DECEMBER 20, 2016

COMPREHENSIVE PLANNING LAW

The Comprehensive Planning Law was enacted in 1999. Sometimes referred to as the "smart growth law," the Comprehensive Planning Law does not mandate how a community should grow, rather it leaves such decisions up to local communities.

A comprehensive plan is a local government's guide to community physical, social, and economic development. Comprehensive plans are not meant to serve as land use regulations in themselves; instead, they provide a rational basis for local land use decisions with a twenty-year vision for future planning and community decisions.

The Wisconsin Comprehensive Planning Law does not mandate how a local community should grow, but it requires public participation at the local level in deciding a vision for the community's future. The uniqueness of individual comprehensive plans reflects community-specific and locally driven planning processes.

While a local government may choose to include additional elements, a comprehensive plan must include AT LEAST all of the nine elements below as defined by the Comprehensive Planning Law and described in Element Guides.

1. Issues and Opportunities Element
2. Housing Element
3. Transportation Element
4. Utilities and Community Facilities Element
5. Agricultural, Natural and Cultural Resources Element
6. Economic Development Element
7. Intergovernmental Cooperation Element
8. Land Use Element
9. Implementation Element

Source: http://www.doa.state.wi.us/Divisions/Intergovermental-Relations/Comprehensive-Planning/what-is-a-comprehensive-plan?

RESOLUTION NO. [TO BE COMPLETED AT TIME OF PLAN ADOPTION]

RESOLUTION FOR AN AMENDMENT TO THE COMPREHENSIVE PLAN FOR THE TOWN OF ST. JOSEPH

WHEREAS, the Town of St. Joseph, pursuant to Sections 62.23, 61.35, and 60.22(3) of the Wisconsin Statutes, has adopted Village powers and created a Town Plan Commission; and

WHEREAS, the Town Board adopted a Comprehensive Plan on (date) , following extensive public participation; and

WHEREAS, _(name of applicant)_ has submitted a request to change the land use designation of a parcel(s) of land located at (Street Address) , (tax key number) (or, of a parcel(s) of land as described or mapped on the attached Exhibit A) from _____ to _____ on the land use plan map adopted by the Town Board as part of the comprehensive plan; and

WHEREAS, the Plan Commission finds that the comprehensive plan, with the proposed amendment, contains all of the required elements specified in Section 66.1001(2) of the Wisconsin Statutes and that the comprehensive plan, with the proposed amendment, is internally consistent; and

WHEREAS, the Town has duly noticed and held a public hearing on the proposed amendment, following the procedures in Section 66.1001(4)(d) of the Wisconsin Statutes and the public participation procedures for comprehensive plan amendments adopted by the Town Board.

NOW, THEREFORE, BE IT RESOLVED, that pursuant to Section 66.1001(4)(b) of the Wisconsin Statutes, the Town of St. Joseph Plan Commission hereby approves the attached Amendment No. __ to the Town of St. Joseph Comprehensive Plan: 2035.

BE IT FURTHER RESOLVED that the Plan Commission does hereby recommend that the Town Board enact an Ordinance adopting the Comprehensive Plan amendment.

ADOPTED this ____ day of _____, 2016.

Ayes_____ Noes_____ Absent_____

_____
Chair, Town Plan Commission

Attest:_____

Clerk, Town of St. Joseph
(or Secretary of the Plan Commission)

ORDINANCE NO. [TO BE COMPLETED AT TIME OF PLAN ADOPTION]

ORDINANCE ADOPTING AN AMENDMENT TO THE TOWN OF ST. JOSEPH COMPREHENSIVE PLAN

The Town Board of the Town of St. Joseph, Wisconsin, do ordain as follows:

SECTION 1. Pursuant to Sections 62.23, Section 61.35, and Section 60.22(3) of the Wisconsin Statutes, the Town of St. Joseph is authorized to prepare and adopt a comprehensive plan as defined in Sections 66.1001(1)(a) and 66.1001(2) of the Wisconsin Statutes.

SECTION 2. The Town Board, by the enactment of an ordinance, formally adopted the document titled "A Comprehensive Plan for the Town of St. Joseph: 2035" on _____.

SECTION 3. The Plan Commission, by a majority vote of the entire Commission at a meeting held on _____, recommended to the Town Board the adoption of an amendment to change the land use designation of a parcel/parcels of land located at (Street Address) _____, __(tax key number) (or, of a parcel/parcels of land as described or mapped on the attached Exhibit A) from _____ to _____ on the land use plan map adopted by the Town Board as part of the comprehensive plan.

SECTION 4. The Town published or posted a Class 1 public notice and held a public hearing regarding the plan amendment.

SECTION 5. The Town Board of the Town of St. Joseph hereby adopts the attached Amendment No. __ to the Town of St. Joseph Comprehensive Plan: 2035.

SECTION 6. The Town Clerk is directed to send a copy of the plan amendment to the parties listed in Section 66.1001(4)(b) of the Wisconsin Statutes.

SECTION 7. This Ordinance shall take effect upon passage by a majority vote of the full membership of the Town Board and publication or posting as required by law.

ADOPTED this ____ day of _____, 2016.

_____
Town Chair

Ayes_____ Noes_____ Absent_____

Published/Posted:_____

Attest:_____

Town Clerk

PLANS INCLUDED BY REFERENCE

The following plans are included by reference in the Town of St. Joseph 2016 Comprehensive Plan.

- Town of St. Joseph 2013 Outdoor Recreation Plan,
- Town of St. Joseph 2010 Non Residential Design Standards,
- Town of St. Joseph 1995 Comp Plan,
- Town of St. Joseph 2006 Comp Plan
- Town of St. Joseph 2014 Bicycle and Pedestrian Facility Implementation Study
- Town of St. Joseph Natural Areas Inventory/Land Cover Mapping
- Bass Lake Management Plan
- Bass Lake Management Plan Appendices
- Perch Lake Management Plan
- Houlton Area Wastewater Facilities Plan
- MS4 Houlton Storm Water Plan

St. Croix County Plans and Zoning Code are included by reference in Appendix K following this report.

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Chapter 1 Introduction

1. PROJECT BACKGROUND

The Town of St. Joseph is a unique, rural, and beautiful place. The Town has rich natural resources, agricultural lands and homesteads. The Town faces several changes as regional improvements, notably the St. Croix Crossing Bridge, alter the landscape and increase access from the Twin Cities and neighboring areas. These improvements have the potential to alter the character of the Town. This Comprehensive Plan Update is a proactive response in anticipation of such changes. This Plan lays out the overall vision and goals for the Town over the next twenty years to ensure that the character of the Town is enhanced and maintained. This plan was prepared by the Town of St. Joseph Plan Commission, Town Board, and local residents, with assistance from consultants at Stantec. The Plan was developed starting in summer 2014 and concluding in 2016.

This Plan updates the Town's 2006 Comprehensive Plan, which updated the 1995 Comprehensive Plan. There were two primary reasons that the Town began the planning process: first, the 2008 economic downturn following the completion of the last comprehensive plan slowed growth in both the Town and the region. The Town needed to analyze the new types of development pressure and establish new policies as the economy emerges from the 2008 Recession. Second, the St. Croix Crossing Bridge is expected to be completed in 2017. The anticipated development pressure resulting from the improved access to the surrounding communities, especially the Twin Cities Metro Area, presents an urgent need to consider how St. Joseph will grow and develop as a result.

2. PLAN ORGANIZATION

The Plan chapters correspond with the nine elements required for comprehensive plans under the Wisconsin Comprehensive Planning statutes §66.1001(2). Each of the nine elements and the items described in the statute are addressed within the contents of the chapters.

This chapter presents a brief introduction to the Town, provides a short summary of the planning process, and defines the setting in which this Plan was developed.

Chapter 2: Issues and Opportunities Element provides an overview of the public input and visioning process, presents the key issues and opportunities in the Town as identified during the kick-off and issues forum, and identifies goals and policies for each of the subsequent sections.

Demographic characteristics are important to understanding trends within the Town. Overall population characteristics, such as age and household size, will have significant implications on the needs of the Town and potential land use patterns. Population, household and other demographic information helps define existing conditions within the Town. This information also provides a basis for future expectations about growth, housing needs, economic development, land use needs and other important components of the Comprehensive Plan.

Figure 1 Pasture photo from Google

Figure 2 Willow River State Park

Subsequent chapters focus on specific planning topics/elements including:

- Housing and Population Element
- Transportation Element
- Utilities and Community Facilities Element
- Agricultural, Natural, and Cultural Resources Element
- Economic Development Element
- Land Use Element

Each of these chapters contains an inventory and analysis of existing conditions related to the respective topic. Existing conditions help define the current expectations of the Town, and those areas that are available to the Town for development, redevelopment or preservation.

Some of the chapters address intergovernmental coordination associated with specific issues such as transportation and economic development. Additionally, Chapter 8: Intergovernmental Cooperation Element includes general information about other jurisdictions and their role in working with the Town of St. Joseph.

Each of these chapters also contains a policy plan, which includes a set of goals and policies specific to that chapter's topic. General goals and policies defined in these chapters are included in the Chapter 2: Issues and Opportunities.

Finally, Chapter 10: Implementation Element describes how the Town intends to execute this Plan and lists tools available to the Town to implement the Plan.

3. PLANNING PROCESS

The process of updating the Plan began in 2014 by analyzing existing conditions, updating maps and statistics, and discussing key issues for the Town of St. Joseph. The background data is included as part of each of the chapters of this Plan.

One of the significant features about the current update is that a number of key issues were identified before the planning process started as needing more in-depth discussion and analysis. This included:

- Municipal Services - The Town decided to analyze and discuss whether municipal sanitary sewer should be developed in the Houlton area in the western part of the Town. Stantec prepared a facility service analysis and concept plans for the Houlton area which could be served with municipal services. The Plan Commission devoted several meetings to the issues and a community meeting on municipal services was held in August of 2015. Three Twin Cities area developers were interviewed on the question as well. This issue is discussed in the Land Use chapter of this Plan.
- Rural Character - The Plan Commission devoted two meetings discussing what constitutes "rural character" since that issue has been important in both the 2006 Comprehensive Plan and in the St. Joseph Planning Survey, 2013. This issue is discussed in the Issues and Opportunities chapter of this Plan.
- Natural Resource Inventory - A separate study was conducted by Stantec inventorying natural resources in the Town. A natural resource scientist mapped most of the various features on the ground and also used maps, aerials or other remote information. This inventory is discussed in Chapter 6: Agricultural, Natural and Cultural Resources Element.
- Market Overview - In addition to the demographic statistics that were updated, Stantec contracted with Maxfield Research Group to prepare a generalized market overview, analyzing the potential demand for residential, office, retail and industrial markets in the Town of St. Joseph. This analysis is summarized in Chapter 7: Economic Development Element in this Plan. In conjunction with St. Croix County, the University of Wisconsin Extension Center for Community and Economic Development studied the commercial and economic effects of the St. Croix Crossing Bridge.

This phase of discussion involved updating the Town's goals and policies, with the 2006 goals as the starting point. A Public Hearing was held by the Plan Commission on December 2, 2015 to review the background information and goals.

Following this, options for land use and transportation were discussed as well as drafts of the full Plan document.

4. PLAN SETTING

The Town of St. Joseph is a community of about 3,900 people in the western region of St. Croix County, Wisconsin. The Town is located in western Wisconsin and is bound by the St. Croix River on the west side. The Town has ample natural resources including the St. Croix River and bluff lands, streams and wetlands, woodlands, and rolling agricultural fields. A large portion of the Town's landscape is devoted to agricultural production and large-lot single family residential homes.

The Town of St. Joseph is bordered to the north by the Town of Somerset, to the east by the Town of Richmond and the Town of Warren, and to the south by the Town of Hudson. The Town of St. Joseph includes the two rural, unincorporated hamlets of Houlton and Burkhardt. These two hamlets contain some smaller lot residential development and a minimal amount of commercial and retail space.

Although the Town is located in Wisconsin, there are several cities in Minnesota that are close to and provide services to the Town's residents. The City of Stillwater is located just across the river from the Town of St. Joseph and provides the most accessible shopping alternatives for residents. The Town is connected to Stillwater by a lift bridge which will become a bicycle and pedestrian bridge after the St. Croix Crossing Bridge is completed in 2017.

In addition to Stillwater, there are several jurisdictions in proximity to the Town of St. Joseph. Minneapolis and St. Paul are the closest major metropolitan areas and are approximately 20 miles west of the Town. Within Wisconsin, other nearby cities and villages include the villages of Somerset and North Hudson and the cities of New Richmond and Hudson. (See Figure 1-1, Regional Context on page 1.6).

5. TOWN VISION

A Place Where Natural Resources are Preserved

The Town of St. Joseph prepared a natural resources inventory to understand and identify the significant natural resource areas in the Town. The Town has beautiful natural resources including the St. Croix River, various streams and rivers, woodlands, and rolling topography. The abundance of natural resources makes the Town a unique place to live, and these resources should be maintained to preserve the rural quality of the Town.

A Place Where Development is Compatible with the Environment

The residents understand that there is likely to be growth in Town. The current residents are dedicated to maintaining the current natural and rural quality of the Town. The environmental quality of the Town is a part of what makes the Town desirable, and all growth and development should consider and respond to existing natural resources and topography.

A Place with an Accessible Town Center

The Town currently has two unincorporated hamlets at Houlton and Burkhardt, which provide minimal services to the Town. In the future, the Town would like to encourage small business opportunities that could support a small village center. This area would be walkable to encourage connectivity between adjacent homes and the village center. The village center could include various educational opportunities, small retail and service businesses, life-cycle housing options, parks and open spaces. This area would contribute to the quaint small town atmosphere the residents are currently enjoying.

A Place that is Aesthetically Pleasing

Development should not only be sensitive to the natural surroundings, but also consider the impact it has visually on the character of the community. The community would like to improve the quality of development through consistent guidelines that address building materials, signage and scale, placement of public art, landscaping and vegetation, and attractive and harmonious streetscapes that support the community vision.

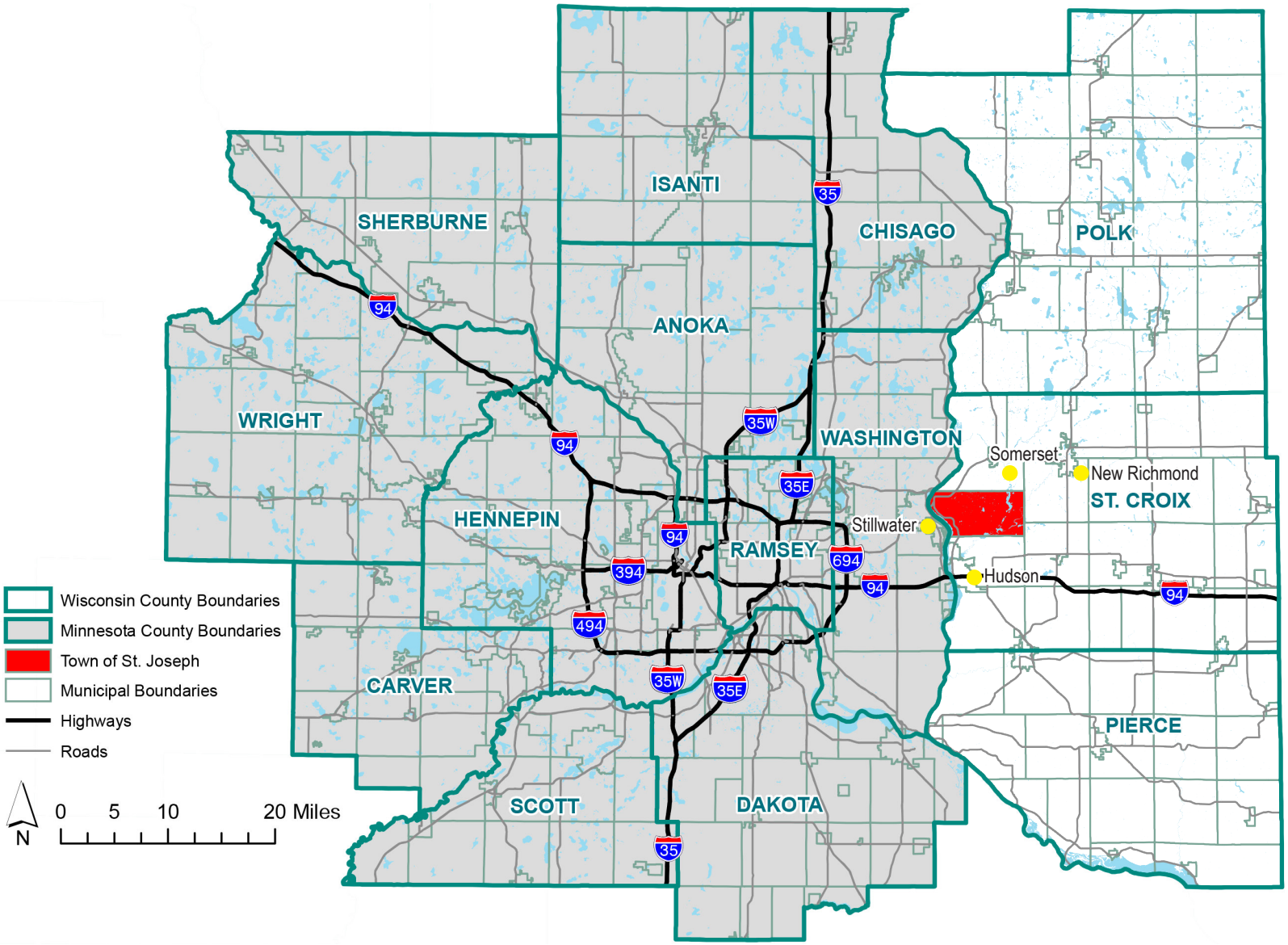
A Place that Residents Can Live, Work and Recreate

The Town would like to encourage a community that is sustainable and provides opportunities to live, work, and recreate within the community. The Town should provide basic service to its residents and should expand opportunities in the town to meet the needs of the current and future residents.

A Place of Recreational Opportunities

The Town has the opportunity to provide and plan for passive and active recreational areas within the Town. There are several areas that have been identified as preferred locations to provide park and recreational facilities to its residents. The Town would like to enhance active and passive park lands to meet the needs of existing and future residents.

Figure 1-1
Regional Context



Chapter 2 Issues and Opportunities Element

1. KEY ISSUES

Based on discussions with the Plan Commission, Town Board, community members, along with consideration of the 2013 Town Survey results, and other information and analysis, there are five major issues facing the Town of St. Joseph as it moves into its new future. These are not stand-alone issues, but instead are connected and interrelated in many important ways. These include the following five issues:

Natural Resources

Protecting and preserving the natural beauty of the Town has always been important in St. Joseph. It was identified as one of the most important issues in the St. Joseph Planning Survey, 2013. A separate detailed Natural Resources Inventory was conducted in conjunction with the Comprehensive Plan update which served as a basis for key policies in the Plan. One of the unseen natural resources is groundwater which is considered the most important element of rural character but is significantly affected by what happens above ground with the other natural features.

Rural Character

The Town of St. Joseph has defined itself as a rural enclave and the term "rural character" is invoked frequently in describing its essence. What does this mean? The Plan Commission had a full discussion and made a list of ten characteristics that define rural character, summarized below and more fully in a memorandum in Appendix A of this Plan. This discussion involves not just natural resources and farming, but detailed design elements as the Town develops. The top ten qualities that make up rural character, as ranked by the Plan Commission, in St. Joseph are:

1. *Groundwater*. This issue was placed first because it is so vital to basic living. It was noted that groundwater is invisible and that the Town's natural resources help protect groundwater.
2. *Quiet*. Including discussion of the lack of intrusive noise, such as traffic.
3. *Natural features*. Including vegetation and wildlife.
4. *Viewsheds*. Including minimal telecommunication towers interrupting views.
5. *Farmland.*
6. *Limited, focused development in the hamlet of Houlton.*
7. *Lighting*. Including a generally dark sky at night with a lack of intrusive street lights and other urban light sources.
8. *Signage*. Including minimal intrusive commercial signage.
9. *Architectural standards*.
10. *Parks, recreation and trails*.

Houlton Town Center

There was considerable discussion about how the Houlton area might change in coming years (as it certainly will) due to the new bridge crossing and highway. The realignment of roadways has already changed traffic patterns, which will affect business and economics, which will determine the kinds of land uses that will thrive or not. The Loop Trail connecting to Stillwater and the new bridge will be a tourist attraction, bringing different kinds of traffic and customers. Traffic on the new highway may bring development pressure for businesses near the new interchange. There was a separate discussion on the possibility of municipal services in the hamlet of Houlton, which is discussed in the Land Use chapter 9 on page 9 and a memorandum in Appendix F. The balance of allowing and encouraging a concentrated mix of uses in the area while maintaining the Town of St. Joseph's rural character elsewhere is an ongoing challenge that will unfold in coming years.

New Bridge and Highway

The character and location of the new bridge crossing and highway are significantly different than the old Stillwater Bridge that has served to connect St. Joseph with Minnesota for so many years. There will be significantly more traffic and light around the new interchanges. What will the impacts be on traffic, economic development, tourism, visual aesthetics, noise and other issues? It remains to be seen, but there will certainly be change on the western side of St. Joseph once the new bridge is open.

Town Roadways

The new bridge and highway have impact on the lesser roads in the Town as well. Several segments of road are now cut off from the main highway with the construction of the new highway. There will be new patterns of movement and new amounts of drive-by traffic, which can be positive or negative, depending on one's role and viewpoint.

2. GENERAL POLICY PLAN

The General Policy Plan identifies overarching goals for the community that help define the characteristics and qualities of the Town. The General Policy Plan guides the specific goals presented in later chapters of this Plan. The General Goals are deliberately broad and are supported through the specific goals and policies developed in the Policy Plans of each chapter.

General Goal #1: Enhance and maintain the rural character of the Town while providing opportunities to maintain and enhance St. Joseph as a unique and desirable place to live, learn, work, and recreate.

Policies:

1. Promote the development and implementation of a comprehensive plan that effectively and efficiently plans for land use, community facilities, transportation, housing, economic development and environmental protection.
2. Formulate and enforce ordinances to ensure development in accordance with the Comprehensive Plan.
3. Review and amend the Comprehensive Plan as necessary to ensure its usefulness as a practical guide for current and future development. Adhere to this Plan, which shall guide zoning changes, as closely as possible to ensure consistent development policy.

General Goal #2: Maintain and enhance the natural landscape by encouraging special consideration for places of natural significance in the Town.

Policies:

1. Preserve and protect key natural resources as identified through the natural resources inventory.
2. Provide incentives to developers and land owners to protect important natural resource areas.
3. Preserve and protect Bass Lake and Perch Lake by implementation and periodic updates to their respective Lake Management Plans.

General Goal #3: Encourage development that supports and enhances the Town's Vision.

Policies:

1. Update and refine current ordinances to be consistent with the goals set forth in this Plan.
2. Create and develop land use tools that promote development that is creative, unique, and consistent with the vision of the Town.
3. Work to develop design and architectural standards that support and guide future development.

General Goal #4: Protect groundwater supplies and surface water to assure high quality groundwater for all residents.

Policies:

1. Encourage and promote improvements in monitoring of all private wells and private septic systems in the Town to assure the highest standards are being maintained.
2. Encourage and promote improvements in monitoring of all waste disposal and management systems and practices to assure the highest standards are being maintained.
3. Develop and implement a stormwater management plan and best practices to guide future development.
4. Encourage, promote, and implement the Lake Management Plans for Bass Lake and Perch Lake in the Town of St. Joseph.

General Goal #5: Support strong, ongoing working relationships between the Town of St. Joseph and surrounding cities, towns, St. Croix County, and other jurisdictions in matters related to planning and the provision of public services.

Policies:

1. Continue to discuss and identify potential intergovernmental relationships that help promote efficient services to the Town and adjacent jurisdictions.
2. Pursue new collaborative planning efforts among local governments and organizations to address existing issues and new issues as they arise with regard to land use, transportation, parks, natural resources, delivery of services and other areas of mutual concern.
3. Promote information sharing between the Town of St. Joseph and surrounding towns, cities, and the county, and encourage them to participate in local issues.
4. Maintain communications, and collaborate where appropriate, with St. Croix County and state agencies involved in planning issues that affect the Town and region.

General Goal #6: Promote community input, information sharing and collaboration.

Policies:

1. Actively encourage and utilize resident participation in the local decision-making process.
2. Continue to improve and enhance communication among the Town, residents, businesses, civic groups and public agencies utilizing various media such as a Town newsletter, internet access and a community web page.

General Goal #7: Encourage the creation of a Houlton town center that preserves and enhances the small-town, quaint, atmosphere the Town values.

Policies:

1. Create a Houlton Town Center plan that identifies the types of businesses that the Town would like to support.
2. Encourage and support a compact development pattern in the Houlton Town Center to support a mix of residential, small retail and businesses.
3. Encourage the use of the Town of St. Joseph's Non-Residential Design Guidelines for the Houlton Town Center to promote architecture and design which is consistent with the small-town, rural atmosphere of the Town (see Appendix I).
4. Encourage and support plans to improve accessibility for pedestrians and bicycles on existing roads within Houlton.

General Goal #8: Encourage a Burkhardt Mixed use area which will provide increased business opportunities.

Policies:

1. Maintain the Rural Residential for residences on Old Mill Road, except for current Commercial area.
2. Encourage multiuse zoning for Scott Road parcels from Co Rd A to the Town Line.
3. Maintain Burkhardt as a distinct area with alternative businesses and structures.
4. Work with the State of Wisconsin and St. Croix County to address shared issues of concern including parking and access to facilities and services in Burkhardt from the Willow River State Park.

Chapter 3 Housing and Population Element

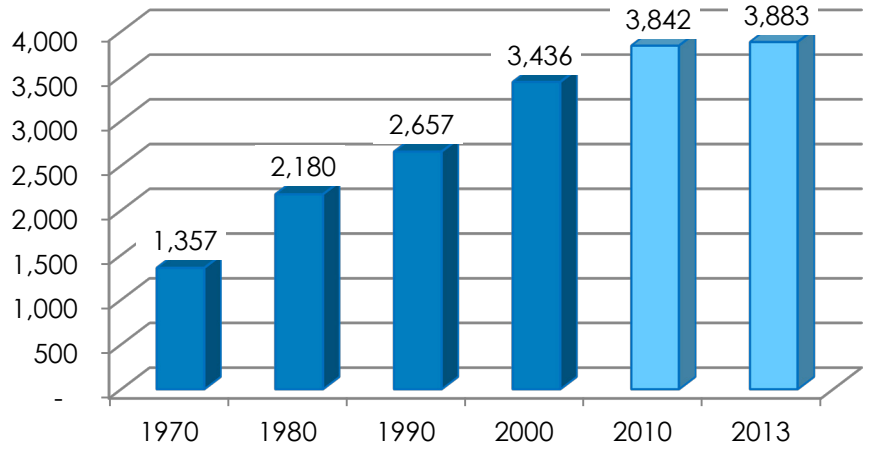
1. INTRODUCTION

The identification of trends in population growth and other demographic data is a very important part of the comprehensive planning process. It can provide clues to future growth patterns and indicate what types of housing and public facilities may be needed to support that growth. For example, an increase in young couples with children would require starter housing, new parks and schools, and new or upgraded community facilities; whereas, an increase in the elderly population would lessen the need for schools and increase the need for accessible housing. Chapter 3: Housing and Population Element contains information on the Town of St. Joseph's population and household characteristics.

2. POPULATION

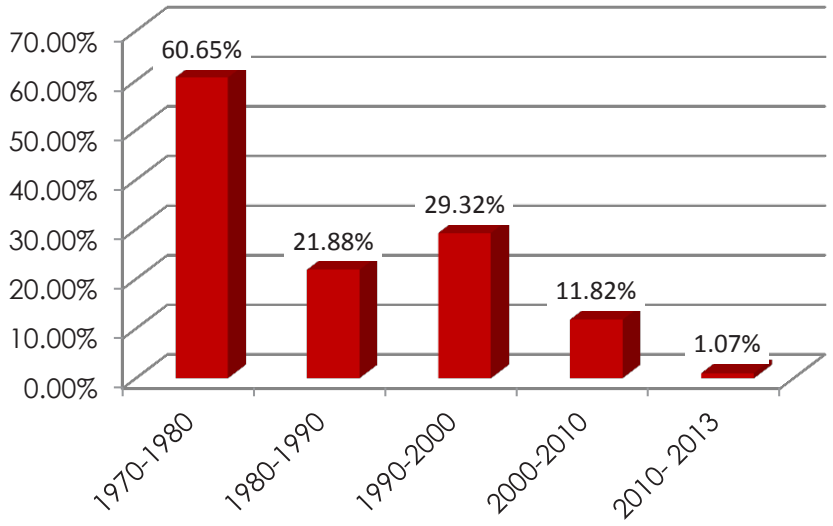
As shown in Figure 3-1, the population of St. Joseph has grown slowly since the completion of the 2006 Comprehensive Plan. In 2013, an estimated population of 3,883 resided in St. Joseph. This is a growth of 447 people since year 2000. Although this is a small number, it is a growth rate of 13 percent within 13 years. Figure 3-2 shows the percentage change over the past several decades. While the greatest population growth in St. Joseph happened in the 1970s and the rate of growth has been on a general decline, the Town has continued to experience double digit growth over the past 40 years. It is likely that this trend will continue in the near future.

Figure 3-1
Population Trends



Source: US Census

Figure 3-2
Population Percent Change



Source: US Census

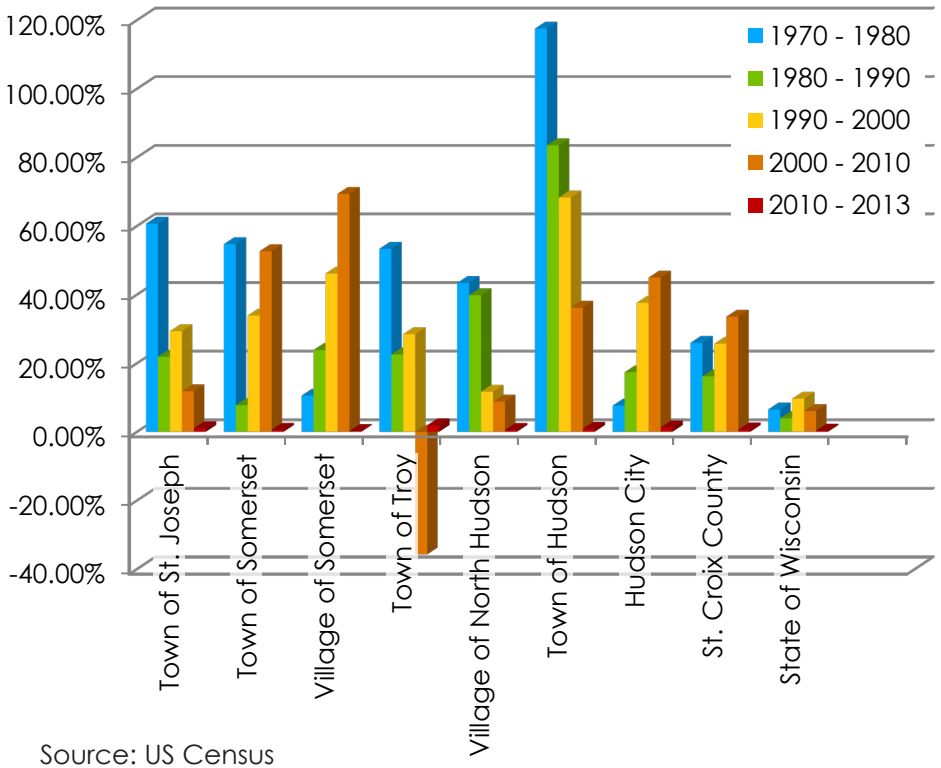
Table 3-1 and Figure 3-3 show the 1970 - 2013 population growth in St. Joseph and surrounding communities, as well as in St. Croix County and the state of Wisconsin.

Table 3-1
Population Trends

Community	1970	1980	1970 - 1980 Change	1970 - 1980 Percent Change	1990	1980 - 1990 Change	1980 - 1990 Percent Change	2000	1990 - 2000 Change	1990 - 2000 Percent Change	2010	2000 - 2010 Change	2000 - 2010 Percent Change	2013	2010 - 2013 Change	2010 - 2013 Percent Change
Town of St. Joseph	1,357	2,180	823	60.65%	2,657	477	21.88%	3,436	779	29.32%	3,842	406	11.82%	3,883	41	1.07%
Town of Somerset	1,185	1,833	648	54.68%	1,975	142	7.75%	2,644	669	33.87%	4,036	1,392	52.65%	4,060	24	0.59%
Village of Somerset	778	860	82	10.54%	1,065	205	23.84%	1,556	491	46.10%	2,635	1,079	69.34%	2,641	6	0.23%
Town of Troy	1,517	2,326	809	53.33%	2,850	524	22.53%	3,661	811	28.46%	2,353	-1,308	-35.73%	2,398	45	1.91%
Village of North Hudson	1,547	2,218	671	43.37%	3,101	883	39.81%	3,463	362	11.67%	3,768	305	8.81%	3,789	21	0.56%
Town of Hudson	925	2,012	1,087	117.51%	3,692	1,680	83.50%	6,213	2,521	68.28%	8,461	2,248	36.18%	8,537	76	0.90%
Hudson City	5,049	5,434	385	7.63%	6,378	944	17.37%	8,775	2,397	37.58%	12,719	3,944	44.95%	12,880	161	1.27%
St. Croix County	34,354	43,262	8,908	25.93%	50,251	6,989	16.16%	63,155	12,904	25.68%	84,345	21,190	33.55%	84,912	567	0.67%
State of Wisconsin	4,417,731	4,705,767	288,036	6.52%	4,891,769	186,002	3.95%	5,363,675	471,906	9.65%	5,686,986	323,311	6.03%	5,706,871	19,885	0.35%

Source: US Census

Figure 3-3
Population Trends



Source: US Census

The population of the Town of St. Joseph has increased by 186 percent in the past 43 years from 1,357 people in 1970 to 3,883 in 2013. The Town's population grew considerably faster than the state of Wisconsin as a whole, which increased in population by 29 percent during the same time period. The growth rate is also faster than in St. Croix County as a whole, which grew by 147 percent in the same period.

Most of the communities around the Town of St. Joseph have experienced continued population growth. Although growth in St. Joseph has been slowing since 2000, some surrounding communities, the County, and the State have grown at a faster rate.

The Town of St. Joseph's natural amenities, proximity to the Twin Cities, and location along the

Highway 64 and 35 corridors have fueled much of its growth. It is reasonable to expect that the Town's population will continue to grow as people migrate from growing Twin Cities area in search of a more rural lifestyle and as existing younger residents of the Town begin to establish families. In addition, construction of the new St. Croix Crossing Bridge is underway, which will affect growth pressure in the near future.

Population Share

The Town of St. Joseph and surrounding communities comprised 39 percent of the County's total population in 1980 as shown on Table 3-2. Their share increased steadily through 2013 to 45 percent. This trend illustrates some of the land use and growth dynamics occurring in the community mentioned above.

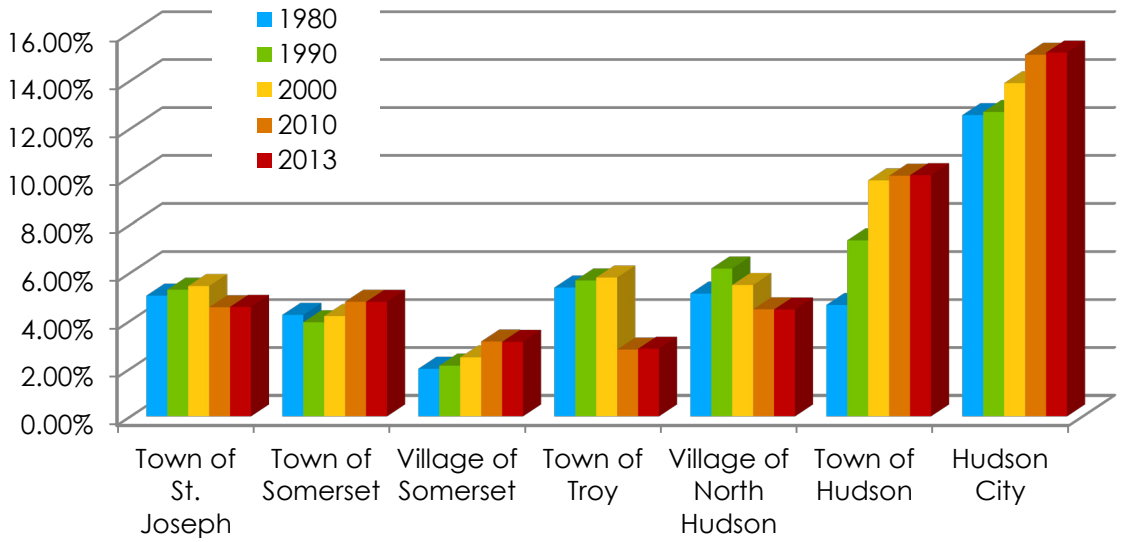
The Town of St. Joseph's share of population in St. Croix County has been more or less stable in the past decades. This share has declined somewhat since 2000 while those in some surrounding communities increased.

Table 3-2
Population Share

Community	1980	Percent of County	1990	Percent of County	2000	Percent of County	2010	Percent of County	2013	Percent of County
Town of St. Joseph	2,180	5.04%	2,657	5.29%	3,436	5.44%	3,842	4.56%	3,883	4.57%
Town of Somerset	1,833	4.24%	1,975	3.93%	2,644	4.19%	4,036	4.79%	4,060	4.78%
Village of Somerset	860	1.99%	1,065	2.12%	1,556	2.46%	2,635	3.12%	2,641	3.11%
Town of Troy	2,326	5.38%	2,850	5.67%	3,661	5.80%	2,353	2.79%	2,398	2.82%
Village of North Hudson	2,218	5.13%	3,101	6.17%	3,463	5.48%	3,768	4.47%	3,789	4.46%
Town of Hudson	2,012	4.65%	3,692	7.35%	6,213	9.84%	8,461	10.03%	8,537	10.05%
Hudson City	5,434	12.56%	6,378	12.69%	8,775	13.89%	12,719	15.08%	12,880	15.17%
Subtotal	**16,863**	**38.98%**	**21,718**	**43.22%**	**29,748**	**47.10%**	**37,814**	**44.83%**	**38,188**	**44.97%**
St. Croix County	43,262	100.00%	50,251	100.00%	63,155	100.00%	84,345	100.00%	84,912	100.00%

Source: US Census

Figure 3-4
Population Share



Source: US Census

Age Distribution

Trends in age impact a community's planning needs. These demographics help project the types of housing, schools, parks and community facilities and services that may be needed in the future. Table 3-3 shows the median age in the Town of St. Joseph and surrounding communities. The table shows that St. Joseph's median age continues to be higher than surrounding communities, the County and Wisconsin as a whole. The table also shows that almost all communities adjacent including the county and the state are experiencing aging of the general population, a trend that is more pronounced in St. Joseph.

Table 3-4 shows the age cohorts for the Town of St. Joseph for 1990 and 2013. This is also illustrated in Figure 3-6. In 2013, the largest age cohort in the Town of St. Joseph is the 45 to 54 year-old group, followed by the 65 to 74 year-old group. These groups, combined, comprise 40 percent of the Town's population. From 2000 to 2013, the majority of population growth in St. Joseph occurred in age groups older than 44. In the 45 to 54 and 55 to 64 year-old cohorts there was a growth of 87% and 88% respectively. The population of the 65 to 74 cohort increased 239 percent during the same period. In the meantime, younger population cohorts experienced double digit decreases.

Table 3-3
Median Age

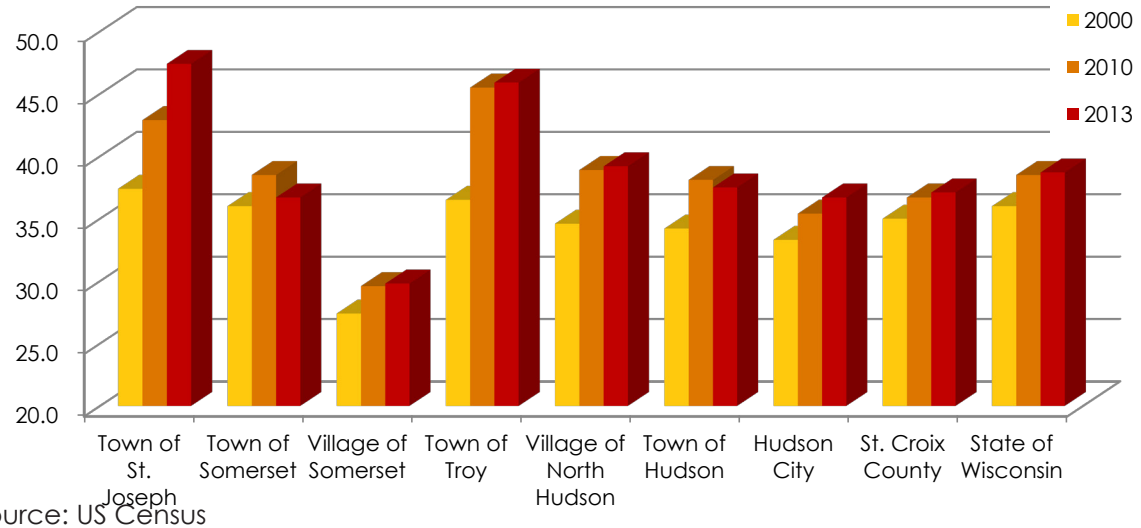
Community	2000	2010	2013
Town of St. Joseph	37.4	42.9	47.4
Town of Somerset	36.0	38.5	36.7
Village of Somerset	27.4	29.6	29.8
Town of Troy	36.5	45.5	45.9
Village of North Hudson	34.6	38.9	39.2
Town of Hudson	34.2	38.1	37.5
Hudson City	33.3	35.4	36.7
St. Croix County	35.0	36.7	37.1
State of Wisconsin	36.0	38.5	38.7

Source: US Census

Table 3-4
Population by Age

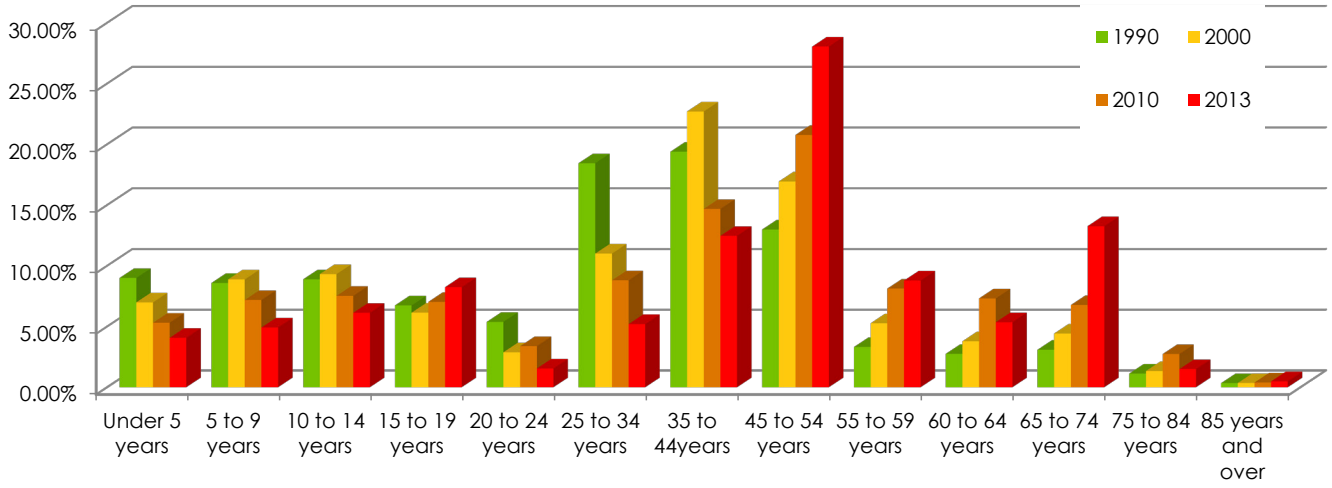
	1990		2000		1990 - 2000 Change		2010		2000 - 2010 Change		2013		2010 - 2013 Change	
Age Cohort	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 5 years	239	9.00%	240	6.98%	1	0.42%	204	5.31%	-36	-15.00%	158	4.07%	-46	-22.55%
5 to 9 years	228	8.58%	305	8.88%	77	33.77%	276	7.18%	-29	-9.51%	191	4.92%	-85	-30.80%
10 to 14 years	236	8.88%	320	9.31%	84	35.59%	289	7.52%	-31	-9.69%	238	6.13%	-51	-17.65%
15 to 19 years	179	6.74%	211	6.14%	32	17.88%	270	7.03%	59	27.96%	320	8.24%	50	18.52%
20 to 24 years	143	5.38%	99	2.88%	-44	-30.77%	130	3.38%	31	31.31%	60	1.55%	-70	-53.85%
25 to 34 years	490	18.44%	378	11.00%	-112	-22.86%	338	8.80%	-40	-10.58%	202	5.20%	-136	-40.24%
35 to 44years	515	19.38%	780	22.70%	265	51.46%	564	14.68%	-216	-27.69%	484	12.46%	-80	-14.18%
45 to 54 years	345	12.98%	582	16.94%	237	68.70%	798	20.77%	216	37.11%	1,089	28.05%	291	36.47%
55 to 59 years	88	3.31%	181	5.27%	93	105.68%	312	8.12%	131	72.38%	341	8.78%	29	9.29%
60 to 64 years	73	2.75%	130	3.78%	57	78.08%	281	7.31%	151	116.15%	208	5.36%	-73	-25.98%
65 to 74 years	82	3.09%	152	4.42%	70	85.37%	260	6.77%	108	71.05%	515	13.26%	255	98.08%
75 to 84 years	30	1.13%	46	1.34%	16	53.33%	105	2.73%	59	128.26%	58	1.49%	-47	-44.76%
85 years and over	9	0.34%	12	0.35%	3	33.33%	15	0.39%	3	25.00%	19	0.49%	4	26.67%
Total	2,657	100.00%	3,436	100.00%	779	29.32%	3,842	100.00%	406	11.82%	3,883	100.00%	41	1.07%

Figure 3-5
Median Age



Source: US Census

Figure 3-6
Population by Age



Source: US Census

Population Projections

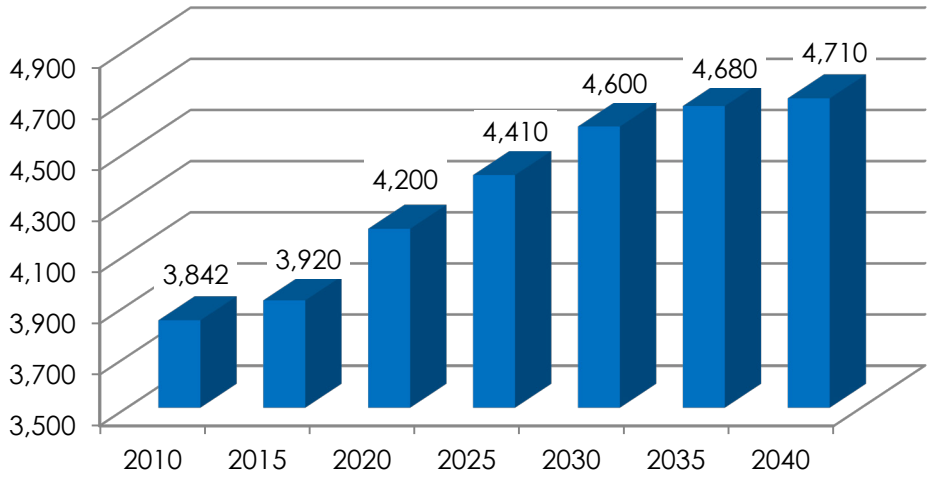
According to the Wisconsin state demographic services, the Town of St. Joseph is expected to have a 7 percent increase in population between 2015 and 2020. This growth rate is expected to slow down gradually over the next two decades. St. Joseph is expected to grow at about the same rate as the county and the state for the next 25 years. Its growth is expected to exceed that of the state as a whole but less than the county as a whole.

Table 3-5
Population Projection

Community	2010	2015	2020	2025	2030	2035	2040	2010 - 2040 Percent Change
Town of St. Joseph	3,842	3,920	4,200	4,410	4,600	4,680	4,710	22.59%
St. Croix County	84,345	87,990	96,985	104,450	111,470	115,900	119,010	41.10%
State of Wisconsin	5,686,986	5,783,015	6,005,080	6,203,850	6,375,910	6,476,270	6,491,635	14.15%

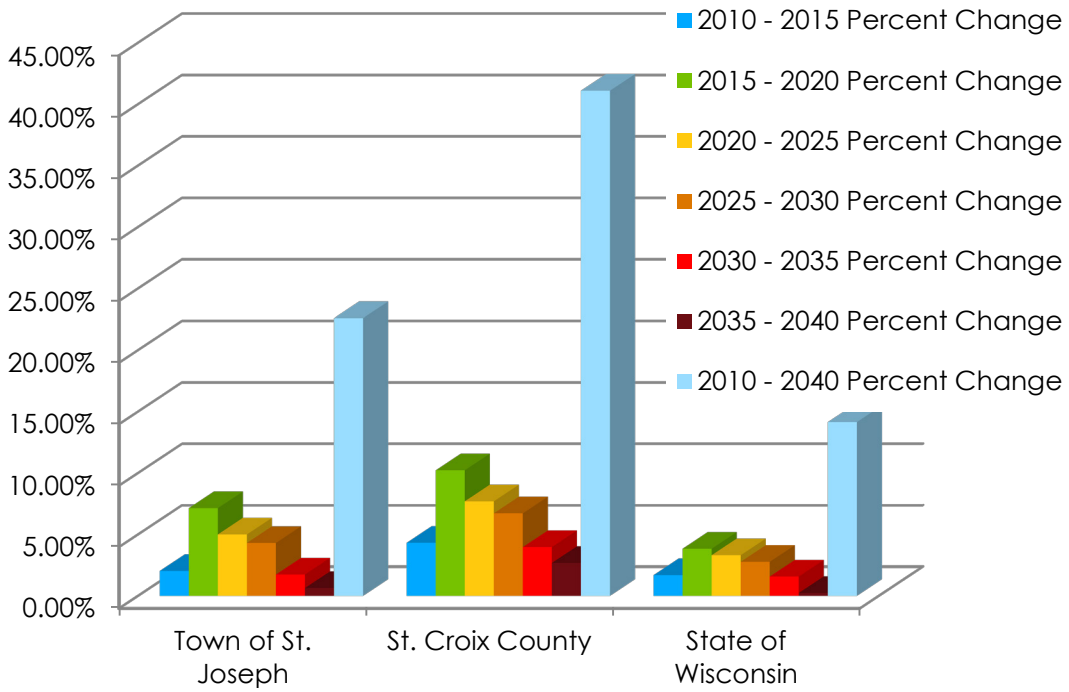
Source: Wisconsin Department of Administration

Figure 3-7
Population Projection



Source: Wisconsin Department of Administration

Figure 3-8
Projected Population Percent Change



Source: Wisconsin Department of Administration

2. HOUSEHOLDS

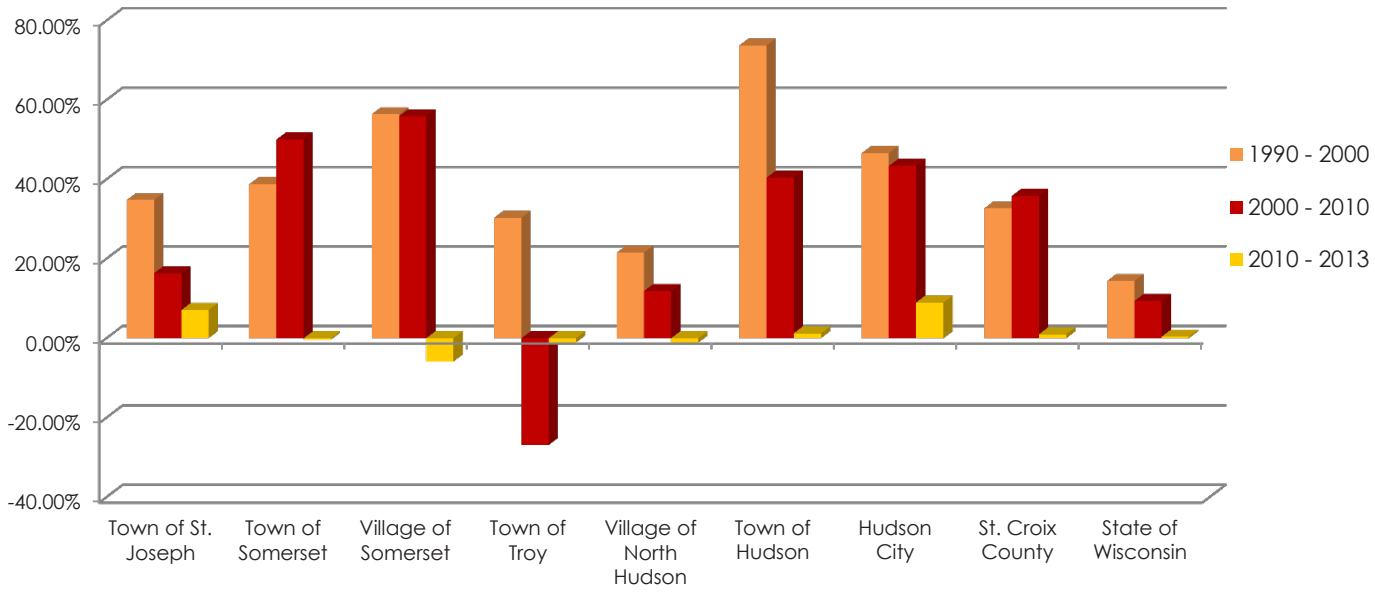
Table 3-6 shows that from 2000 to 2013, St. Joseph continued to grow in number of households. This pattern is also present in nearby communities, the County and the State. The Town experienced a household growth rate of approximately 25 percent. This was significantly higher than the statewide average of 10 percent, but lower than some neighboring communities and the County as a whole. Overall, the rates of household growth of all these communities have generally slowed in the past two decades.

Table 3-6
Household Trends

Community	1990	2000	1990 - 2000		2010	2000 - 2010		2013	2010 - 2013		2000 - 2013	
			Change	Percent Change		Change	Percent Change		Change	Percent Change	Change	Percent Change
Town of St. Joseph	885	1,193	308	34.80%	1,388	195	16.35%	1,486	98	7.06%	293	24.56%
Town of Somerset	668	927	259	38.77%	1,391	464	50.05%	1,386	-5	-0.36%	459	49.51%
Village of Somerset	406	635	229	56.40%	990	355	55.91%	932	-58	-5.86%	297	46.77%
Town of Troy	959	1,250	291	30.34%	914	-336	-26.88%	904	-10	-1.09%	-346	-27.68%
Village of North Hudson	1,082	1,315	233	21.53%	1,471	156	11.86%	1,455	-16	-1.09%	140	10.65%
Town of Hudson	1,108	1,925	817	73.74%	2,703	778	40.42%	2,736	33	1.22%	811	42.13%
Hudson City	2,515	3,687	1,172	46.60%	5,287	1,600	43.40%	5,764	477	9.02%	2,077	56.33%
St. Croix County	17,638	23,410	5,772	32.72%	31,799	8,389	35.84%	32,114	315	0.99%	8,704	37.18%
State of Wisconsin	1,822,118	2,084,544	262,426	14.40%	2,279,768	195,224	9.37%	2,288,332	8,564	0.38%	203,788	9.78%

Source: US Census

Figure 3-9
Household Trends in Percent Change



Source: US Census

Size and Characteristics of Growth

The character of households can change over time in two ways related to a community's population growth: by number and by size. If, over time, population growth is coupled with an increase in both the number and size of households, it generally indicates a community is growing from within (i.e. a high birth rate). However, if population growth is reflected by an increase in the number of households and a decrease in the size of the household, then it may indicate that the community is growing due to an influx of new residents.

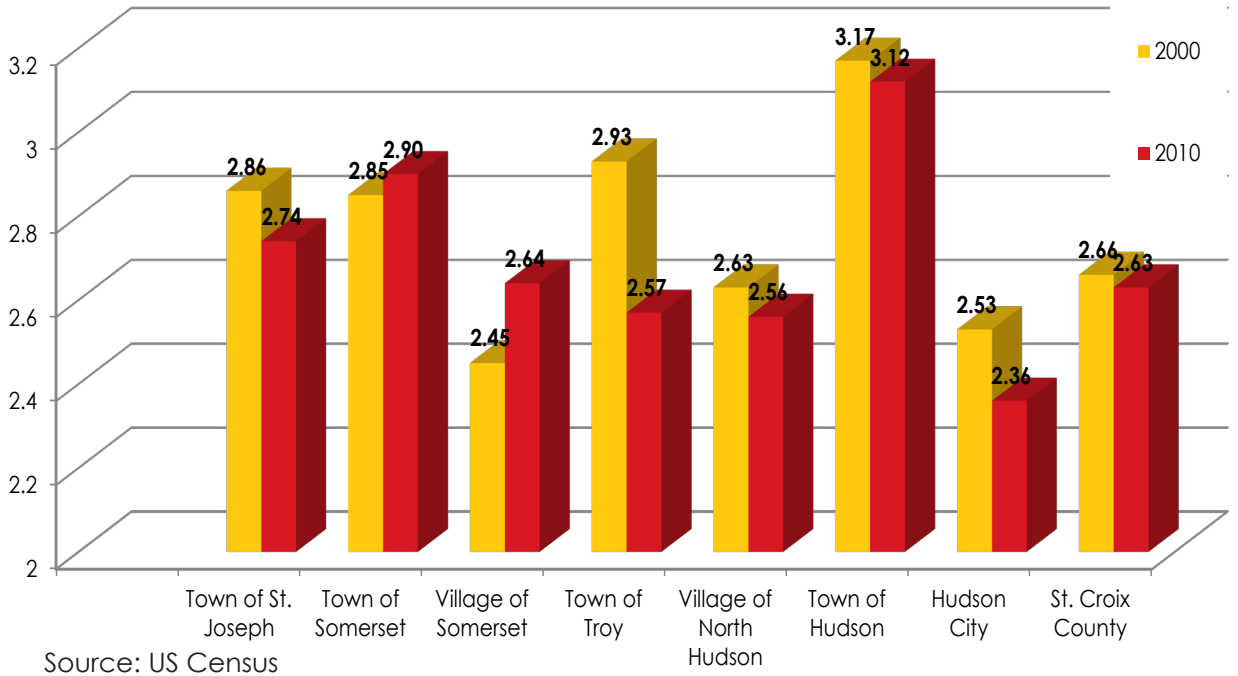
Tables 3-1 and 3-7 show an increase in the Town of St. Joseph's population and number of households, and a decrease in the number of persons per household. This is consistent with the national trends of smaller family sizes and more single person households. Therefore, the data indicates that the Town of St. Joseph is growing due to an influx of new residents.

Table 3-7
Household vs. Population

	1990	2000	1990 - 2000 Change	1990 - 2000 Percent Change	2010	2000 - 2010 Change	2000 - 2010 Percent Change
Persons in Households	2,636	3,407	771	29.25%	3,810	403	11.83%
Total Households	885	1,193	308	34.80%	1,388	195	16.35%
Average Household Size	2.98	2.86	-0.12	-4.12%	2.74	-0.11	-3.88%

Source: US Census

Figure 3-10
Household Trends



Source: US Census

Household Projections

According to the Wisconsin state demographic services, the Town of St. Joseph is expected to have an 8.5 percent increase in households between 2015 and 2020. This growth rate is expected to slow down gradually over the next two decades.

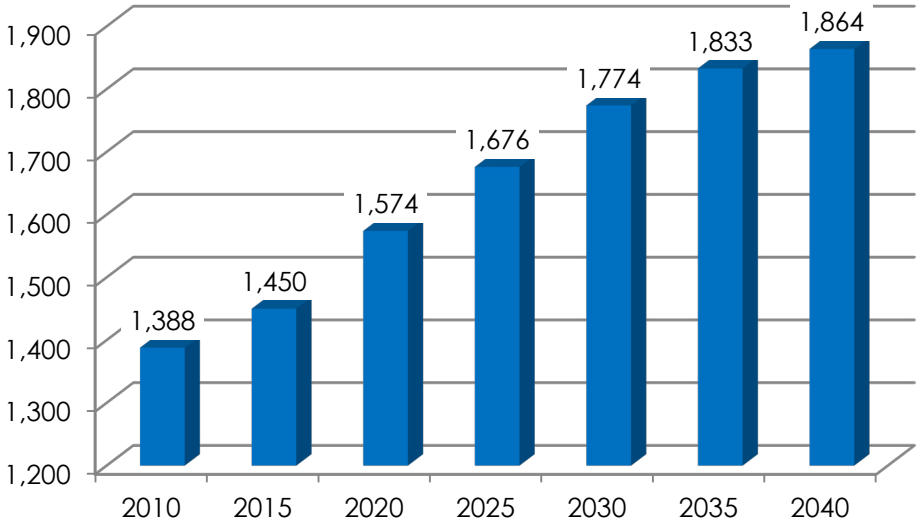
Similar to the population projections, the number of households in St. Joseph is expected to grow at about the same rate as the County and the State for the next 25 years. Its growth is expected to exceed that of the State as a whole but less than the County as a whole.

Table 3-8
Household Projections

Community	2010	2015	2020	2025	2030	2035	2040	2010 - 2040 Percent Change
Town of St. Joseph	1,388	1,450	1,574	1,676	1,774	1,833	1,864	34.29%
St. Croix County	31,799	33,975	37,935	41,416	44,853	47,314	49,073	54.32%
State of Wisconsin	2,279,768	2,371,815	2,491,982	2,600,538	2,697,884	2,764,498	2,790,322	22.39%

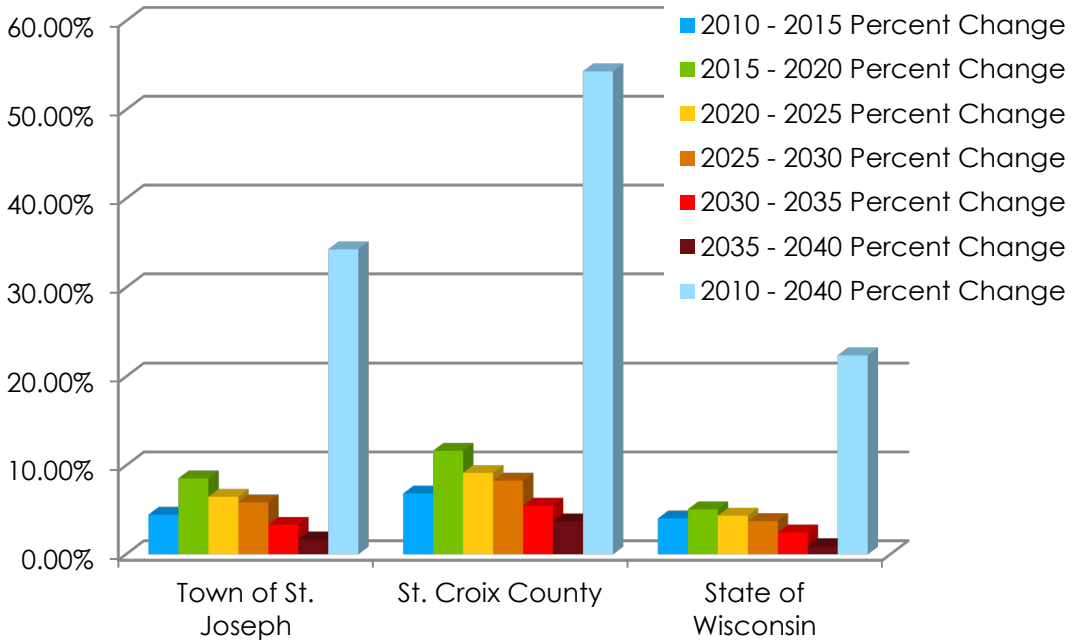
Source: Wisconsin Department of Administration

Figure 3-11
St. Joseph Household Projections



Source: Wisconsin Department of Administration

Figure 3-12
Projected Household Percent Change



Source: Wisconsin Department of Administration

3. HOUSING

Available, affordable and safe housing is necessary for a community to accommodate the growth of all segments of its population. It provides a vital link between the community's population growth, economic development goals and its land use priorities. The average age of the residents of the Town of St. Joseph is higher than the surrounding communities. The Town has a low inventory of affordable housing for young families and down-sized homes desirable to empty-nesters, retirees or the elderly. Currently the Town of St. Joseph has a three acre minimum requirement per single family residence in the sub-division ordinance. In order to encourage growth in the population and local economy, housing may be needed in the Town of St. Joseph for residents of differing income levels, multi-family and single-family units, and for purchase and rent.

Housing Types

In the Town of St. Joseph, more than 90 percent of the housing stock is single family units. Table 3-9 describes the total number of occupied housing units in the Town for years 2000 and 2013. During this time period, the housing stock in the Town of St. Joseph increased by 350 units. Single-family homes grew 371 units which was a 32 percent increase. There was no change in multi-family units and the number of mobile homes decreased by 21 units, a loss of more than 40 percent since 2000.

Table 3-9
Housing Type (in Total Units)

	2000		2010		2000 - 2010 Change		2013		2010 - 2013 Change		2000 - 2013 Change	
Structure Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Single Family	1,163	93.41%	1,449	93.67%	286	24.59%	1,534	96.18%	85	5.87%	371	31.90%
Multi-Family	31	2.49%	46	2.97%	15	48.39%	31	1.94%	-15	-32.61%	0	0.00%
Mobile Homes	51	4.10%	52	3.36%	1	1.96%	30	1.88%	-22	-42.31%	-21	-41.18%
Total	1,245	100.00%	1,547	100.00%	302	24.26%	1,595	100.00%	48	3.10%	350	28.11%

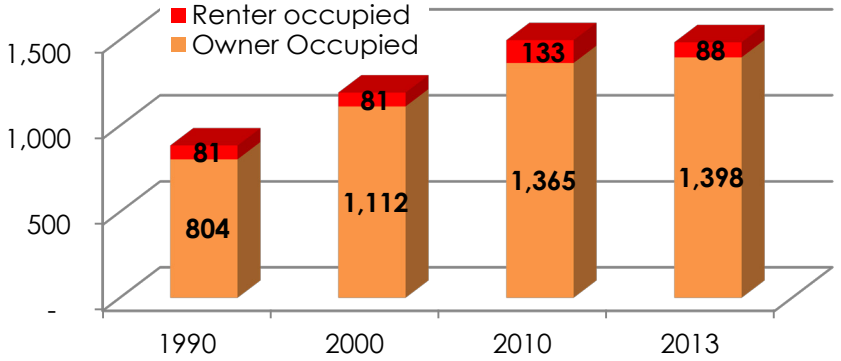
Source: US Census

Ownership/Occupancy Characteristics

Figure 3-13 shows that in 2013, 94 percent of the Town's housing is owner occupied. In Figure 3-14, the vacancy rate for owner occupied units was zero percent in 2010 and only 4.4 percent in 2013. That translates to only 61 owner occupied units in the Town were vacant in 2013.

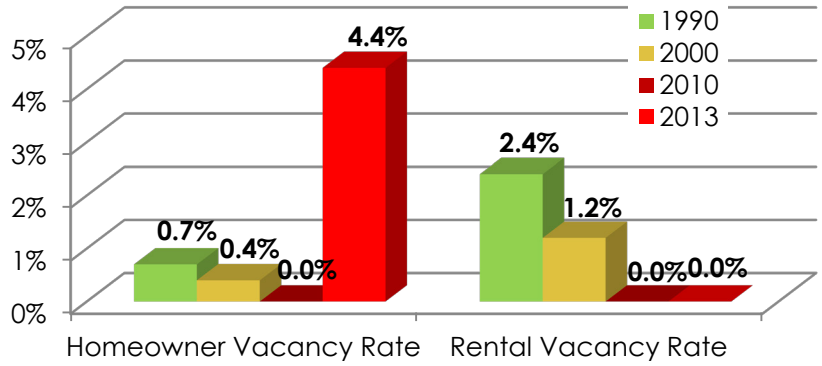
The Town of St. Joseph has very few renter occupied housing units. This number was 81 in 1990; it remained at 81 ten years later in 2000 and then had a major increase to 133 in 2010. However, it quickly decreased to 88 just 3 years later in 2013. Overall, the share of renter occupied housing has been small since 1990. Not surprisingly, the vacancy rate of rental units has been 0 since 2013.

Figure 3-13
Ownership/Occupancy Characteristics



Source: US Census

Figure 3-14
Housing Vacancy Rates

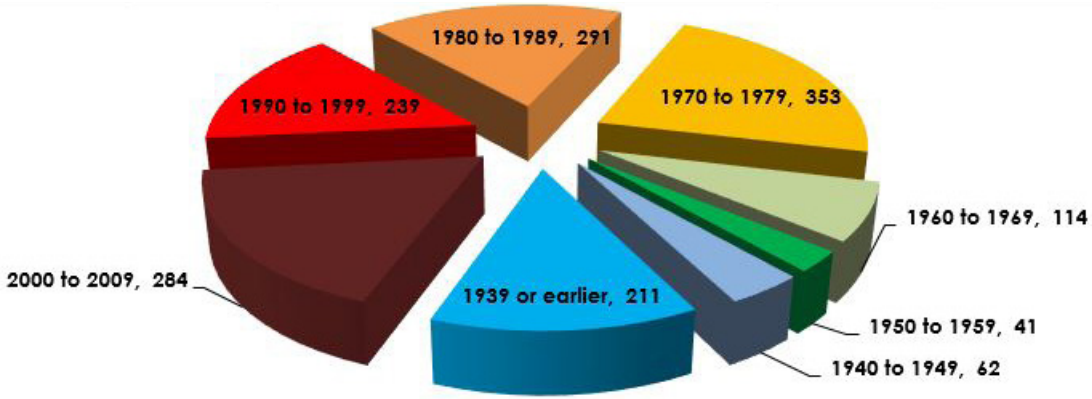


Source: US Census

Housing Age Characteristics

Figure 3-15 and Table 3-10 show the age of the Town of St. Joseph's housing stock. Over 50 percent of the Town's total housing units were constructed between 1970 and 2000. While over 30 percent of the units are fairly new (less than 20 years old), there is a sizable portion, about 20 percent, that is significantly older (over 50 years old).

Figure 3-15
Housing Age in Total Units



Source: US Census

Table 3-10
Housing Age Characteristics

Year Built	Number	Percent
2000 to 2009	284	17.81%
1990 to 1999	239	14.98%
1980 to 1989	291	18.24%
1970 to 1979	353	22.13%
1960 to 1969	114	7.15%
1950 to 1959	41	2.57%
1940 to 1949	62	3.89%
1939 or earlier	211	13.23%
Total housing units	1,595	100.00%

Source: US Census

Value Characteristics

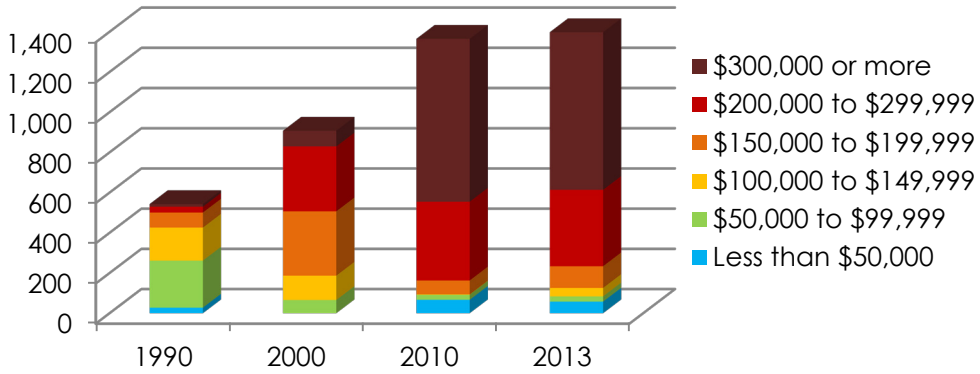
Table 3-11 and Figure 3-16 illustrate housing values for the years 1990 and 2013 in the Town of St. Joseph. From the component proportions, it is obvious that as time passes, The Town's supply of housing has skewed towards higher-priced homes. Since 2010, the largest group of home values has fallen in the $300,000 or more range.

Table 3-11
Owner Occupied Housing Values

Type	1990		2000		2010		2013	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Less than $50,000	28	5%	0	0%	67	5%	58	4%
$50,000 to $99,999	234	43%	66	7%	25	2%	26	2%
$100,000 to $149,999	164	30%	121	13%	2	0%	42	3%
$150,000 to $199,999	75	14%	320	35%	69	5%	108	8%
$200,000 to $299,999	29	5%	323	36%	392	29%	380	27%
$300,000 or more	13	2%	78	9%	810	59%	784	56%
Total	543	100%	908	100%	1,365	100%	1,398	100%

Source: US Census

Figure 3-16
Owner Occupied Housing Values



Source: US Census

Adjusted to 2013 dollars, the median value of home in the Town of St. Joseph was $252,302 in 2000, as shown in Table 3-12. By 2013, the value rose to $325,400. This represents a 29 percent increase in housing values. Compared to the 10 percent increase in St. Croix County and the State of Wisconsin, the Town has a very healthy and desirable housing market.

Table 3-12
Median Housing Values (in 2013 Dollars)

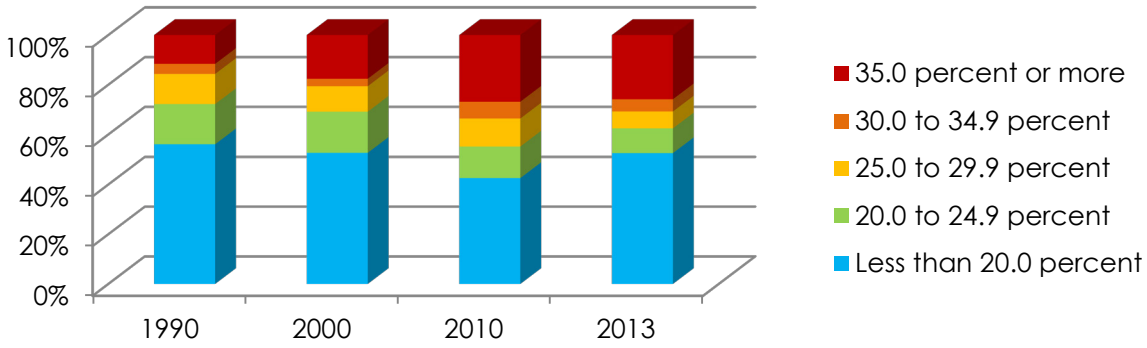
Community	2000	2010	2000 - 2010 Change		2013	2010 - 2013 Change	
			Change	Percent		Change	Percent
Town of St. Joseph	252,302	351,911	99,609	39.48%	325,400	-26,511	-7.53%
St. Croix County	188,720	241,124	52,404	27.77%	206,900	-34,224	-14.19%
State of Wisconsin	151,787	180,550	28,763	18.95%	167,100	-13,450	-7.45%

Source: US Census

Affordability Trends

Housing is often considered affordable if a household does not have to spend more than 30 percent of its gross income on housing. Meanwhile, over half of the Town's residents continue to spend less than 20 percent of their income on housing. Figure 3-17 shows that in 2013, 31 percent of the Town of St. Joseph's residents spent 30 percent or more on housing. This is up from 16 percent in 1990 and 21 percent in 2000 but down slightly from 34 percent in 2010.

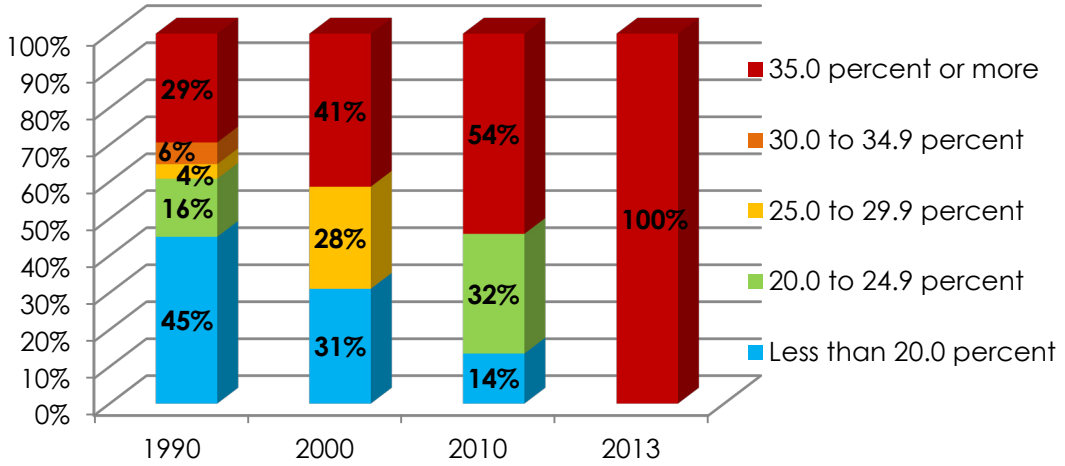
Figure 3-17
Overall Percent of Income Spent on Housing



Source: US Census

As discussed earlier, renters occupy a very small portion of the Town of St. Joseph housing market. As shown in Figure 3-18, over time, renters are steadily spending a much higher portion of their income for housing. In 2013, 100 percent of the renters in St. Joseph spent more than 35 percent of their income on housing. This indicates an extremely tight rental market in the Town and could put pressure on both the existing housing market and the housing development front. Additional affordable rental units are needed to alleviate the cost burden of renters in the Town.

Figure 3-18
Renters' Percent of Income Spent on Housing



Source: US Census

Housing Conditions

No in-depth assessment of housing condition has been conducted in the Town of St. Joseph. Anecdotal information from Town staff and residents indicates that the majority of housing in St. Joseph is in good or excellent condition, with more older homes in the Houlton area and Burkhardt area.

4. POLICY PLAN

The Town of St. Joseph recognizes the importance of maintaining and expanding its housing stock in order to foster economic growth and sustain a high quality of life for area residents. Below are the goals and policies of the Town to address housing and neighborhoods.

Housing Goal #1: Promote cooperative efforts and utilize existing resources to foster housing development within the Town.

Policies:

1. Continue to study housing needs and resources; and monitor and update goals as needed.
2. Work closely with federal, state, and local agencies and organizations that can help the Town meet its housing goals.
3. Encourage public and private partnerships to expand affordable housing and housing rehabilitation opportunities in the Town.
4. Explore county-wide and other intergovernmental options to develop regional strategies and incentives to promote the expansion of affordable, work force, rental, life cycle and other housing opportunities.

Housing Goal #2: Promote a variety of housing types in the Town for citizens of all income levels, ages, abilities and needs.

Policies:

1. Encourage the appropriate mix of a variety of housing types throughout the Town's growth areas in accordance with the Future Land Use Plan.
2. Develop policies that allow neighborhoods with mixed housing types and/or other appropriate uses within residential areas.
3. Examine policies and other development standards to ensure they encourage the provision of affordable housing.
4. Develop options for providing accessory dwelling units to meet alternative housing needs.
5. Encourage housing developments that serve unique populations including seniors, low income residents, and residents with physical disabilities.

Housing Goal #3: Encourage well maintained residential neighborhoods.

Policies:

1. Develop and enforce the necessary codes to ensure the continued maintenance of the housing stock.
2. Identify or develop methods and funding options to encourage the rehabilitation or redevelopment of substandard housing.

Chapter 4 Transportation Element

1. INTRODUCTION

This chapter identifies existing and future roads and other transportation infrastructure that serve the Town. This analysis will help guide land use and development in the Town that is concurrent with an accessible and efficient road network. The Policy Plan identifies future and current aspirations of the Town with respect to the transportation system. This transportation system is important as a result of the construction of the St. Croix Crossing Bridge. The bridge will increase traffic coming from Minnesota into the Town of St. Joseph and alter current traffic patterns. The functional classification of roadways and projected annual average daily traffic, presented below, reflects these major transportation changes.

2. FUNCTIONAL CLASSIFICATION OF ROADWAYS

Functional Classification of a roadway system involves determining what function each roadway should be performing with regard to travel within and through a community. The intent of a functional classification system is to create a roadway hierarchy that collects and distributes traffic from local roadways and collectors to arterials in a safe and efficient manner. Such classification aids in determining appropriate roadway widths, speed limits, intersection control, design features, accessibility and maintenance priorities. Functional classification helps to ensure that non-transportation factors, such as land use and development, are taken into account in planning and design of the roadway system.

St. Croix County Road Classification System

The Town of St. Joseph maintains a Roadway Map with slightly different roadway classification categories, and slightly different classifications for some roadways, than St. Croix County. The County's classification is described here. A balanced system is desired, yet not always attainable due to existing conditions and characteristics. The criteria of the Functional Classification System are intended to be guidelines and are to be applied when plans are developed for the construction or reconstruction of a given route. It can and does occur that different roadways with very similar design characteristics may have different functional classifications. Some roadways, for a short segment, may carry higher volumes than a roadway with a higher classification. Spacing guidelines may not follow recommendations for a variety of reasons such as topography, land use type and density, and environmental concerns.

The two major considerations in the classification of roadway networks are access and mobility. Mobility is of primary importance on arterials, thus limitation of access is a necessity. The primary function of a local roadway, however, is to provide access, which in turn limits mobility. The extent and degree of access control is a very important factor in the function of a roadway facility. The functional classification types utilized are dependent upon one another in order to provide a complete system of streets and highways.

A complete functional design system provides a series of distinct travel movements. Most trips exhibit six recognizable stages. These stages are as follows:

- Main movement
- Transition
- Distribution
- Collection
- Access
- Termination

Using the functional classification system, roads in the Town of St. Joseph have been divided into four categories. These categories include principal arterials, minor arterials, major collectors, and local streets. The following paragraphs describe these classifications, highlight key roadways, and describe traffic projections for principal and minor arterials. The roads are mapped in Figure 4-1.

Principal Arterials

Principal Arterial roadways serve major activity centers, higher traffic volumes, longer trips and carry a higher proportion of total urbanized travel on a minimum of mileage. Along these facilities, access needs to be limited in order to preserve the ability of the roadway to accommodate the volumes and to maximize safety. Spacing varies from 2 to 3 miles for a fully developed area to 3 to 6 miles for a developing area. The management criteria require that a 40 mph average speed be achieved during peak traffic periods. Also, little or no direct land access should be allowed within an urban area. Grade separated intersections are required for freeways and highly desired for other principal arterial roadways. There are two principal arterials in the Town of St. Joseph:

- Highway 64: Along the St. Croix Crossing Bridge which connects Highway 64 to Highway 35.
- Highway 35: North of Houlton and South of the Town of St. Joseph into North Hudson, WI.

Annual Average Daily Traffic (AADT)
AADT for 2030 has been projected for principal arterials and listed below in Table 4-1.

Table 4-1
Projected AADT for Principal Arterials

Road Segment	Projected AADT in 2030
Highway 64 (Stillwater Bridge)	48,000
Highway 35	38,000

Minor Arterials

Minor Arterial roadways connect the urban service area to cities and towns inside and outside the region and generally serve medium to short trips. Minor Arterials may also provide an alternate route for congested Principal Arterial roadways. Minor Arterials connect principal arterials, minor arterials and connectors. The spacing ranges from ¼ to ¾ of a mile in metro centers to 1 to 2 miles in a developing area. The desired minimum average speed during peak traffic periods is 20 mph in fully developed areas and 30 mph in developing areas. The emphasis for Minor Arterial roadways is on mobility rather than on land access. In urban areas, direct land access is generally restricted to concentrations of commercial/industrial land uses. There is only one minor arterial roadway in the Town of St. Joseph:

- Highway 35: Through Houlton south of the town to North Hudson, WI.

Annual Average Daily Traffic (AADT)
AADT for 2030 has been projected for minor arterials and listed below in Table 4-2.

Table 4-2
AADT for Minor Arterials

Road Segment	Projected AADT in 2030
Highway 35 (North Houlton)	1,500
Highway 35 (Central Houlton)	3,400
Highway 35 (South of Houlton)	5,200

Major Collectors

Major Collectors provide more land access than arterials and provide connection to arterials, although not in all cases. As is the case with any roadway system, there will always be exceptions to the planning guidelines that are used to classify a roadway system. Collectors serve a dual function of accommodating traffic and provision of more access to adjacent properties. Mobility and land access are equally important and direct land access should predominately be to development concentrations. Collector road spacing ranges from ¼ to ¾ miles in fully developed areas, to ½ to 1 mile in developing areas. Major Collectors generally connect to minor arterials and serve shorter trips within the County. These roads supplement the arterial system in that mobility is slightly emphasized over access. Major collectors are:

- County Road A
- County Road E
- County Road I
- County Road V
- Trout Brook Road (south of River Road)

Annual Average Daily Traffic (AADT)
AADT for 2030 has been projected for County Road E, one of the major collectors, and is listed below in Table 4-3.

Table 4-3
Projected AADT for Major Collectors

Road Segment	Projected AADT in 2030
County Road E	4,300

Local Streets

The lowest classification of roadways is the local roadway where access is provided with much less concern for control, but land service is paramount. Spacing for local streets is as needed to access land uses. Local roadways generally have lower speed limits in urban areas and normally serve short trips. Local streets will connect with some minor arterials but generally connect to collectors and other local streets. The development of local streets will be guided by the location of the existing and proposed minor arterials and collectors as well as by development and the expansion of local utilities.

Town of St. Joseph Road Classification System

The Town's map is used to catalog the various roadways in the Town and document the different setbacks for structures abutting various classifications of roadways. The Town's Existing Roadway map – before the new bridge and new highway – is attached as Figure 4-2. St. Croix County's Roadway Classification map is attached as Figure 4-1. The differences in the categories are as follows:

Categories:

- St. Croix County has four classifications of roadways:
- Principal Arterial
- Minor Arterial
- Major Collector
- Local Road

The Town of St. Joseph's system has six classifications:

- Minor Arterial
- Collector
- Sub Collector
- Access Roads (greater of 108' from CL or 75' from ROW)
- Houlton/Burkhardt Access Roads (30' from ROW)
- Private Roads

The differences between the two maps as far as specific roadways are concerned are numerous, but not significant, and do not conflict with planning or maintenance of the roadways. Three County Roads are classified Major Collectors at the County level but designated Minor Arterials at the Town level. The most common difference is that many roads considered Local at the County level are considered Town Collectors or Sub Collectors. There are also many roads shown as Local on the County map that are private roads. The differences between the St. Croix County classification and the Town of St. Joseph classification are:

Major Collector on the County map and a Minor Arterial on the Town map:

- County Road E
- County Road I
- County Road A

Major Collector on the County map and a Sub Collector on the Town map:

- Trout Brook Road

Local Road on the County map and Collector on the Town map:

- Valley View Trail
- River Road

Local Road on the County map and Sub Collector on the Town map:

- Andersen Scout Camp Road
- Thelen Farm Trail/Settlers Way
- Heritage Trail
- 20th Street
- 24th Street
- 150th Avenue (24th Street to Heron Lane)
- Arbor Hills Drive
- 27th Street
- 125th Avenue

- Trout Brook Road North
- 50th Street (plus short contiguous segment of 150th Avenue)
- 60th Street (plus short contiguous segment of 150th Avenue)
- Old E West (north half only)
- Old E East
- 126th Avenue
- Rolling Hills Trail
- 52nd Street
- Perch Lake Road
- Scott Road
- Bass Lake Road
- 132nd Street (Bass Lake Road to County Road I)
- 80th Street/132nd Avenue/83rd Street
- 140th Avenue (83rd Street to eastern Town limits)
- 85th Street
- 150th Avenue (northeast corner of the Town)

Local Road on the County map and Private Road on the Town map:

- Too numerous to list

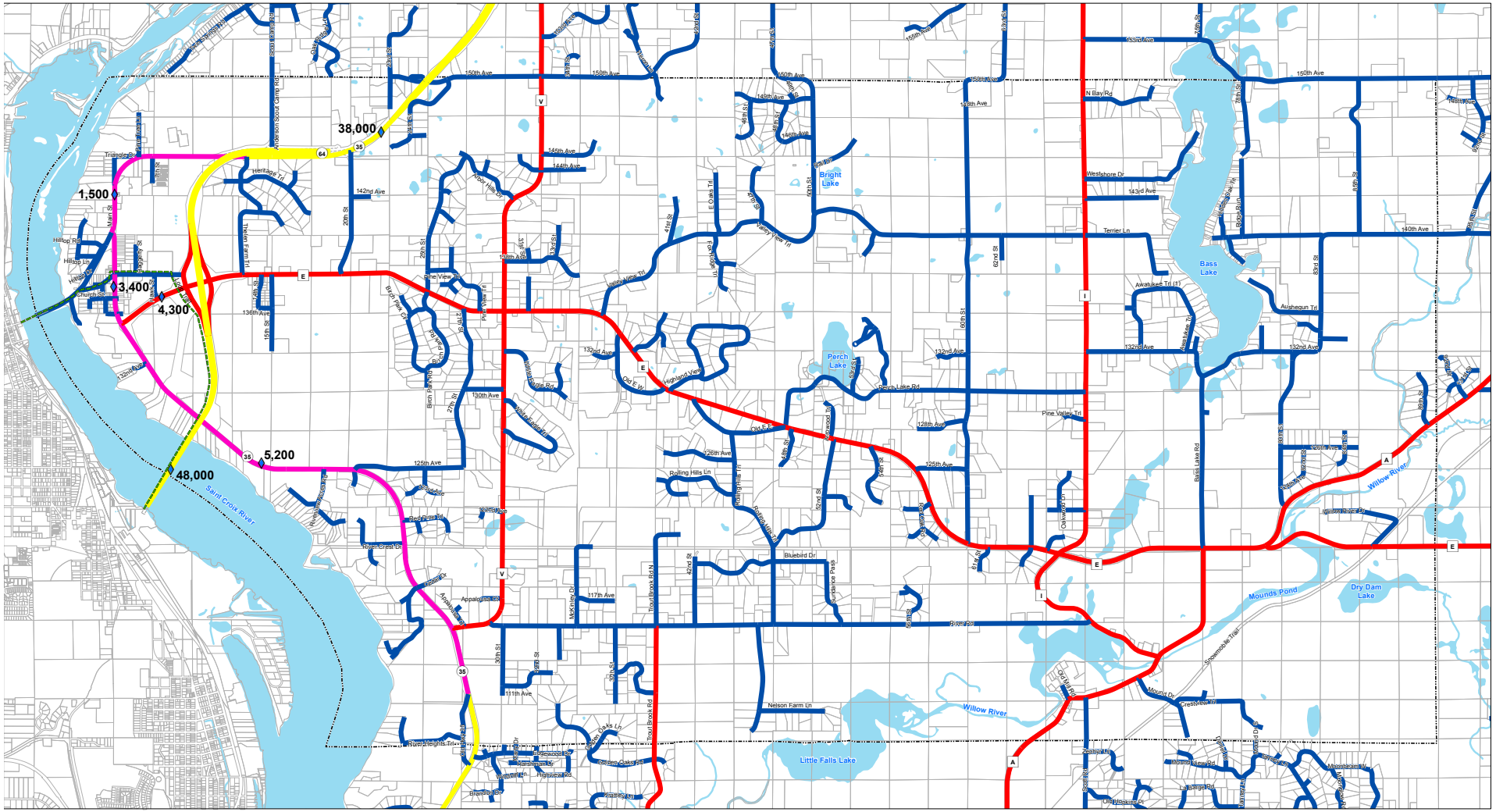
The St. Croix Crossing Bridge affected several segments of roadway:

1. New Highway 64 comes across the river on the St. Croix Crossing Bridge and curves through St. Joseph rejoining the old alignment of Highways 35/64 on the north edge of the Town. There is a new interchange with County Road E.
2. County Road E stays on its current alignment east of the new interchange but then curves south across the interchange to join existing Highway 35 about a third of a mile south of the old intersection of E and 35.
3. The segment of old County Road E between Highway 35 (Main Street) and the interchange ends in a cul-de-sac near the interchange and reverts to a local road.
4. A new street, Hawk Street, has been constructed to connect new County Road E to old County Road E directly south of the Houlton Elementary School.
5. The segment of old Highway 35 from its intersection with new County Road E north and east to its new terminus in a cul-de-sac past Andersen Scout Camp Road will change from a Minor Arterial to a Collector.
6. Segments of Highway 64 and County Road E between Main Street and the river are vacated to become part of the Loop Trail system.
7. A new frontage road on the south side of new Highway 35/64 connects Settler's Way to 20th Street, which will no longer have access to 35/64.

Principal Arterial will be added to the Town's system as a classification category for this new segment of Highway 35/64.

A reference map identifying these changed segments is included as Figure 4-3. The proposed Future Town Road Map, incorporating these changes, is included as Figure 4-4.

Figure 4-1
St. Croix County Roadway Functional Classification



St. Croix County Roadway Functional Classification

Town of St. Joseph Comprehensive Plan 2016

June 30, 2016

Stantec

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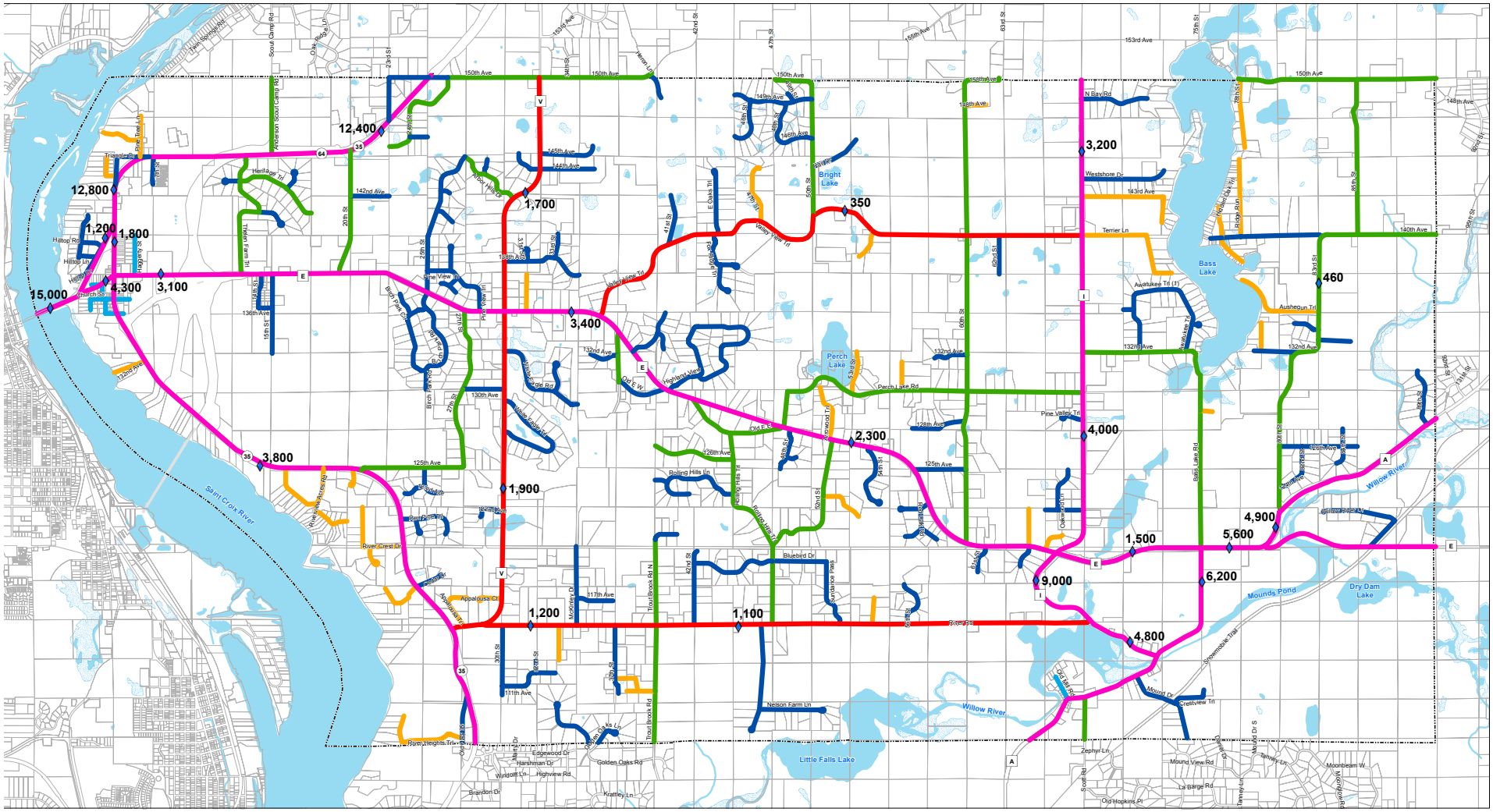
Figure 4-2
Existing Town Roadway Functional Classification



Existing Town Road Map (Pre-Bridge)

Town of St. Joseph Comprehensive Plan 2016

- Minor Arterial
- Collector (greater of 133' from CL or 100' from ROW)
- Sub Collector (same as Collector)
- 1,200 Existing ADT
- Access Roads (greater of 108' from CL or 75' from ROW)
- Houlton/Burkhardt Access Roads (30' from ROW)
- Private Roads
- Municipal Boundary

N W E S

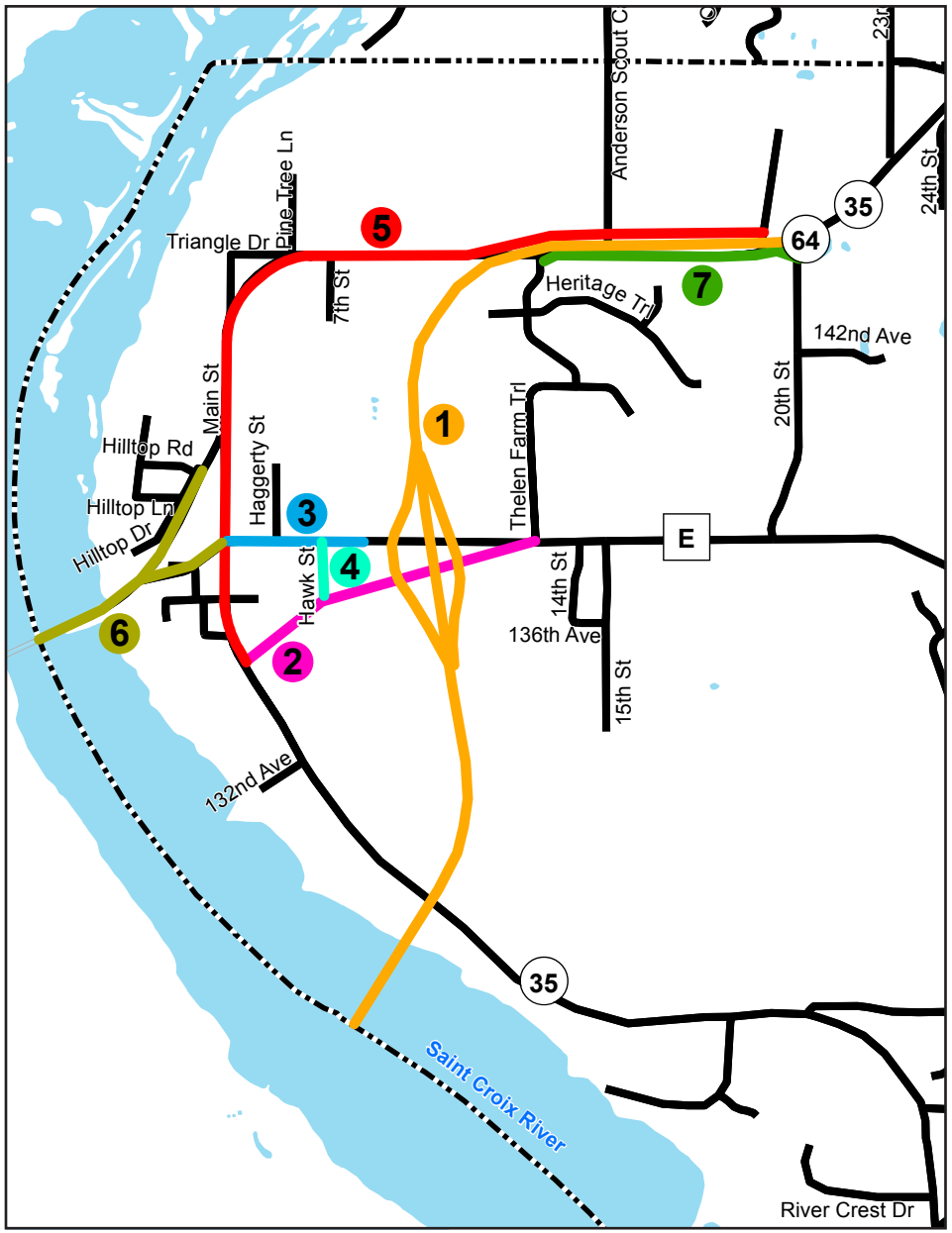
0 1,500 3,000 6,000 Feet

June 30, 2016

Stantec

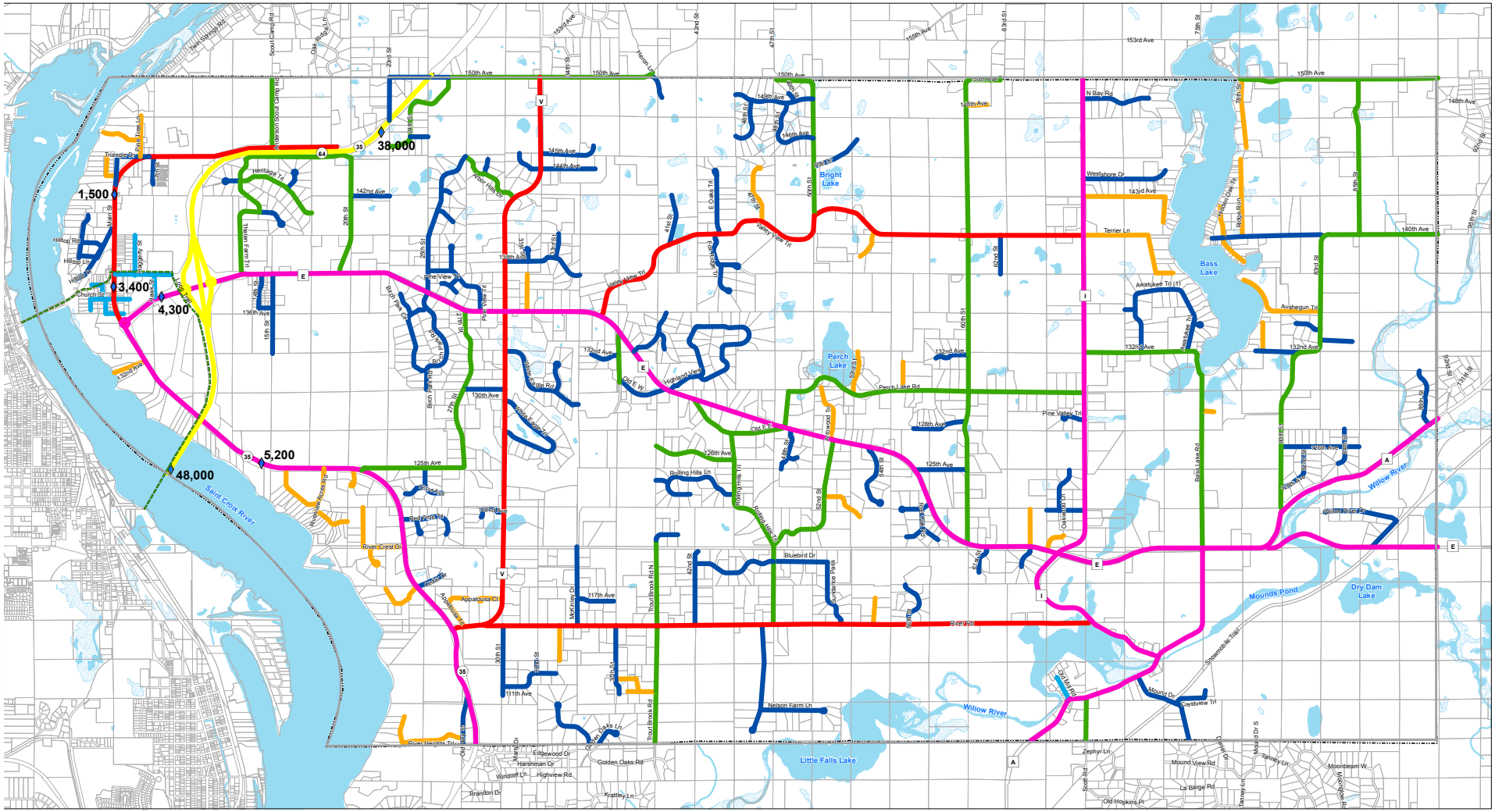
V:\1938\active\193803109\GIS\Projects\Town Road Map 22X34.mxd

Figure 4-3
Town Roadway Changes



1. New Highway 64 comes across the river on the St. Croix Crossing Bridge and curves through the Town of St. Joseph rejoining the old alignment of Highways 35/64 on the north edge of the Town. There is a new interchange with County Road E.
2. County Road E stays on its current alignment east of the new interchange but then curves south across the interchange to join existing Highway 35 about a third of a mile south of the old intersection of E and 35.
3. The segment of old County Road E between Highway 35 (Main Street), now Houlton School Circle, and the interchange ends in a cul-de-sac near the interchange and reverts to a local road.
4. A new street, Hawk Street, has been constructed to connect new County Road E to old County Road E directly south of the Houlton Elementary School.
5. The segment of old Highway 35 from its intersection with new County Road E north and east to its new terminus in a cul-de-sac past Andersen Scout Camp Road, will change from a Minor Arterial to a Collector.
6. Segments of Highway 64 and County Road E between Main Street and the river are vacated to become part of the Loop Trail system.
7. A new frontage road on the south side of new Highway 35/64 connects Settler's Way to 20th Street, which will no longer have access to 35/64.

Figure 4-4
Future Town Roadway Functional Classification



Future Town Road Map (Post-Bridge)

Town of St. Joseph Comprehensive Plan 2016

- Principal Arterial
- Minor Arterial
- Collector (greater of 133' from CL or 100' from ROW)
- Sub Collector (same as Collector)
- Access Roads (greater of 108' from CL or 75' from ROW)
- Houlton/Burkhardt Access Roads (30' from ROW)
- Private Roads
- Municipal Boundary
- 1,200 Projected 2030 ADT

0 1,500 3,000 6,000 Feet

June 30, 2016

Stantec

V:\1938\active\193803109\GIS\Projects\Town Road Map 22X34 Future.mxd

3. ACCESS MANAGEMENT

The management of access along roadway systems, particularly arterial and collector roadways is an important component of maximizing the capacity of a roadway and decreasing the accident potential along those facilities. Arterial roadways have a function of accommodating larger volumes of traffic and often at higher speeds. Therefore, access to such facilities must be limited in order to protect the integrity of the arterial function. Collector roadways provide a link from local streets to arterial roadways and are designed to provide more access to local land uses since the volumes and speeds are often lesser than arterial roadways.

Studies have shown that as the density of accesses increase, whether public or private, the traffic carrying capacity of the roadway decreases and the vehicular crash rate increases. Businesses suffer financially on roadways with poorly designed access. Well-designed access to commercial properties supports long-term economic vitality.

As with many transportation related decisions, land use activity and planning are integral parts of creation of a safe and efficient roadway system. Land use decisions have a major impact on the access conditions along the roadway system. Every land use plan amendment, subdivision, rezoning, conditional use permit, or site plan involves access and creates potential impact to the efficiency of the transportation system. Properties have access rights and good design will minimize the deleterious effect upon the roadway system. Access management is a combination of good land use planning and effective design of access to property.

The granting of access in the Town of St. Joseph is shared by the Town, St. Croix County and Wisconsin Department of Transportation, with each having the permitting process responsibility over roadways in their jurisdiction.

The Town, along with the County and State, produces access spacing quality that does provide benefits to the traveling public. In order to strengthen the goal of good access management, a set of access spacing guidelines has been prepared for use in the access permitting process.

The guidelines are presented for functionally classified arterial and collector roadways without reference to the jurisdiction over these roadways. The basic references for the spacing guidelines are the St. Croix County guidelines. The stated values are meant to be "minimum" values. It is also recognized that some existing connections, both public and private, may not meet these guidelines. It is also recognized that, due to various circumstances, access may need to be granted that cannot adhere to these guidelines. The access guidelines are presented in Table 4-4.

Table 4-4
Access Management Guidelines

	Minimum Distance from Centerline for Driveways on the Following Highways or Roads:				
Functional Classification of Intersecting Road Or Highway	**Freeways & Expressways**	**Principal & Minor Arterials**	**Major & Minor Collectors**	**Subcollector**	**All Access Roads**
Freeways, Expressways & Ramp Termini	No Access Allowed	1000 feet	1000 feet	1000 feet	1000 feet
Principal & Minor Arterials	No Access Allowed	500 feet	500 feet	500 feet	500 feet
Principal & Minor Arterials	No Access Allowed	500 feet	500 feet	200 feet	200 feet
Subcollectors	No Access Allowed	500 feet	500 feet	200 feet	200 feet
Access Roads	No Access Allowed	500 feet	500 feet	200 feet	200 feet
Subcollectors or Access Roads within Conservation Design Development	No Access Allowed	500 feet	500 feet	200 feet	150 feet

Source: St. Croix County Code of Ordinances, Subchapter VI, Section 17.60

4. STATE AND COUNTY PLANS

Town of St. Joseph In Relation to State and County Transportation Plans

Traffic volumes have been generally increasing throughout the County. The State Highway Plan 2020 identified WIS 35 from Hudson to Houlton as a facility that would experience moderate congestion by 2020 if no capacity expansion improvements were made. Extreme or severe congestion were projected for WIS 64 from Houlton to New Richmond. A legislatively approved major project on this road has since been completed.

The Town of St. Joseph has a total of 86.17 miles of road. 21.21 miles belong to the County and 64.96 miles belong to the Town. Within the County's miles, 0.27 miles are arterials and 20.94 miles are collectors. Of the Town roads, 11.41 miles are considered collectors and the remainder, 53.55 miles, are considered local roads.

The new St. Croix Crossing Bridge is projected to open in 2017. There is a process to designate WIS 64 from Houlton to New Richmond as a freeway/expressway. The conversion is not expected for 10 or more years. However, the designation of WIS 64 as freeway from the new St. Croix Crossing Bridge location to 150th Avenue is expected to take place by 2017.

There are specific rules for this new segment of freeway regarding length, height and width of agricultural equipment; driver requirements; hazardous materials; safety and vehicle registration; and weight restrictions from WisDOT.

The Town of St. Joseph will cooperate with St. Croix County and the State of Wisconsin in implementation of their transportation plans.

Bicycle and Pedestrian Issues in State and County Plans

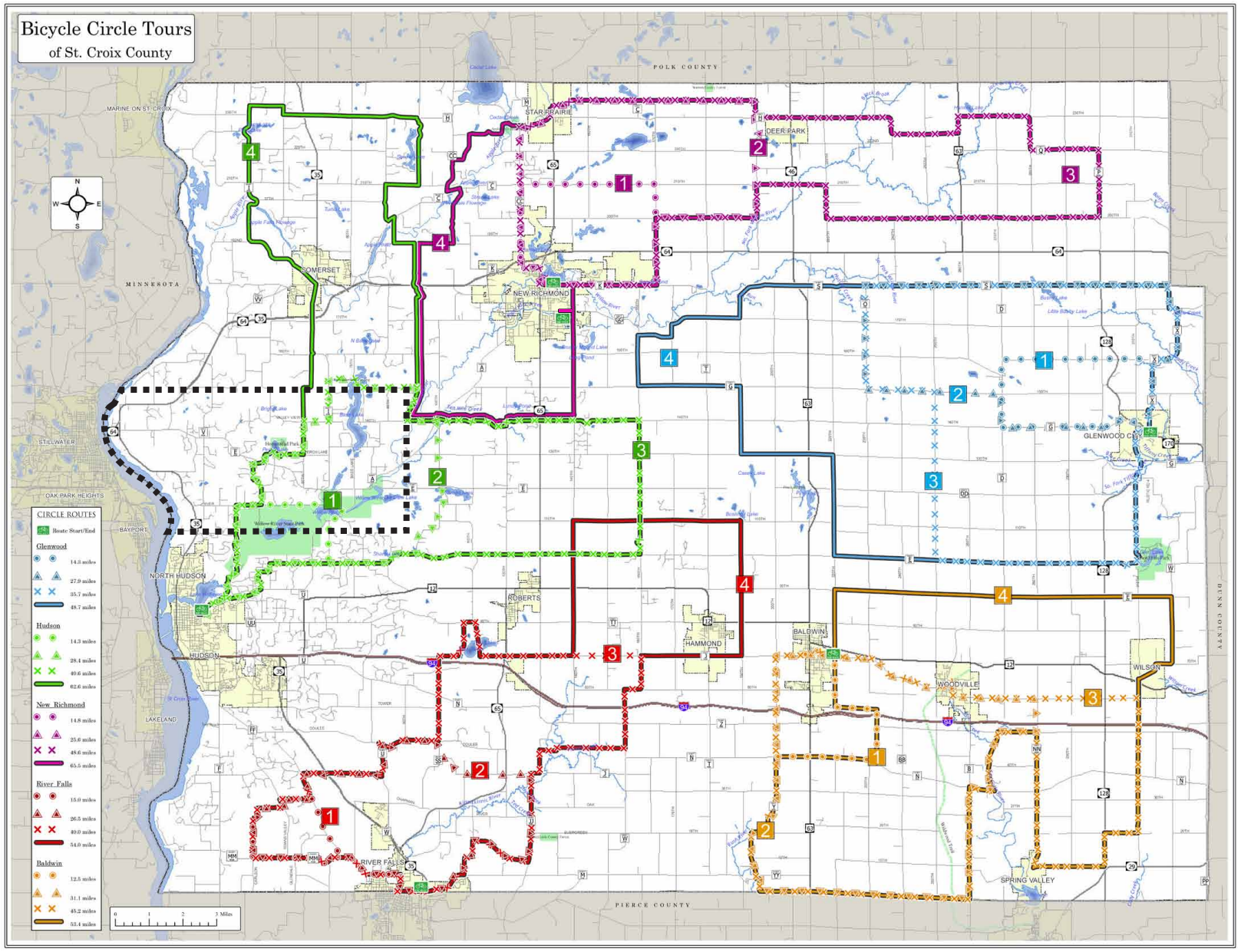
The St. Croix County Parks and Recreation Bicycle and Pedestrian Plan was developed in 2008. Three segments of the Hudson bicycle tour route passes the Town of St. Joseph. See Figure 4-5: St. Croix County Bicycle Circle Tours. The 2014 Town of St. Joseph Bicycle and Pedestrian Facility Implementation Study was adopted by the Town of St. Joseph in November 2014.

All Wisconsin towns, cities and villages must address the need for pedestrians to safely cross state or county highways. A federal program, Safe Routes to School, is available to assist communities with planning infrastructure improvements, enforcement and education to make walking and biking to school safer and to encourage students to do so.

The St. Croix River Crossing Bridge plan includes a bicycle and pedestrian Loop Trail utilizing the Historic Stillwater Lift Bridge. which includes the Town of St. Joseph. This new Bicycle and Pedestrian Loop Trail will become an integral part of the Town of St. Joseph. St. Croix County along with other governmental agencies will have the development responsibility of the Loop Trail project in the Town of St. Joseph.

In anticipation of expected growth, the Loop Trail was designed to provide a viable multi-modal transportation option for non-motorized commuting trips in the area. Currently, there are no safe bicycle/pedestrian connections to the Loop Trail in Wisconsin and with the St. Croix River Crossing project nearing completion in 2017; the Town of St. Joseph is taking a proactive approach to provide safe and cost-effective commuting alternatives for pedestrians and bicyclists in the community.

Figure 4-5
St. Croix County Bicycle Circle Tours



5. TRANSIT

There are no public transit services in St. Joseph but the St. Croix County Aging and Disability Resource Center (ADRC) coordinates several demand-responsive specialized transportation services for the elderly and handicapped. These services include the Volunteer Medical Transportation program, Interfaith Volunteers of St. Croix County, New Freedom Transportation Program, and the Specialized Van Transportation program. No regular public transit program is being considered for St. Joseph at this point. The nearest long distance commuter service is Jefferson Lines in Hudson.

The work force in the Town of St. Joseph and in St. Croix County that commutes to and from the Minneapolis/St. Paul area continues to grow. The Town supports efforts by the County to investigate commuter transit linkages to that area and is interested in the provision of park and ride lots for this purpose. Such park and ride lots will help to decrease the volume of personal vehicle commuter traffic to/from the Minneapolis/St. Paul area.

6. ELECTRIC PERSONAL ASSISTIVE MOBILITY DEVICES

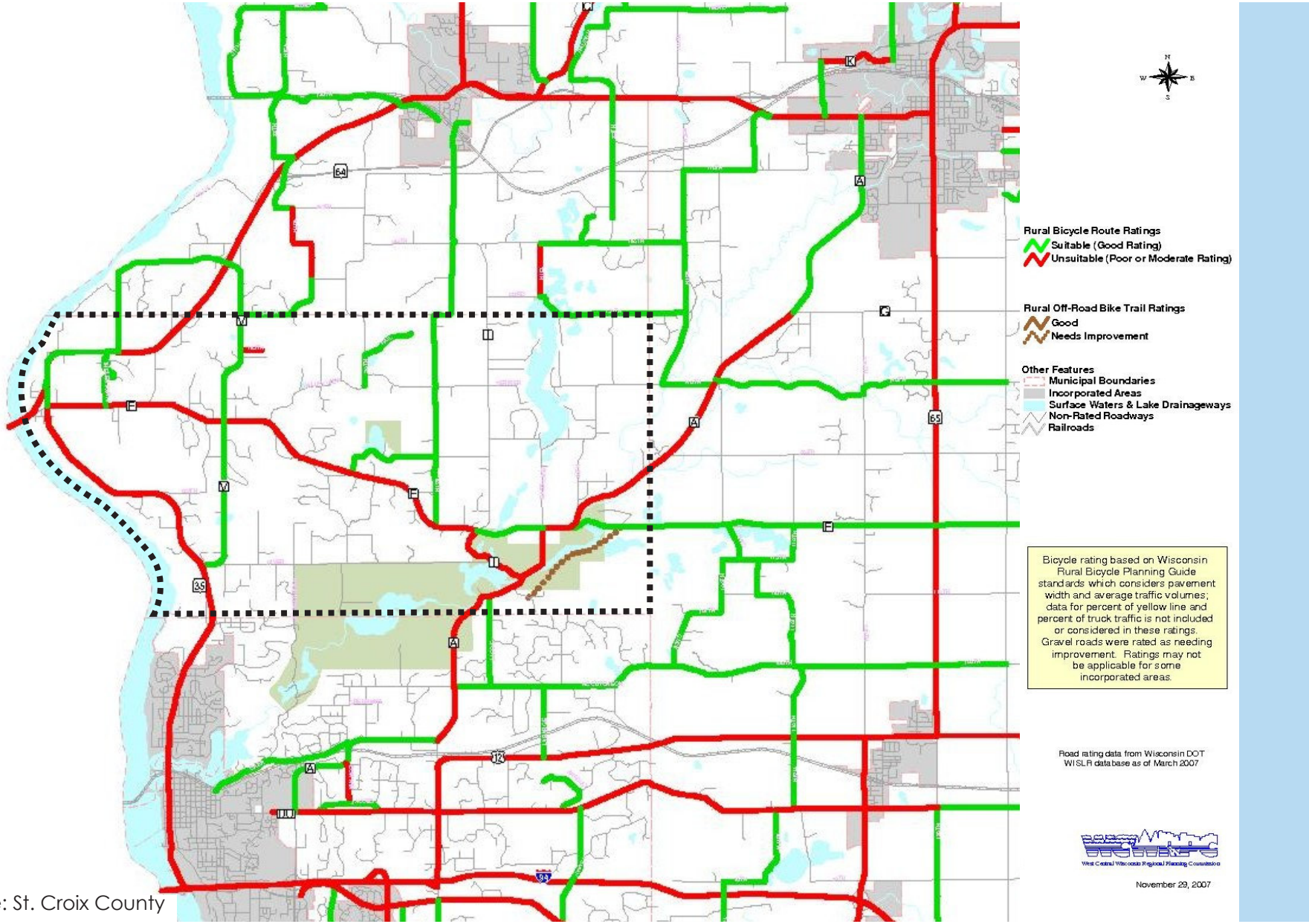
The Wisconsin Department of Transportation has adopted ordinances guiding the use of electric personal assistive mobility devices on state roadways. The ordinances allow for the use of these devices on roadways and sidewalks provided that the user exercise caution and stay as far to the right of the road as possible. In the case of two-way highways, users of these devices must ride in the left shoulder of the road so they are visible to oncoming traffic. Electric mobility devices are prohibited along certain state roadways as marked by a sign, such as interstate highways. St. Croix County has adopted these ordinances for their roadways as well.

7. BICYCLE AND PEDESTRIAN TRAILS

Active living improves physical and mental health and can be a key component of overall economic health of the community as well. In order to be effective, sidewalk and trail connections for biking and pedestrians need to be continuous and serve key commercial and service destinations. On the St. Croix County bicycling suitability map (Figure 4-6), several roads in the Town of St. Joseph are considered suitable for bicycling, including County V, 60th Street, Andersen Scout Camp Road and former Highway 64 from the historic Stillwater Bridge to 150th Street. Highway 35 and County E are considered unsuitable for bicycling due to narrow roadway shoulders.

Incorporating trail connections in new developments is important to ensure continuity and connections to as many points as possible in the community. The Town is committed to increasing the opportunities for walking and biking in the community and recognizes the importance of healthy, active living. The 2014 Town of St. Joseph Bicycle and Pedestrian Facility Implementation Study and Chapter 5: Utilities and Community Facilities Element further address bicycling and walking in the Town.

Figure 4-6
St. Croix County Bicycling Suitability Ratings (Excerpt)



Source: St. Croix County

8. RAILROADS

There are no railroads in the Town of St. Joseph.

9. AIR TRANSPORTATION

There are no public airports in the Town of St. Joseph, but there is one small private airstrip in the southeast part of the Town. The Beer airport, located in the southwest quadrant of County Roads A and E, has a single 2,200-foot turf runway. There is another similar small private airstrip, the Irlbeck airport, located a mile north of St. Joseph in the Town of Somerset, at the northeast quadrant of County Road I and 63rd Street. It has a single 1,800-foot turf runway. The nearest public airport is the New Richmond Regional Airport in New Richmond, about ten miles northeast of St. Joseph. The nearest major airport with regularly scheduled commercial flights is the Minneapolis St. Paul International Airport.

10. TRUCKING

WIS 35 and WIS 64 are designated truck routes in St. Joseph. No St. Croix County highways are designated as truck routes, nor does the Town of St. Joseph designate truck routes on any of its Town roads.

11. WATER TRANSPORTATION

The St. Croix River borders the Town of St. Joseph's western border. There is no commercial water transportation access to the river in the Town of St. Joseph.

12. POLICY PLAN

Transportation Goal #1: Provide a safe, convenient and efficient multi-modal transportation system that:

- Ensures transportation system improvements are coordinated with land development plans.
- Maintains a cost effective level of service.
- Coordinates multi-jurisdictional transportation system improvements and maintenance.
- Plans for the extension of town roads and other arterials and collector streets as necessary to efficiently serve the users.
- Controls access through the road system to ensure the access, mobility and safety of affected road systems.

Policies:

1. Plan for the extension of Town roads and other arterials and collectors in order to complete connections and provide for future planned development access.
2. Consider planning and implementing a network of interconnected new roads to control highway access, preserve rural character, improve access to new development, minimize extensive road construction and decrease road maintenance costs.
3. Develop plans and new funding strategies for the regular structural maintenance of Town roads, including implementation of the WISLR Pavement Management program as required by WisDOT to provide for the upgrading and maintenance of Town roads.
4. Continue implementing Town road impact fees on any new building permit that places burden on or requires the upgrading of subcollector roads.
5. Continue implementing Town road fees on new developments that place burden on or require the upgrade of Town roads.
6. Continue posting weight restrictions on existing Town roads and consider the weight limits on local roads when reviewing development proposals.

Transportation Goal #2: Work to develop transportation system improvements for walking, hiking, biking and other transportation modes.

Policies:

1. Develop a shared community vision for bicycle and pedestrian facilities and recreational opportunities and build capacity to fund these activities in addition to utilizing Park Impact Fees for this purpose.
2. Encourage the connection of the Town of St. Joseph residents, economic opportunities and recreational destinations with the Loop Trail which is being constructed through the Town of St. Joseph as part of the St. Croix Crossing Bridge.
3. Encourage the connection to other recreational and trail facilities outside the Town of St. Joseph.
4. Encourage the connection of the Loop Trail with Willow River State Park.
5. Support the efforts of the St. Croix Bike and Pedestrian Trail Coalition.
6. Follow and update as warranted the 2013 Town of St. Joseph Outdoor Recreation Plan as it pertains to hiking, biking and other transportation modes.
7. Follow and update as warranted the 2014 Town of St. Joseph Bike and Pedestrian Trail Implementation Study.
8. Support the implementation of the St. Croix County Parks and Recreation Bicycle and Pedestrian Plan.

Chapter 5 Utilities and Community Facilities Element

1. INTRODUCTION

The purpose of this chapter is to inventory the various public and community facilities within St. Joseph. This chapter includes a thorough documentation of existing utilities that serve Town residents as well as community facilities. The primary purpose is to understand what utilities and facilities currently exist, the location of the facilities and utilities, the use and capacity and to identify future needs. An overview of several facilities is given below. For each building or facility, its location is given and the use of the facility identified. The utilities are addressed similarly but also identify the capacity available. A set of goals, objectives and policies are included to guide future development and ensure that the needs of all residents are met.

2. PUBLIC UTILITIES

Sanitary Sewer

There is no municipal sanitary sewer service in the Town of St. Joseph. All wastewater is handled with on-site septic systems. The potential for municipal sanitary sewer and water in the Houlton Center area is discussed in Chapter 9: Land Use of this Plan.

A State Sanitary Permit is required for the installation of a private on-site wastewater treatment system (POWTS). A St. Croix County Sanitary Permit is required for the repair, reconnection or rejuvenation of a POWTS or for the installation of a non-plumbing sanitation (i.e. privy, composting toilet, etc.) The proper maintenance of a POWTS is essential to ensure the longevity of the private sewage system and to avoid premature failure.

A Sanitary Permit is required prior to obtaining a building permit from the Town Building Inspector. A Sanitary Permit may only be submitted by a licensed plumber. St. Croix County Staff will conduct at least one inspection for all work requiring a sanitary permit.

When obtaining a Sanitary permit, residents are required to submit a signed agreement indicating that the property owner will maintain the septic system properly and report this maintenance to the St. Croix County Community Development Office. This is done by sending in a card every three years that has been signed by an inspector or licensed septic hauler.

Stormwater Management

Review and approval of subdivisions, grading plans
Stormwater and erosion control are managed through the Town's subdivision ordinance. The ordinance requires that any major or minor land disturbance activity go through a plan review process. The review process includes an examination of existing conditions and proposed changes including new roads, utilities, and structures. The review process also examines grading, stormwater management and erosion control for all land disturbance activities. The Town of St. Joseph Plan Commission reviews all plans to ensure that water and sediment are properly managed on the site. St. Croix County may adopt a Stormwater Mitigation Ordinance.

Municipal Separate Storm Sewer System Program (MS4)
MS4 is an acronym used to denote the U.S. Environmental Protection Agency's permitting program to address stormwater discharge in urban areas. In Wisconsin, the program is administered by the Wisconsin Department of Natural Resources (DNR). The Houlton Area in the Town of St. Joseph was designated as an MS4 in February of 2015. The Town is currently in the process of creating its plan to meet the requirements of the MS4 permit program, referred to as the Houlton Stormwater Plan. Typical operations throughout the Town in regards to stormwater management include culvert inspection and maintenance, inspection of drainage easements as needed, and resolving drainage and erosion control issues in the public right-of-way where applicable. The Town of St. Joseph culvert survey includes locations and status, mapping and photos. More information about the MS4 program is included in Appendix G of this plan.

The Town of St. Joseph is also supportive of the Bass Lake Management Plan and the Perch Lake Management Plan, which address runoff to these two high quality Outstanding Resource Waters (ORW) in the Town.

Solid Waste and Recycling

The Town of St. Joseph does not have municipal trash or recycling removal. The residents in St. Joseph are responsible for choosing their waste hauling provider. There are several commercial companies that pick up waste. There are no operating landfills or recycling facilities in the Town. There are two closed historic landfills.

Telecommunication Facilities

Telecommunications facilities are located in the Town of St. Joseph at 1370 Highway 35, 1190 County Road A and Trout Brook Road North.

Power

There are no electric power plants in the Town of St. Joseph. Electricity in the Town is provided by the St. Croix Electric Cooperative and Xcel Energy. There are no power-generating plants in the Town. There are two major transmission lines in the Town: the 113 kV Xcel Energy transmission line runs east-west and is shown on the existing land use map and the 69kV transmission runs south of the 113kV line.

3. COMMUNITY FACILITIES

There are community facilities in and around the Town of St. Joseph serving the needs of its residents. Information about these facilities is included below and are mapped in Figure 5-1.

St. Joseph Town Hall

The Town of St. Joseph Town Hall, 1337 County Road V, includes a meeting hall and the clerk's office. There are no expansion plans for the Town Hall building. The facility also includes a Fire Hall, ball diamond, pavilion, playground equipment and a 24 acre park. A small storage building to house road maintenance equipment may be constructed at the location in the future.

Emergency Services

The Town of St. Joseph Fire Emergency and Rescue EMS, provides services from the Fire Hall located at 1339 County Road V. The Town also participates in mutual aid agreements with neighboring communities throughout St. Croix County and eastern Washington County in Minnesota for fire and emergency response services.

Emergency Medical Services

Ambulance services are provided to the citizens by Lakeview Ambulance Service, Stillwater, MN, and St. Croix Emergency Medical Services, Hudson, WI and New Richmond Area Ambulance Service.

Police Services

Law enforcement and protective services are provided by the St. Croix County Sheriff's Department. Statewide law enforcement mutual aid services exist if needed.

Health

There are no hospitals or clinics in St. Joseph. The nearest clinics are in the neighboring communities of Hudson, New Richmond and Somerset, and Stillwater. These clinics provide medical services including general care, dental and vision. Nearby hospitals include Hudson Hospital in Hudson, WI, Westfield's Hospital and Clinics in New Richmond, WI and Lakeview Hospital in Stillwater, MN. The St. Croix Health Center in New Richmond is a long term care and short term care facility.

Schools

Houlton Elementary School is located at 70 Houlton School Circle in St. Joseph. Operated by the Hudson School District, it serves grades kindergarten through fifth grade and has an average enrollment of 225 students. It is the only public or private school facility in the Town of St. Joseph. The residents of the Town are served by three school districts: Hudson, Somerset and New Richmond, as determined by the residents' address.

Libraries

The Town of St. Joseph is a member of the Hudson Area Joint Library System. Other public libraries are located in the neighboring communities of Somerset and New Richmond, WI and Stillwater, MN.

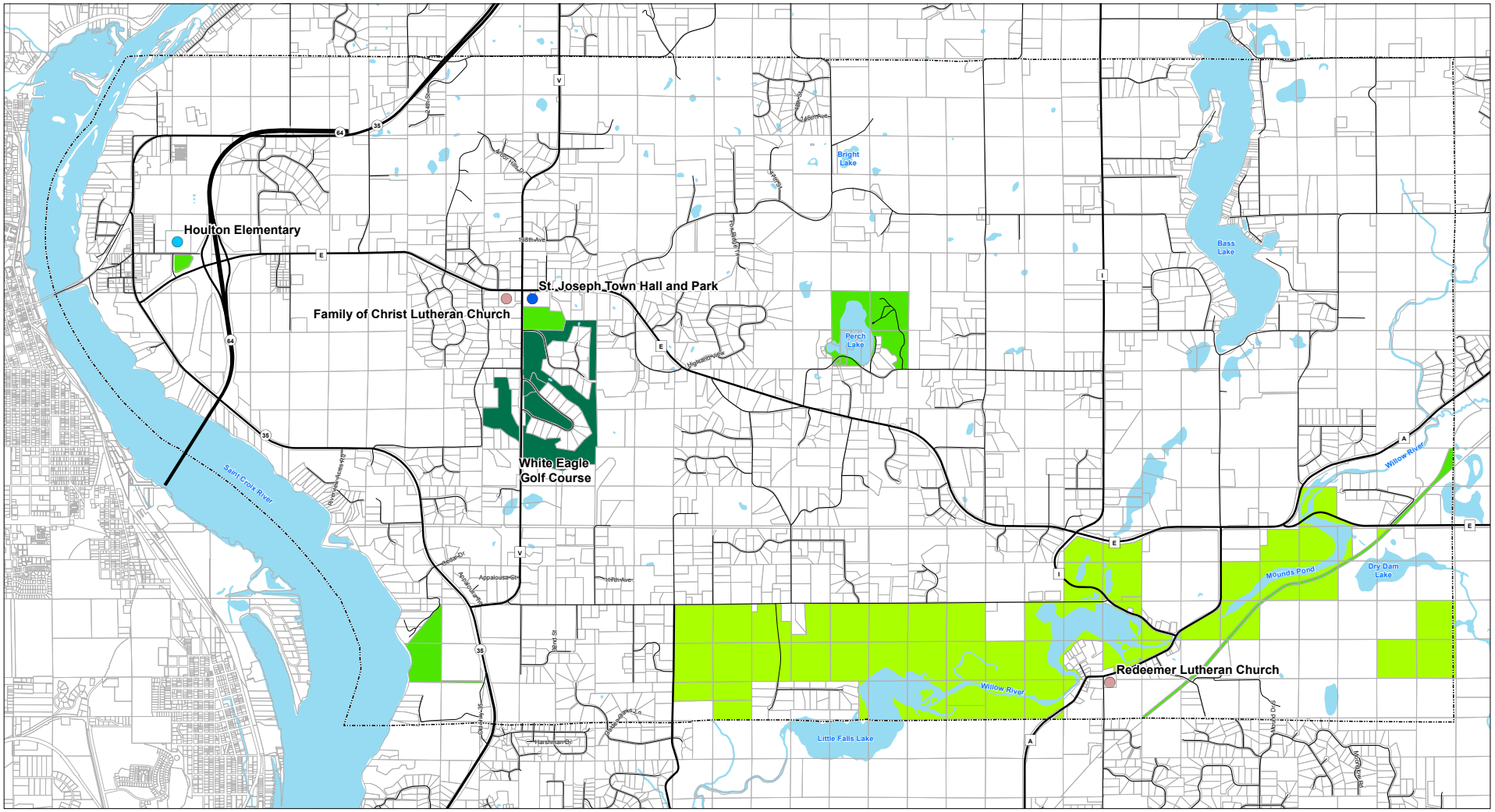
Childcare Facilities

There are no commercial day care or childcare facilities in the Town of St. Joseph. Home occupations (including childcare) are permitted uses under the Rural Residential zoning district. This St. Croix County zoning district includes much of the Town. There are a number of small home day cares in St. Joseph. There is a need for and potential for commercial day care in the Town of St. Joseph.

Cemeteries

There are three cemeteries in the Town of St. Joseph. The Houlton Cemetery, founded in 1881, is located at 1251 Highway 35. The Thelen Family Cemetery is located at Thelen Farm Trail and Settlers Way. The Pioneer Cemetery is located on County Road V between 145th and 150th Streets.

Figure 5-1
Town of St. Joseph Community Facilities



Community Facilities

Town of St. Joseph Comprehensive Plan 2016

N W E S

0 1,500 3,000 6,000 Feet

Community Facilities	
Institutional	Land Parcel Outline
School	Water
Church	Golf Course
Municipal Boundary	Park
	State Park

December 5, 2016

Stantec

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4. EXPANSION OF EXISTING UTILITIES OR FACILITIES

The Town of St. Joseph does not provide municipal utilities. The Town Hall is located at 1337 County Road V in the Town of St. Joseph. There are no expansion plans for the existing Town Hall building other than the storage building noted above. The possibility of providing municipal sewer and water for a portion of the Houlton area was discussed as part of developing this Plan, and the potential need for a sewage treatment facility. Developing such a facility would depend on a number of factors, including funding and a suitable site location. It is not anticipated soon.

5. PARK AND RECREATION FACILITIES

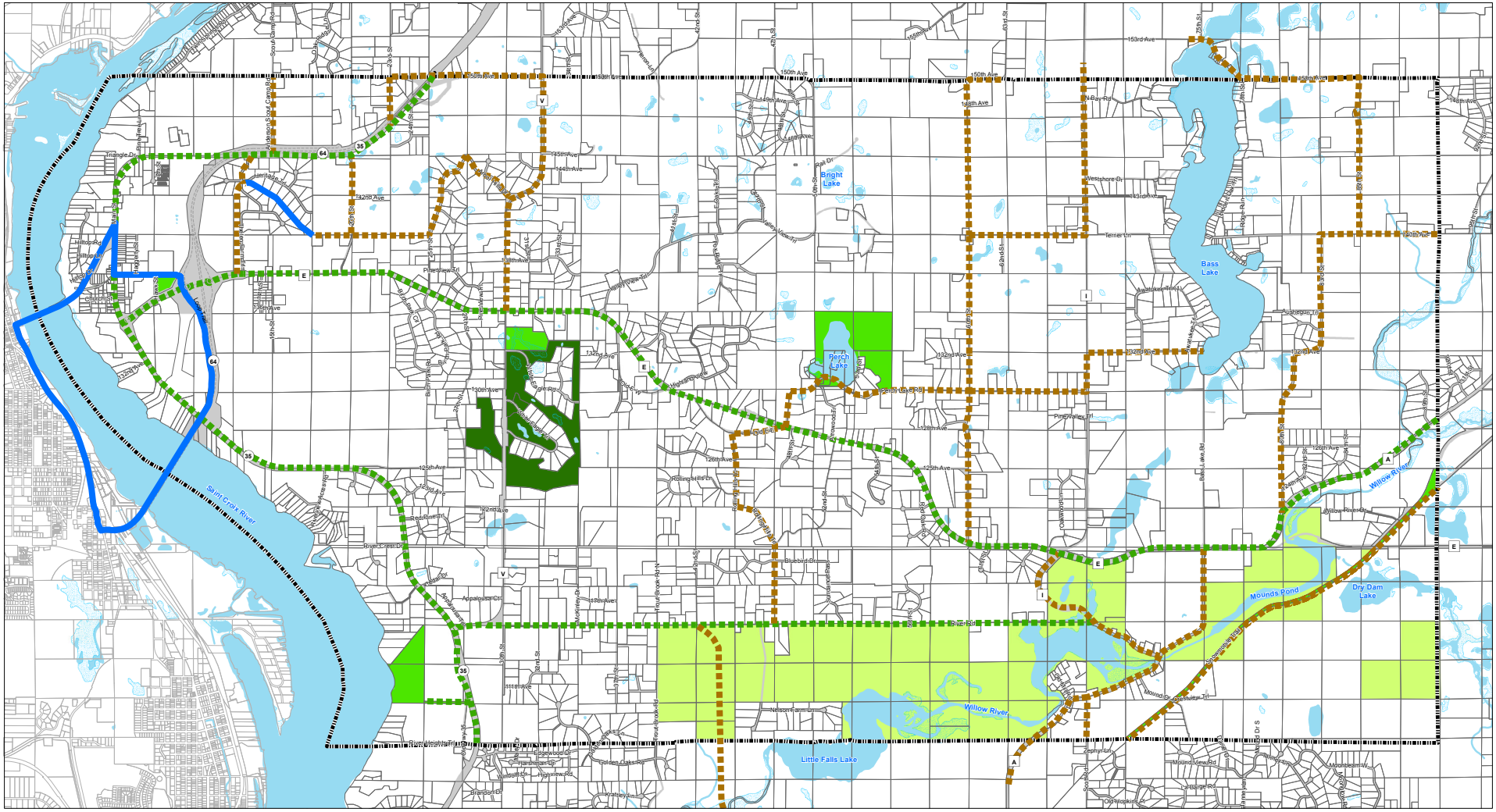
The Town of St. Joseph has an abundance of natural resources which provide exceptional recreational opportunities including St. Croix County's Homestead Park at Perch Lake, Bass Lake, Willow River State Park, and the St. Croix National Scenic Riverway. State and National Parks and Recreational Areas are shown on Figure 5–1. They include playgrounds, ballfield, walking trails, swimming, boating and many scenic views and opportunities.

Bicycle and Pedestrian Opportunities in the Town of St. Joseph

Current and future bicycling and pedestrian trails are shown in Figure 5-2. The Town of St. Joseph plans to pursue funding to design and construct bicycling and pedestrian facilities, as identified in the 2013 Outdoor Recreation Plan. The completion of the St. Croix Crossing Bridge adds urgency to the community's desire to begin implementation of the planned trail network. Nearby road realignments and bicycling facilities incorporated into the bridge's design create opportunity to enhance the bicycling network in the Twon of St. Joseph. After bridge construction, portions of State Trunk Highway 35 will be turned over to the Town, creating an opportunity to reexamine how space is allocated in this right-of-way for bicycle and motorized travel. Meanwhile, the new Loop Trail presents an opportunity to connect destinations in St. Joseph with a wider trail network. The five-mile multi-use trail runs on both sides of the river between the St. Croix Crossing Bridge and the existing Stillwater Bridge, connecting bicyclists in St. Joseph to the St. Croix National Scenic Riverway and destinations in Minnesota.

Development of trails creates opportunities for economic benefit and a higher quality of life for St. Joseph residents. Many communities that have implemented trails have found that their wide-ranging and long-lasting benefits to individuals and communities as a whole validate the expense of trail construction. The St. Jospeh Parks, Trails and Recreation Committee will continue to seek opportunities to partner with county, state, federal and private agencies to enhance the town's bicycle and pedestrian facilities. The 2014 Town of St. Joseph Bike and Pedestrian Facility Implementation Study provides more information on planned facilities.

The following table identifies the parks and recreational opportunities that are currently available to residents (Table 5-1). The table also includes existing and proposed bicycle facilities.



Parks and Bicycle Facilities Map

Town of St. Joseph Comprehensive Plan 2016

December 5, 2016

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Table 5-1
Park and Recreation Facilities

Name	Acres	Access	Facilities
Town of St. Joseph Town Park	34	Public	Softball/Little League Baseball diamond, benches, winter sliding, cross country skiing, prairie restoration with walking paths.
Nelson Farm Road Park	1.5	Semi-Public	Undeveloped open space
Houlton Elementary School	10	Public	Playground, ball field, basketball court
City of Stillwater's Legion Beach	20	Semi-Public	None
Perch Lake Boat Landing	0.5	Public	Landing, parking lot and waste receptacle
Homestead Parklands at Perch Lake	62	Public – user fees	Camping, canoe rentals, fishing, swimming beach, boat launch, toilet facilities
Bass Lake Boat Landing (Somerset)	0.5	Public	Landing, parking lot and waste receptacle
Willow River State Park (DNR)	1,600	Public – State Park Fees	Trout stream, boat launch, picnicking, 78 camp sites, nature center, parking, restrooms, hiking trails, sight-seeing, passive recreation areas, ice skating, sliding, cross-country skiing.
Game Unlimited	760	Semi-public	Members-only, licensed shooting preserve. Chalet, hunting, cross-country skiing.
St. Croix County Trailhead	8	-	-
St. Croix County Richards Property	50	Public	Parkland along the St. Croix River which includes natural areas and shoreland. Park was acquired in 2015.
Bicycle Routes/Trails	County Trunk Highways E, I, A , V, Hwy 35, St. Croix River Crossing loop		
Snowmobiling Routes (Local Club Maintains)	Southeast Section of town along the Willow River		
Scenic Routes	Trout Brook Road, Rustic Road 13		

Source: Town of St. Joseph

6. POLICY PLAN

The Town is committed to providing efficient and adequate services to the residents of the Town of St. Joseph. The policy plan will provide goals and policies to support the continuation of providing residents with a safe, healthy, and active place in which residents live.

Community Facilities Goal #1: Enhance and maintain community facilities to provide meeting and gathering spaces for Town residents.

Policies:

1. Maintain and monitor community gathering and meeting spaces to ensure appropriate facilities are available to conduct Town Business and other community building activities.
2. Encourage the use of Houlton Elementary School as a community gathering space and facility that provides benefit to all Town residents.
3. Encourage Town participation in the Hudson Area Joint Library Board.

Community Facilities Goal #2: Maintain the educational quality and accessibility to the Town's residents.

Policies:

1. Work with the School Districts to monitor and project the number of students entering the school systems to ensure the educational levels are maintained.
2. Encourage families and residents to actively participate in the schools to ensure quality educational opportunities are available to students.

Community Facilities Goal #3: Work with adjacent jurisdictions, the County and the State to ensure that services and utilities are being provided to residents in the most efficient and effective manner.

Policies:

1. Coordinate with adjacent jurisdictions to identify ways to provide services and utilities to residents in a way that is cost-effective and efficient.
2. Participate with intergovernmental groups to identify and monitor issues and concerns of residents and adjacent jurisdictions to ensure the adequacy of services and utilities in the area.
3. Support the work of the Highway 64 Corridor Communities Stormwater and Wastewater Coalition.

Community Facilities Goal #4: Maintain and enhance adequate park and recreational opportunities for residents that encourage an active and healthy lifestyle.

Policies:

1. Enhance and maintain current recreational facilities in the Town.
2. Work with Town Parks Commission to ensure the development of interconnected trails and paths that allow Town residents to easily walk and bicycle throughout the Town safely.
3. Work with residents to identify and obtain park lands for current and future needs.
4. Cooperate with other governmental agencies for development of park property.
5. Work with Wisconsin DNR to identify potential park lands within Willow River State Park that might better function as active parkland in the area.
6. Encourage and promote the goals, objectives and policies outlined in the Town of St. Joseph Outdoor Recreation Plan.
7. Pursue funding to design and construct bicycling and pedestrian facilities as identified in the 2013 Town of St. Joseph Outdoor Recreation Plan.

Community Facilities Goals #5: Explore the need for municipal services for Houlton

Policies:

1. Prepare a municipal sewer facility study for the Houlton area.
2. Support the work and participate as a member of the Highway 64 Corridor Communities Stormwater and Wastewater Coalition.

Chapter 6
Agricultural, Natural and Cultural Resources Element

1. INTRODUCTION

The Town of St. Joseph includes significant natural resources. It is bordered by the St. Croix River to the west and the Willow River on the southeast, and includes high quality lakes, native prairie, and woodland areas. While it is close to the Twin Cities Metropolitan Area and the growing community of Hudson, much of the Town is still rural in character.

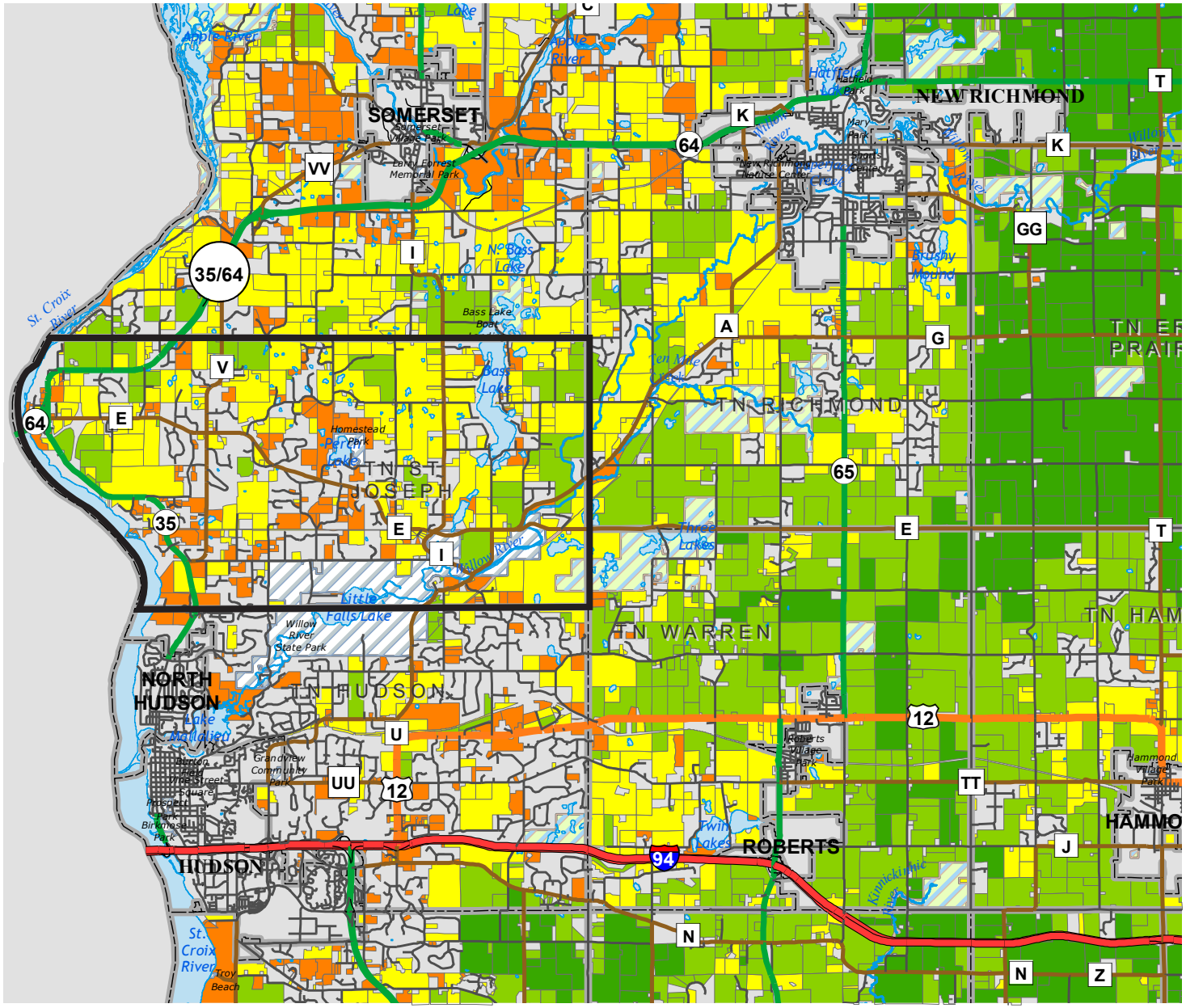
The Town Board and the residents recognize the role natural areas and rural vistas play in maintaining a healthy community, in attracting people to the area, and in contributing to the quality of life in the Town. They also recognize that these natural areas offer concrete benefits including:

- Protecting ground and surface water quality
- Providing wildlife habitat
- Maintaining property values and providing buffers between land uses
- Providing opportunities for active and passive recreation.

Another important characteristic of the Town of St. Joseph is its rural, agricultural character. Much of the Town is currently farmed and residents enjoy the rural and natural landscape. This could change if the Town is becomes more residential, with pressures from the Twin Cities and Hudson. Based on St. Joseph Planning Survey, 2013 results, the Town residents hope to remain rural in character and celebrate its agricultural and natural resources.

In order to better understand the Town's environment, a Natural Resources Inventory (NRI) was conducted, see subsection 3 of this chapter. This inventory will help to guide future land use and development to ensure that the Town of St. Joseph's important natural resources are protected and enhanced.

Figure 6-1
St. Croix County Land Evaluation and Site Assessment (LESA)



St. Croix County, Wisconsin
Land Evaluation and Site Assessment:
LESA Program

2. AGRICULTURAL RESOURCES

Historically, the Town of St. Joseph and St. Croix County have been predominantly agricultural communities. However, with the growth of the Twin Cities Metro area, the western parts of St. Croix County have experienced a reduction in the amount of agricultural land. Similarly, there has been a shift in the type of farming from small dairy farms to large-scale corn or soybean operations and alternative farming practices.

The Town has a strong agricultural community. The land and soils in the Town have moderate crop yields and are classified as moderately producing agricultural land. In addition, even though there is strong development pressure within the Town, there remains large tract farmlands. The primary agricultural use is active farmlands, farmsteads, and large-lot single family residential.

St. Croix County uses the Land Evaluation Site Assessment System (LESA) for rating the relative value of agricultural land resources. Based on this assessment, there are portions of the Town of St. Joseph that score high on the LESA ranking, as "most suitable for long-term agricultural use". See attached Figure 6-1. These areas are relatively small in comparison to the large expanses of prime farm land in the central and eastern portions of the County.

In 2012, St. Croix County completed their Comprehensive Plan, which included a Farmland Preservation Plan. Using the LESA rankings and current land uses across the County, the Plan designated farmland preservation areas. These areas are particularly valuable as agricultural land and development of these parcels is discouraged. The Town of St. Joseph still has active farming in much of the Town. However, none of the land is zoned as farmland preservation. In the future, agricultural activities could include limited small scale traditional agriculture and agriculture related activities.

3. NATURAL RESOURCES INVENTORY

The Town of St. Joseph is a rural town located along the St. Croix River in St. Croix County, Wisconsin. To plan effectively for natural resources, the Town requires accurate information about the type and quality of open space and natural areas within the Town. This information was gathered, analyzed and presented as part of the Natural Resource Inventory (NRI). The following subchapter summarizes the methodology and findings of the NRI (see Appendix J).

About the NRI

Typically, communities rely on aerial photography and land classification data to understand where important natural resources are present. In the Town of St. Joseph, the National Park Service staff completed Minnesota Land Cover Classification System (MLCCS) mapping in the western-most portion of the Town of St. Joseph and the St. Croix River. In these areas, natural resources were only identifiable using aerial photos and a very limited field review. In 2015 the Town retained Stantec to conduct land cover mapping and natural resources inventory to gather more complete and accurate data of areas not included in the MLCCS. The inventory was conducted for portions of the Town that fall within previously identified natural resource corridor areas and have the potential for development. Owners of parcels in the NRI area were contacted by the Town in late summer 2015 to request permission for property access. Work to investigate sites occurred in the fall of 2015.

The field inventory documented a variety of distinct natural community types including forest, woodland, shrubland, herbaceous wetlands, and grasslands, as well as areas of open water (lakes and ponds). The most common upland cover type is oak woodland/brushland, while the most common lowland cover type is cattail marsh. The most unique plant communities identified during the NRI include several rich fens sites and one oak savanna (an ecosystem type that is considered imperiled).

After conducting the field inventory, a total of 174 natural areas received quality ranks. Of these, 13 (7.5 percent) were considered to be Exceptional (highest quality rank possible). A total of 24 (13.8 percent) sites were given a High quality rank. Moderate quality sites totaled 113 (64.9 percent) – the majority of these were Oak Woodland-brushland sites. A total of 24 (13.8 percent) were mapped as Low quality – these areas typically exhibited significant signs of human disturbance and/or invasive plants. These sites are listed in Table 6-1.

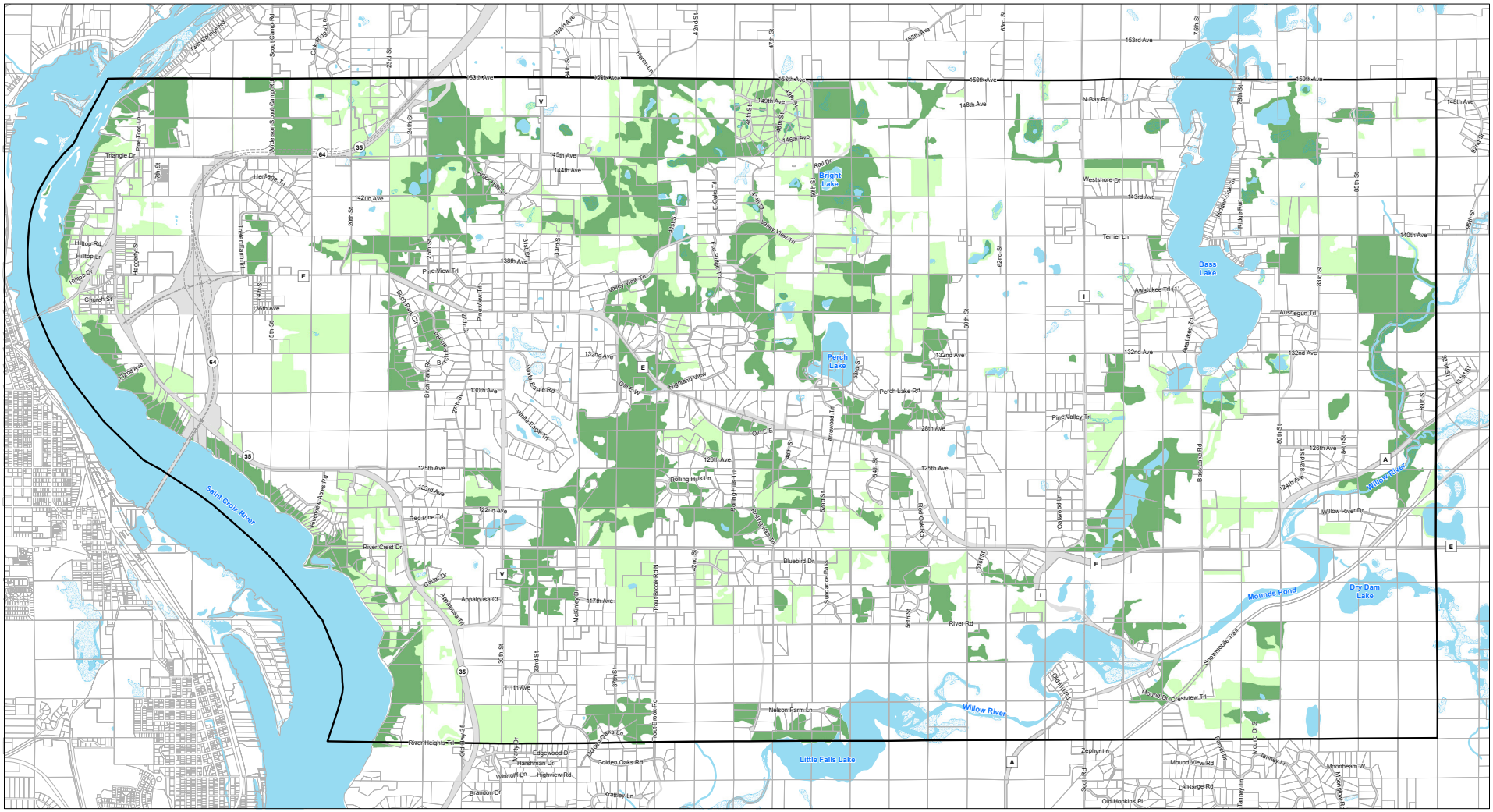
Natural areas tended to be concentrated in the previously mapped natural resources corridors. Other natural areas can be found around the lakes, along the rivers, and in scattered locations. The NRI provides some general guidelines and information for management of natural areas. These natural areas are illustrated in Figure 6-2.

Table 6-1
Quality Natural Areas

Quality Rank	Number of Sites
Exceptional (341)	13
High (342)	24
Moderate (343)	113
Low (344)	24

Developing a Natural Resource Corridor

Once natural areas were identified, as an update to the 2006 and 1995 Comprehensive Plans, a Natural Resource Corridor was established. Rather than simply designate natural areas for protection, this 2016 Plan identifies a Natural Resource Corridor that focuses on connecting the identified exceptional and high quality areas. This provides a network of habitat and encourages animal migration. By creating corridors, the Town of St. Joseph is protecting its natural amenities and rural character, while supporting the growth of native plant and animal species. Delineation of a Natural Resource Corridor will guide future land use and development to ensure that natural resources and critical habitat are protected. Natural areas are mapped in Figure 6-2. The Natural Resource Corridor has implications for land use and future development which are discussed further in Chapter 9: Land Use.



Natural Resources Inventory Natural and Semi-Natural Areas

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Stantec

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4. HISTORIC AND CULTURAL RESOURCES

There are four places listed on the State and National Register of Historic Places (SRHP and NRHP respectively) within the Town of St. Joseph. Three are residential farms, located in the Houlton and Burkhardt areas, and the fourth is the Stillwater Bridge which crosses the St. Croix River. These sites are listed below.

John Nicholas and Hermina Thelen House
This home is located at 1383 and 1405 Thelen Farm Trail in the Houlton area of the Town of St. Joseph.

- NRHP: Listed on 02-12-09
- SRHP: Listed on 07-18-08

Louis C. and Augusta Kriesel Farmstead
This farmstead is located at132 STH 35/64 in the Houlton area of the Town of St. Joseph.

- NRHP: Listed on 02-12-09
- SRHP: Listed on 07-18-08

The Lewis Farmhouse
This farmhouse is located at 1270 County Road A in the Boardman area of the Town of St. Joseph.

- NRHP: Listed on 03-19-82
- SRHP: Listed on 05-29-81

Stillwater Bridge
This bridge follows MN 36/WI 64 over St. Croix River. Traffic will be redirected to St. Croix Crossing Bridge in 2017.

- NRHP: Listed on 05-25-89
- SRHP: Not listed on the State Register

The St. Croix County Historical Society is located in Hudson, WI. The society provides tours in the area, has a research center and library and hosts events. Most of the events and tours are centered on architectural features in Hudson, though the museum and research area host information and artifacts from across the County. The Town of St. Joseph does not have a historical society.

5. POLICY PLAN

The Town of St. Joseph recognizes that growth and change will occur in the future. Growth can have negative impacts on natural resources, including fragmentation and destruction of natural habitats, increase impervious surface and resulting flooding and pollution of surface waters, impacts to the quantity and quality of groundwater, and other impacts.

The Town also recognizes that it can manage growth, and seek to avoid and minimize impacts to significant natural resources. The Town has completed a Natural Resources Inventory and Map to identify the significant resources remaining in the community. The Town has also adopted the following Policy Plan to manage growth and protect these important resources.

Natural Resources Goal #1: Agricultural Resources: Enhance and maintain the rural character of the Town of St. Joseph by encouraging the preservation of agricultural lands and uses.

Policies:

1. Create a land use category that preserves traditional agricultural practices on a limited scale in keeping with the agricultural and residential character of the community.
2. Encourage the development of ag-related and ag- tourism uses.

Natural Resources Goal #2: Improve and protect the quality of surface waters.

Policies:

1. Develop and implement a Surface Water Management Plan and policies, including the MS4 permit process in Houlton.
2. Work in partnership with the County's Priority Watersheds Program and local lake protection efforts.
3. Support and review Shoreland and Floodplain Ordinances as needed to protect surface waters.
4. Develop and adopt a wetland protection and buffers ordinance that sets minimum buffer standards.
5. Use park and open space dedication to protect significant water resources and adjacent habitat areas.
6. Promote wetland and shoreland restoration by private landowners.
7. Educate residents and developers regarding Best Management Practices and state and local stormwater regulations.
8. Support the development and implementation of a County Stormwater Management Ordinance to complement the Town's Erosion and Sediment Control Ordinance.

9. Support development designs that protect the quality of surface waters and other natural resources, and minimize development impacts.
10. Apply for DNR grants that support local efforts to control nonpoint source pollution.
11. Support the implementation and periodic updates to the Lake Management Plans for Bass Lake and Perch Lake.
12. Create a new ordinance for stormwater management to protect Outstanding Resource Waters (ORW) Bass Lake and Perch Lake.

Natural Resources Goal #3: Encourage preservation and restoration of sensitive natural resource areas and wildlife habitat.

Policies:

1. Adopt the Natural Resources Inventory Map.
2. Encourage public and private landowners and developers to restore native habitats and control invasive species.
3. Seek state and other funding for habitat protection and control of invasive species.
4. Incorporate natural resource areas in parks and open space areas.
5. Adopt incentives and regulations to protect environmental corridors and natural resource areas (described in the implementation section).
6. Work with other conservation agencies and organizations, both public and private, to further this goal.

Natural Resources Goal #4: Protect groundwater supplies and surface water to assure high quality groundwater for all residents.

Policies:

1. Encourage monitoring of all private wells and private septic systems in the Town to assure the highest standards are being maintained.
2. Encourage monitoring of all agricultural waste disposal and management systems and practices to assure the highest standards are being maintained.
3. Encourage enforcement of state rules regarding wellhead and groundwater protection.
4. Encourage protection of wetlands and other ground water recharge areas.

Natural Resources Goal #5: Provide for future open space and recreation needs.

Policies:

1. Implement the Town and St. Croix County's Outdoor Recreation Plans.
2. Develop the proposed bicycle and pedestrian trail systems identified in the 2014 Town of St. Joseph Bicycle and Pedestrian Facility Implementation Study.
3. Review and update park dedication requirements and fees included in the Town's impact fees, and use these fees along with grants, land dedication and donation to develop the Town's park and bicycle/pedestrian trail system as growth occurs.

Natural Resources Goal #6: Preserve the character of the Town's landscape, and examples of native woodlands, prairies, and wetlands.

Policies:

1. Identify important views and implement subdivision and zoning ordinances to protect valued views and viewsheds.
2. Incorporate scenic areas and native habitats in parks and open space.
3. Encourage development of County regulations that protect the night sky.
4. Encourage development of St. Croix County telecommunications tower regulations that encourage towers that blend in with the landscape.
5. Work with the County on developing and implementing landscaping ordinances for commercial development that support the Town's character.
6. Implement the Town's sign ordinance.
7. Develop and use the tools identified in Chapter 10: Implementation to manage land use and natural resources for the long term.

Chapter 7 Economic Development Element

1. INTRODUCTION

Economic health is an important component of a thriving community. A strong commercial and industrial base provides jobs to community residents, contributes to a community's tax base, and can be a source of psychological strength to a community. One can also measure the economic health of a community by taking a look into a community's employment and household income. New construction of housing and businesses in the community are also good indicators of growth and vitality. These are covered in the following sections of this chapter.

Economic development blends economic opportunity with local infrastructure, land, housing and education. The primary objectives of most economic development plans are to increase local tax base, provide job opportunities, and provide the goods and services local residents and visitors desire. However, these objectives are inherently linked to the availability of skilled and educated workers, affordable housing, developable land, and infrastructure.

2. EMPLOYMENT AND INCOME

Employment

In 2000, the manufacturing industry employed 415, or 22 percent, of the Town of St. Joseph's labor force, more than any other industry. Manufacturing was also the largest employer within St. Croix County. Between 2000 and 2013, the residents of the Town of St. Joseph experienced a shift from manufacturing jobs to more social services jobs.

In 2013, the largest employment became the educational, health care and social assistance sector. This trend is similar to that of St. Croix County, although it is more exaggerated in the Town of St. Joseph. Table 7-1 indicates in which industries Town of St. Joseph residents worked in 2013.

Table 7-1
Employment by Industry, 2013

Industry	Town of St. Joseph		St. Croix County	
	Number	Percent	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	40	2.13%	1,024	2.29%
Construction	94	5.01%	2,755	6.17%
Manufacturing	312	16.62%	8,138	18.23%
Wholesale trade	48	2.56%	1,343	3.01%
Retail trade	121	6.45%	5,019	11.24%
Transportation and warehousing, and utilities	77	4.10%	2,008	4.50%
Information	0	0.00%	653	1.46%
Finance and insurance, and real estate and rental and leasing	225	11.99%	3,236	7.25%
Professional, scientific, and management, and administrative and waste management services	196	10.44%	3,883	8.70%
Educational services, and health care and social assistance	507	27.01%	9,778	21.91%
Arts, entertainment, and recreation, and accommodation and food services	121	6.45%	3,031	6.79%
Other services, except public administration	45	2.40%	1,932	4.33%
Public administration	91	4.85%	1,835	4.11%
Total	1,877	100.00%	44,635	100.00%

Source: American Community Survey, 2013

As shown in Table 7-2, in 2013, over half of the labor force in the Town of St. Joseph engaged in management, business, science, and arts occupations. This percentage was 40 in 2000. Also in 2013, as shown in Table 7-3, almost 40 percent of the same labor force had a bachelor's degree or higher education. In 2000, only 33 percent of residents had this level of education. These statistics indicate the labor force in the Town of St. Joseph is becoming more highly educated and, as result, participating in more managerial and professional occupations.

Table 7-2
Occupations in the Town of St. Joseph, 2013

Occupation	Persons	Percent
Management, business, science, and arts occupations	978	52.10%
Service occupations	246	13.11%
Sales and office occupations	377	20.09%
Natural resources, construction, and maintenance occupations	98	5.22%
Production, transportation, and material moving occupations	178	9.48%
Total	1,877	100.00%

Source: American Community Survey, 2013

Table 7-3
Education Attainment for the Town of St. Joseph Population 25 Years and Older, 2013

Education Level	Persons	Percent	Percent High School Graduate or Higher	Percent Bachelor's Degree or Higher
Less than 9th Grade	52	1.78%		
9th to 12th Grade, no Diploma	135	4.63%		
Regular High School Diploma	508	17.42%		
GED or Alternative Credential	29	0.99%		
Some College, no Degree	671	23.01%		
Associate's Degree	360	12.35%		
Bachelor's Degree	706	24.21%		
Master's Degree	187	6.41%		
Professional School Degree	184	6.31%		
Doctorate Degree	84	2.88%		
Total	2916	100.00%	93.59%	39.81%

Source: American Community Survey, 2013

This section of the Plan includes information on where the Town of St. Joseph residents work and the categories of employment in which they work. St. Joseph is mostly a rural residential town and does not have significant employment itself. Larger employers include the Houlton Elementary School and various businesses, mostly in the Houlton area.

Table 7-4 shows the number of the Town of St. Joseph residents who are employed. This table also shows the percentage of women in the work force and the number of two-parent working households. In 2013, about 60 percent of the population over 16 years in St. Joseph was in the labor force, all in civilian capacity. Only 3 percent of this labor force was unemployed. About 50 percent of females 16 years and over were in labor force and over 90 percent were employed. In about 60 percent of families with children, both parents were in the labor force.

In 2013, about 40 percent of people over age 16 in the Town of St. Joseph were not in labor force. Of that 40 percent, 18 percent represent people over 65 years old.

Table 7-4
Employment Status, 2013

Type	Persons	Percent
Population 16 years and over	3,276	100.00%
In labor force	1,987	60.65%
Civilian labor force	1,987	60.65%
Employed	1,877	57.30%
Unemployed	110	3.36%
Armed Forces	0	0.00%
Not in labor force	1,289	39.35%
Females 16 years and over	1,555	100.00%
In labor force	830	53.38%
Civilian labor force	830	53.38%
Employed	767	49.32%
Children up to 17 years old	813	100.00%
All parents in family in labor force	514	63.22%

Source: American Community Survey, 2013

Table 7-5 shows where residents in the Town of St. Joseph are working. Over the years there has been a slight increase of people working in state and county of residence and a corresponding decrease in people working out of state. However, the general pattern has not changed since 1990. Roughly 65 percent of the people work outside the state, presumably mostly in the Twin Cities Metro Area in Minnesota. The other 35 percent worked in the state of Wisconsin, the vast majority within St. Croix County.

As shown in Table 7-6, the majority of the Town of St. Joseph's residents commute to work via an automobile and driving alone. The average time for traveling to work is 32 minutes, a slight increase from 27 minutes in 2000.

Table 7-5
Place of Work, 1990-2013

Type	1990		2000		2010		2013	
	Persons	Percent	Persons	Percent	Persons	Percent	Persons	Percent
Worked in state of residence	448	31.11%	650	34.52%	798	38.63%	661	35.22%
Worked in county of residence	421	29.24%	616	32.71%	717	34.70%	650	34.63%
Worked outside county of residence	21	1.46%	34	1.81%	81	3.92%	11	0.59%
Worked outside state of residence	992	68.89%	1,233	65.48%	1,268	61.37%	1,216	64.78%
Total	1,440	100.00%	1,883	100.00%	2,066	100.00%	1,877	100.00%

Source: American Community Survey, 2013

Table 7-6
Form of Transportation, 2013

Commute to Work	Persons	Percent
Car, truck, or van -- drove alone	1,625	86.57%
Car, truck, or van -- carpooled	129	6.87%
Public transportation (excluding taxicab)	0	0.00%
Walked	23	1.23%
Other means	50	2.66%
Worked at home	50	2.66%
Total workers 16 years and over	1,877	100.00%
Mean travel time to work (minutes)	32.1	-

Source: American Community Survey, 2013

Income

Table 7-7 shows that the largest income bracket for households in the Town of St. Joseph is in the $100,000 to $149,000. While about 13 percent of households earn more than $200,000, a large number (over 30 percent) earn between $35,000 and $75,000.

Table 7-7
Household Income, 2013

Income	Household	Percent
Less than $10,000	73	4.91%
$10,000 to $14,999	50	3.36%
$15,000 to $24,999	25	1.68%
$25,000 to $34,999	81	5.45%
$35,000 to $49,999	208	14.00%
$50,000 to $74,999	258	17.36%
$75,000 to $99,999	97	6.53%
$100,000 to $149,999	346	23.28%
$150,000 to $199,999	151	10.16%
$200,000 or more	197	13.26%
Total	1,486	100.00%

Source: American Community Survey, 2013

The Town of St. Joseph's median household income has stayed significantly higher than the statewide average and St. Croix County as a whole, as shown in Table 7-8. In 2013, the median income in St. Joseph was $88,700, compared to $68,426 and $52,413 for the county and state, respectively. However, between 2000 and 2013, the median income in the Town of St. Joseph increased much less than it did in the County during that period.

Table 7-8
Median Household Income, 1990-2013

Community	1990	2000	2010	2013	2000 - 2013 Change
Town of St. Joseph	$52,021	$81,277	$87,949	$88,700	9%
St. Croix County	$36,716	$54,930	$67,446	$68,426	25%
State of Wisconsin	$29,442	$43,791	$51,598	$52,413	20%

Source: American Community Survey, 2013

3. ST. JOSEPH PLANNING SURVEY, 2013

In the St. Joseph Planning Survey, 2013, conducted by the UW-River Falls Survey Research Center, residents generally favored limiting growth in the Town, and agricultural-related production was the only business development type favored by a majority of residents. Home-based cottage industries, light industrial/business park and commercial uses were favored by less than half of the respondents. A quarter of the respondents said business development should not be encouraged. Excerpts from the St. Joseph Planning Survey, 2013 are attached as Appendix B in this Plan.

The Town may be interested in attracting business to the Town of St. Joseph in the area around the new interchange, in the Houlton area on the west side of the community. As of 2016, before the opening of the new bridge and highway, it is uncertain the type, scale or the speed of development that might be interested in developing here. Among the Town of St. Joseph's strengths in attracting business is its location immediately across the river from the Twin Cities metropolitan area, a connection which will improve significantly with the opening of the new St. Croix River bridge. The idea is that people could "live here, work there". Among the weaknesses is the relatively low density of residential development in the Town, which means that there are relatively few customers or employees for businesses compared to more densely developed urban areas.

4. UW-EXTENSION ECONOMIC IMPACT STUDY

St. Croix County commissioned a study of the potential economic impacts on the region as a result of the St. Croix Crossing Bridge. The study concluded that the region, including the Town of St. Joseph, was likely to see population and employment increases, but likely not dramatic or quickly. Even with a new easier access across the River, the region is likely to grow at rates close to historic trends than at dramatic new rates. An executive summary of the study, "Community and Economic Impacts of the St. Croix River Crossing", conducted by the University of Wisconsin-Extension Center for Community and Economic Development and Gillaspy Demographics, is included in Appendix C of the Plan. The study offered several key findings:

1. Infrastructure improvements, like the new bridge, alone will not guarantee economic and population growth.
2. Larger trends suggest St. Croix County is unlikely to return to growth rates of the 1990s and 2000s.
3. Despite slower growth rates, population in St. Croix County and the Corridor communities will continue to grow.
4. Population projections are not certain and should guide development of policies.
5. The new river crossing will improve access to jobs in the region, but communities need to attract and retain residents based on local economic vitality and quality of life issues.
6. Population growth will attract new commercial development but also demand for government services.
7. New development will occur incrementally by growth and expansion of small businesses, and not by large firms relocating to the Corridor.

The overall conclusion of the study is that population and employment growth are possible, but will not be dramatic, No specific numbers for population, household or employment growth for the Town of St. Joseph were provided by the study.

5. MARKET CONDITIONS ANALYSIS

In order to better understand the economic context of the Town of St. Joseph, a market conditions assessment was completed. The market conditions analysis was prepared by Maxfield Research & Consulting, LLC and is included in Appendix D this Plan. It analyzes employment in the larger region, consisting of several counties. It notes that employment will likely grow in St. Croix County as a result of the new bridge crossing with increased ease of access to major highways. That analysis notes that construction, manufacturing, and wholesale distribution businesses are the most likely candidates to be attracted to the Town of St. Joseph at the new highway interchange, in the area in the southwest quadrant of the intersection that has been suggested for a future business park.

In addition, traffic at that interchange is expected to attract highway commercial uses such as a convenience gas station, a coffee shop with drive-thru, fast food restaurant and other small service-related businesses. If a denser mixed use area were to be developed in the Houlton area near the interchange, if municipal services are provided, the increased housing would likely attract other commercial uses as well. This Plan does not include an estimate of the number of jobs which could be potentially added by the development of businesses under these proposed scenarios.

Key findings from the Maxfield Research & Consulting, LLC assessment are described below. A full version of the report is included in Appendix D of this Plan.

Overall Location

- Overall growth in St. Croix County is driven by growth of the Twin Cities Metro Area.
- Currently, multi-family housing options and commercial development are limited in the Town of St. Joseph due to lack of infrastructure, such as municipal sewer and water, and efficient, direct transportation routes to the Twin Cities.
- The St. Croix Crossing Bridge offers more efficient travel between St. Croix County and the Twin Cities Metro. As such, residential and commercial growth will likely accelerate after the bridge opens.

Residential

- Total population in the Town of St. Joseph is projected to grow from 3,920 (2015) to 5,100 (2030). This is an increase of 1,180 in that 15-year period and about 500 more than the previously estimated 2030 population of 4,600. This added growth will be due to the new bridge crossing.

- Total households are expected to increase from 1,450 (2015) to 1,774 (2030). This is an increase of 334 households in that 15-year period and about 124 more households than previously estimated for 2030. This added growth will be due to the new bridge crossing.
- The new household projection translates to about 21 households/year, which is similar to the growth rates from 1990 through 2010, but more than the rate of about 22 households/year that was previously estimated for 2015-2030.
- The Town of St. Joseph has higher-than-average household sizes, indicating that it is currently an attractive community for families.
- The largest numerical growth is expected among people ages 55 to 74. Proportionally, growth will also be strong among 20 to 24-year-olds.
- Older adults and younger adults may prefer attached household products, such as apartments, single-level townhomes, or association-maintained condominiums. No active subdivisions in the Town of St. Joseph currently offer attached housing units.
- Creating an area within the downtown that is walkable and has more of a "village" environment can attract households that are more interested in a location near to the highway and employment opportunities, but prefer other housing products instead of a single-family home on a large lot.

Employment

- Job growth typically fuels household and population growth because people typically desire to live near where they work.
- St. Croix County experienced 2.8 percent job growth from 2005-2010, compared to a 4 percent decline in jobs in the Twin Cities Metro Area. Solid job growth is expected in the region between 2010 and 2020. The region is expected to experience a 16.6 percent gain in jobs, compared to 12 percent in the Twin Cities Metro.
- St. Croix County is expected to capture significant portions of regional job growth due to population growth, convenient transportation access, and available land.

Business Growth

- Ease of transportation between the core Twin Cities Metro Area and the Town of St. Joseph is likely to make the community desirable for businesses in construction, manufacturing (light) and wholesale distribution. The location of a business park near to the interchange, but separate from the core business district for the community, would strengthen employment opportunities for residents and increase the tax base.
- Trends suggest growing demand from smaller industrial spaces, as well as blocks of space in the 100,000 to 249,000 square foot range. All of the industrial sectors experienced business growth in this size range.

- Traffic on the St. Croix Crossing Bridge is likely to be the driving force for retail development initially. Within 18-24 months of bridge opening, potential uses would include convenience gas station, coffee shop with drive-through, fast food (national chains), and other service-related retail businesses including small fitness outlets, shipping/mailing, hair salons, liquor stores, etc. This can be supported through urban style development in a central core location that will serve as the center of community activity.
- After additional residential uses and businesses are located in a cohesive cluster in close proximity to the interchange, additional retail businesses such as grocery, hardware, lawn and garden, and other types of businesses are likely to be attracted to the higher population densities in the community. The level and amount of future retail development would be highly dependent on the number of homes and the support population (residential and employment) located in close proximity.

6. POLICY PLAN

The Town of St. Joseph recognizes the importance of each component of the economic development cycle in the overall health and economic stability of the community. Following are the goals and policies of the Town of St. Joseph to address economic development issues.

Economic Development Goal #1: Promote cooperative efforts and utilize existing resources for economic growth in the Town.

Policies:

1. Continue to identify and tap into local, state and federal resources to enhance economic development.
2. Explore county-wide economic development coordination options.
3. Promote coordination of the educational system and the business community to ensure the availability of qualified workers.

Economic Development Goal #2: Promote economic stability and diversity that provides job opportunities to residents.

Policies:

1. Support efforts to retain existing businesses and facilitate their expansion.
2. Support efforts to recruit new businesses and industries in appropriate locations and scales.
3. Recognize the need to maintain, upgrade and expand existing infrastructure in the Town, including but not limited to roadways, parks/trails, utilities and telecommunications infrastructure, to support and promote continued economic development.

4. Target financial resources and programs to attract businesses that have an emphasis on job creation and businesses that meet or exceed livable wage requirements.
5. Encourage the availability of a range of housing types and values to accommodate an ample work force.
6. Encourage adoption of new technologies and policies that support telecommuting.

Economic Development Goal #3: Promote efficient, planned commercial and light industrial development.

Policies:

1. Identify key commercial and light industrial development opportunities within the unincorporated hamlets and the Town's planned growth areas in locations with access to major transportation systems.
2. Encourage and facilitate infill development on vacant parcels to ensure maximum efficiency of land use.
3. Encourage compact commercial developments that will make efficient use of infrastructure and resources.
4. Encourage industrial and office/business commercial development to locate within master planned light industrial parks or business parks or at the Houlton Town Center.

Economic Development Goal #4: Enhance the character of the Town's commercial and light industrial development.

Policies:

1. Develop the use of architectural, design or other development standards such as landscaping, screening and other standards within the Town's commercial, business park and industrial developments.
2. Support the provision of open/green space within commercial and industrial development.
3. Promote the rehabilitation and redevelopment of older existing commercial facilities by pursuing and making available various financial programs and assistance.

Chapter 8 Intergovernmental Cooperation Element

1. INTRODUCTION

The Town of St. Joseph is bordered by the Towns of Somerset, Richmond, Warren, Hudson and the St. Croix National Scenic Riverway. The Town has the opportunity to work with adjacent jurisdictions specifically with respect to planning for future utility and community facility improvements, including an interconnecting bicycle and pedestrian trail system. During preparation of this Plan the Town identified the interrelated aspects of existing utilities and potential for future services that would require discussions with adjacent municipalities, as well as extensive discussions with St. Croix County and the State of Wisconsin.

The Town relies on and shares services and facilities located in adjacent towns, cities and St. Croix County. Therefore it is necessary for the Town to encourage positive relationships as well as coordination with those jurisdictions. The Town's children attend schools in three different school districts, Hudson School District, School District of Somerset and the School District of New Richmond. Located within the boundaries of the Town of St. Joseph is Hudson School District's Houlton Elementary School. It is the Town's desire to maintain their relationships with those school districts. In addition, as the Town develops, it may be beneficial to discuss providing services and utilities in conjunction with adjacent municipalities.

The Town of St. Joseph has a volunteer fire department,which was established in 1964. It is located at 1339 County Road V, Hudson, WI. Since 1995 the Town of St. Joseph Fire Rescue EMS department has had an automatic aid agreement with the Town and Village of Somerset. The department participates in and complies with the St. Croix County mutual aid policy. Manpower or equipment can be requested from any department in St. Croix County as well as Stillwater, Bayport and Lower St. Croix Valley from Washington County, Minnesota. The Town of St. Joseph Fire Rescue EMS are members of the Mutual Aid Box Alarm System (MABAS), a consortium of area Fire and Rescue Departments in Minnesota and Wisconsin. The Town recognizes the importance of maintaining and encouraging these relationships with other municipalities to ensure that residents are served in the best, and most efficient, capacity possible.

2. POLICY PLAN

The Town of St. Joseph recognizes that growth and change will occur in the future. Cooperating with other government agencies will help the Town to develop in a way that is complementary to and consistent with neighboring jurisdictions.

Intergovernmental Cooperation Goal #1: Work with adjacent jurisdictions to ensure that Intergovernmental Cooperation and activities are pursued.

Policies:

1. Participate with Intergovernmental groups to identify and monitor issues to find common ground to more effectively manage separate and diverse opportunities within the Town of St. Joseph with similar Best Management practices.
2. Support and actively participate in the Hwy 64 Corridor Storm water/Wastewater Coalition, the Hwy 64 Corridor Trail Coalition, the St. Croix Bike and Pedestrian Coalition, the Bass Lake Rehabilitation District, the Intergovernmental Advisory Council(IGAC), the newly formed Hwy 64 Corridor Intergovernmental Cooperation group sponsored by the University of Wisconsin Center for Civic Engagement, and the Sportsman's Alliance.
3. To work closely with St. Croix County, the Wisconsin DNR, and State staff.
4. Work with the three school districts which serve the Town of St. Joseph.

Chapter 9 Land Use Element

1. INTRODUCTION

The purpose of a land use inventory is to quantify and analyze existing development in the community. An examination of current land uses reveals development patterns, current densities, and shows prevalent uses in the Town of St. Joseph. This information can help the Town identify development and redevelopment opportunities based on the current pattern and locations of land uses. The Town of St. Joseph residents are interested in maintaining and enhancing the current small-town, rural character. Utilizing the current land use and natural resources information will help guide future development to be consistent with this goal. This inventory, combined with other background information, is used to suggest where, at what intensity, and at what rate growth should occur. The inventory can also help to classify areas that should remain undeveloped or should be preserved. The kind of development and how that development is allowed to progress should be a reflection of the community's needs and desires. Existing land use and natural resource information as well as the Town's goals shape the Future Land Use Plan.

Development of the Future Land Use Plan

The Town of St. Joseph's natural amenities and rural character make it an attractive place to live and work. Due to these factors, its proximity to the Twin Cities metropolitan area, and location along County Road E and proximity to Highway 35, the Town of St. Joseph has experienced steady growth over the past decades. The Highway 64/County Road E Interchange and the St. Croix Crossing Bridge that will be located within the Town may also have a significant effect on the Town's future land use. This makes the land use analysis and proposed land use plan an integral piece of this planning effort.

Continued growth pressure in the Town of St. Joseph will pose many land use challenges. The conflict between the demands for increased development and retaining the rural and agricultural character of the Town is central to this issue. Pressure on existing natural areas will also generate conflict over environmental preservation. As a part of this land use analysis, the Town conducted an extensive Natural Resources Inventory and developed a corresponding Natural Resource Corridor. Chapter 6: Agricultural, Natural and Cultural Resources is devoted to this discussion. However, the Corridor is summarized in this chapter because it will be used to support parts of the Land Use Plan.

The Land Use Plan includes a map that identifies and guides the types of future land use patterns desired by the community. The map is divided into land use categories that reflect these patterns and the Town's needs. A Natural Resource Corridor is also discussed to ensure that future land use is compatible with Town goals for natural resource protection.

2. EXISTING COMPREHENSIVE PLAN

The Town of St. Joseph's existing land use in 2006, presented as a part of the 2006 Comprehensive Plan, described the following primary land uses within the Town:

- Ag/Residential Farming
- Ag/Residential Natural
- Residential
- Mobile Homes
- Proposed Development
- Commercial
- Public/Semi-Public
- Parks
- Water

The 2006 Comprehensive Plan also has a Future Land Use Plan map, included in Appendix E, which identifies future areas for growth in the Town. In 2006, the Town of St. Joseph's predominant land use was Ag/Residential Farming, which comprised 37 percent of the Town's land. The 2006 Future Land Use Plan accurately reflects much of what has happened in the town over the past 10 years, but does not show some of the new development and existing land uses. As a result the Existing Land Use map and Future Land Use Plan map prepared as a part of this Comprehensive Planning process include different land use designations.

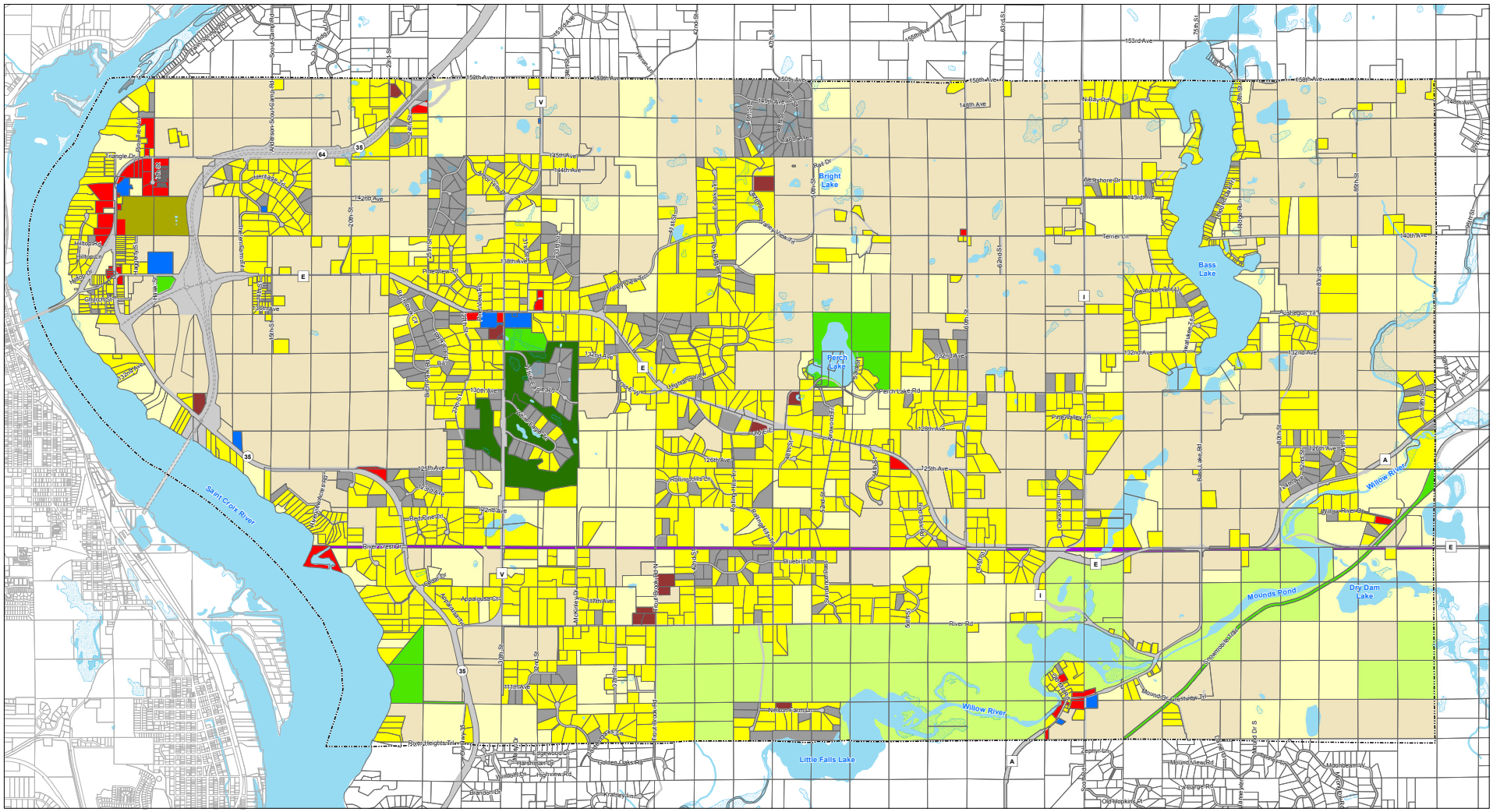
3. LAND USE INVENTORY

There are currently 14 existing land use categories within the Town of St. Joseph. The most predominant land use is Ag/Residential Farming, which includes agricultural land and very low-density residential development. This use comprises 35.8 percent of the Town's land. Other predominant uses include Residential and Ag/Residential Natural. The Residential land use category refers to platted residential properties and comprises 23.2 percent of the Town. Ag/Residential Natural includes currently undeveloped land with important natural features (13.5 percent of the Town). In this area, property owners are encouraged to protect nearby natural resources. All existing land uses are listed below in Table 9-1 and mapped in Figure 9-1.

Table 9-1
Existing Land Use Inventory

Land Use Category	Acreage	Percentage
Ag/Residential Farming	7,950	36.0%
Ag/Residential Natural	2,981	13.5%
Residential	5,123	23.2%
Vacant (Platted)	977	4.4%
Mobile Home	67	0.3%
Commercial	123	0.6%
Home Occupation	50	0.2%
Power Line	57	0.3%
Golf Course	183	0.8%
Town/County Park	210	1.0%
State Park	1,496	6.8%
Public/Semi-Public	47	0.2%
Right-of-Way	1,273	5.8%
Open Water	1,561	7.1%
Total City	**22,098**	**100.0%**

Figure 9-1
Existing Land Use



Existing Land Use

Town of St. Joseph Comprehensive Plan 2016

December 5, 2016

Stantec

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4. LAND USE PLAN

In order to plan for future development that met the Town of St. Joseph's needs, a Future Land Use Plan was prepared. This Plan includes a discussion of new land use categories and their relationship with the Natural Resource Corridor identified in Chapter 6: Agricultural, Natural and Cultural Resources. The Future Land Use Plan is described below.

This Future Land Use Plan focuses on providing additional areas for residential, commercial and light industrial growth in the Town of St. Joseph. The Land Use Plan and associated map describe the future land use designations for the Town. The designations guide the Town's future land use form and provide a general framework for growth and development. The goals and policies stated in this Plan will provide the framework from which the Town can create land development controls. The Future Land Use Plan map illustrates the land use categories for which the policies will apply. The land uses will each be described to help ensure that the types of uses and developments are consistent with the vision for the Town.

Objectives

The Future Land Use Plan accomplishes several objectives: (a) it clearly represents the existing land use pattern and location of existing developments, (b) it provides clearly defined areas that the town would like to preserve as important natural resources, (c) it supports the continuation of rural land uses and rural characteristics as desired by the town, (d) it encourages a land use pattern that is cognizant of the unique characteristics of the Town. The land use and growth recommendations contained in this Plan provide for a balance between these components. It is the intent of this Plan to create a community within which these elements exist:

- Housing options to encourage a diversity of residents
- Rural character and a unique place
- Areas engaged in farming on a large or small scale or with agricultural related uses
- Adequate parks and community facilities
- Business and commercial opportunities to residents and visitors
- An efficient roadway system

Basic Planning Provisions

In addition to the goals and strategies, there are a number of basic principles that are important to implementing the Land Use Plan. These are described below:

- Work with St. Croix County to encourage zoning that is consistent with this plan.
- Update the ordinances to be consistent with the elements of this plan.
- Create ordinances that support the goals and objectives laid out in each section of the plan.
- Ensure adequate roadway connections for new developments.
- Update the 2013 Outdoor Recreation Plan, as needed, to ensure the interconnectedness of neighborhoods and residents with other Town amenities.
- Work cooperatively with surrounding municipalities and the County to plan development of the Town's service areas and staging.

Physical Character

There are five major elements that define the physical character of the Town: (a) development pattern (intensity and use), (b) major road pattern, (c) neighborhood design, (d) future growth pattern of major community facilities/open space, and (e) location and nature of business and commercial areas. Several guiding principles have been established for each element as follows:

Development Pattern and Neighborhood Form

- Promote innovative design and conservation techniques in key natural resource areas.
- Create connectivity between neighborhoods in and around Houlton and Burkhardt to promote a small 'village center' feel.
- Encourage the preservation of large agricultural tracts to enhance the rural character in the Town.
- Encourage open or green space in new residential neighborhoods.
- Explore options for workforce housing and more compact options to increase housing diversity.

Road Pattern

- Promote the development of roadways that provide connections throughout the Town.
- Establish collector roads through the Town's key growth areas.
- Encourage a diversity of roadways so that not all residential areas are served by a cul-de-sac or through roads, but a variety of options and choices are available to residents.

Neighborhood Open Space/Community Facilities

- Strategically locate community and neighborhood sized parks and open space.
- Plan pedestrian and bike corridors that connect commercial areas, parks and other points of interest.
- Continue and plan for upgrading and maintaining parks and open spaces.

Business Districts

- Guide commercial and light industrial expansion primarily to areas with adequate transportation access and infrastructure availability.
- Strengthen existing commercial areas and introduce small-scale retail services and commercial uses in the Houlton Center.

Updating the 2006 Future Land Use Plan

In 2006, a Future Land Use Plan was developed for the Town of St. Joseph, identifying seven different land use types. While these designations helped to categorize appropriate land uses in the Town, the 2006 Plan was difficult to implement. The Plan identified three different agricultural/residential districts. Designations for these three districts were difficult to differentiate and made implementing development a challenge. When developing the 2016 Future Land Use Plan, the Town wanted a Plan that would be clear to residents and property owners, while managing growth and protecting natural areas.

St. Croix County has zoning authority over the Town of St. Joseph, so the county zoning code was analyzed to determine which land use categories might be appropriate for the Future Land Use Plan. St. Croix County zones the entire Town Rural Residential, a district which permits uses from residential, to agricultural, to commercial, to industrial, at a very low density. The Town wanted a simplified set of land use designations, but felt that a single category was not strategic and that certain areas of the Town exhibited special characteristics, making them eligible for a different land use designation. Some of these areas include:

Historic housing along the St. Croix River
Land along the St. Croix River has been developed for many years and, although it is not sewered, reflects a different development type than other parts of the Town. Lots in this area tend to be much smaller with older residential development.

Burkhardt, Houlton and the Intersection of County Roads V and E
These areas reflect a cluster of local services in the Town, not found elsewhere in the rural residential area.

New Highway 64/County Road E Interchange
This new interchange in Houlton may increase development in the area. Clustering new businesses and industry near the highway would be beneficial to both the Town and the businesses.

Thirteen land use designations were developed for the 2016 Future Land Use Plan and are listed in Table 9-2. These areas correspond to Figure 9-2 Future Land Use. Subsection 5 of this chapter further describes these land use categories and allowed uses.

Table 9-2
Future Land Use Designations

Land Use	Acreage	Percentage
Rural Residential	10,644	48.2%
Preservation Residential	6,103	27.6%
Commercial	119	0.5%
Rural Mixed Use	185	0.8%
Houlton Town Center Mixed Use	95	0.4%
Business Park	182	0.8%
Public/Semi-Public	46	0.2%
Golf Course	183	0.8%
Town/County Park	210	1.0%
State Park	1,496	6.8%
Right-of-Way	1,273	5.8%
Open Water	1,561	7.1%
Total	**22,098**	**100.0%**

Based on projected household growth and potential commercial development the following changes in land use are anticipated, estimating future residential and commercial growth. These numbers assume a growth of 414 households from 2015 to 2040. Of these, 339 new households would be absorbed by the existing vacant platted residential lots in the Town, on 997 acres, through 2035. The remaining 75 new households would develop on three acres of land plus one acre of right-of-way apiece, for a total of an additional 300 acres between 2035 and 2040. Commercial growth is difficult to predict, but is estimated at four acres every five years, or 20 acres from 2015 to 2040. These projected land use changes are reflected in Table 9-3.

Table 9-3
Projected Land Use Changes Over Time

Existing Land Use	Acreage					
	2016	2020	2025	2030	2035	2040
Ag/Residential Farming	7,950	7,946	7,942	7,938	7,934	7,630
Ag/Residential Natural	2,981	2,981	2,981	2,981	2,981	2,981
Residential	5,123	5,363	5,603	5,843	6,100	6,325
Vacant (Platted)	977	737	497	257	0	0
Mobile Home	67	67	67	67	67	67
Commercial	123	127	131	135	139	143
Home Occupation	50	50	50	50	50	50
Power Line	57	57	57	57	57	57
Golf Course	183	183	183	183	183	183
Town/County Park	210	210	210	210	210	210
State Park	1,496	1,496	1,496	1,496	1,496	1,496
Public/Semi-Public	47	47	47	47	47	47
Right-of-Way	1,273	1,273	1,273	1,273	1,273	1,348
Open Water	1,561	1,561	1,561	1,561	1,561	1,561
Total City	**22,098**	**22,098**	**22,098**	**22,098**	**22,098**	**22,098**

5. FUTURE LAND USE DESIGNATIONS

The Future Land Use Plan identifies areas where the Town would like to guide growth, and those areas in which the Town would like to maintain its rural character. In developing this Plan, the Town was dedicated to responding to citizen preferences and being cognizant of significant natural resources in the community. The Town has identified 13 land use designations for future land use. These designations include rural residential, preservation residential, commercial, rural mixed use, Houlton Town Center mixed use, Business Park, and other public uses, which are described below. These land use designations will help to balance the rural character of the community with continued growth and major transportation changes in the area.

Rural Residential

The vast majority of the land in the Town has been identified as Rural Residential. In this land use category, agricultural and very low-density residential uses are most prominent. The Town historically has had a strong agricultural community. The land and soils in the Town have moderate crop yields and are classified as moderately producing agricultural land. Although there is strong development pressure within the Town, there remains large tract farmlands. The primary agricultural uses are active farmlands, farmsteads, and large-lot single family residential. Other uses are also allowed under St. Croix County zoning in these areas and vary from small scale agriculture-related businesses, to commercial and service related uses, to parks and public uses, to extractive or industrial uses. Approximately 10,511 acres of land are in this designation, approximately 47.6 percent of the land in the Town.

Preservation Residential

The Town worked through an extensive process during the Comprehensive Plan preparation to identify key natural resource areas and connections within the Town. The Preservation Residential land use responds specifically to the natural resource areas and corridors. The land uses in the Preservation Residential areas will be dedicated to creative subdivision and development techniques that seek to preserve a larger portion of the natural resources. This area could include lots that are smaller than in the Rural Residential district due to the preservation of open space and natural resources through a variety of tools. The land use pattern in this area will primarily be residential uses and open spaces that preserve natural resource amenities for the entire town. Over the past several years the Town has experienced increased growth pressure and this trend is projected to continue. The St. Croix Crossing Bridge will increase accessibility to the Town and demand is expected to increase. The overall density of this designation will remain at 3 acres but will allow the development of lots in conjunction with preservation of significant natural resource areas. Although lot sizes in the preservation residential land designation may vary.

The Town of St. Joseph currently has subdivision ordinance Chapter 168 in place that allows land to be developed in a way that protects the natural features. Under Chapter 168, properties fully or partially included in the Natural Resource Corridor, may be permitted an area to be set aside to preserve the natural character of the parcels. The ordinance and the Corridor serve as a strong implementation tool to meet the unique needs of the Town. More information about the Natural Resource Corridor and the NRI can be found in Chapter 6 Agricultural, Natural and Cultural Resources Element. Approximately 5,978 acres of land are in this designation, approximately 27.1 percent of the land in the Town.

Rural Mixed Use

Rural Mixed Use areas have been identified to support small-scale, rural businesses and services. Uses in this category will include offices, commercial, services, small scale restaurants, and public uses, allowed to be mixed with residential uses. There are two identified Rural Mixed Use areas in the Town, located in the southeast and central parts of the Town. These mixed use areas are located at the intersections of county roads to allow for easy access for residents and employees. Burkhardt, located in the southeastern part of the Town, is an example of one of these Rural Mixed Use areas. Approximately 181 acres of land is in this designation, approximately 0.8 percent of the land in the Town.

Business Park

The Business Park land use designation serves to guide future commercial, warehousing, and light industrial uses in the Town. It is proposed that the Town include a Business Park zone in order to concentrate development and maintain the rural character of the community. The Business Park district is adjacent to the new Highway 64, providing convenient transportation access for future businesses while serving as a buffer to residential neighborhoods closer to the St. Croix River. Approximately 182 acres of land is in this designation, approximately 0.8 percent of the land in the Town.

Houlton Center Mixed Use

The Houlton Town Center Mixed Use land use designation allows for new development of the Town of St. Joseph near the St. Croix River and the new Highway 64/County Road E Interchange. This area includes a mix of residential, commercial, and institutional uses and is intended to be the focus of new growth in the community. Uses in this area could include single family residential, townhomes, multifamily residential, restaurants, offices, services, and public institutions. While this district will support a mix of uses, it is intended that it will feature more intense commercial or retail uses than other areas of the Town. Approximately 95 acres of land are in this designation, approximately 0.4 percent of the land in the Town. Dense growth in this area is currently limited by reliance on septic systems, however, it is possible that this area could become sewered. More information about potential sewer systems is included in subsection 6 of this chapter.

Commercial

The land designated for Commercial uses, about 123 acres and 0.6% of the Town, includes existing business and commercial uses of various kinds throughout the Town. Most of these uses are concentrated in Houlton and Burkhardt.

Other Public Land Uses

There are six other land use districts and overlay districts in the Town of St. Joseph, all relating to public or semipublic uses. These districts include Public/Semi-public, Town/County Parks, State Parks, Right-of-Way, and Open Water. These districts are described below.

Public/Semi-public
The Public/Semi-public land use category is dedicated to public and institutional uses within the Town of St. Joseph. These uses include government buildings, schools, churches, and other community facilities. There are four public uses in the Town: the Town Hall, Houlton Elementary School, Redeemer Lutheran Church and Family of Christ Lutheran. These facilities are discussed and mapped in Chapter 5: Utilities and Community Facilities. The Public/Semi-public use is approximately 46 acres of land (0.2 percent) in St. Joseph.

Town/County Parks
The two public parks currently owned by the Town are located south of the Town Hall and near Perch Lake. A third and recreational facility is under consideration for the Town of St. Joseph.

Three Parks are owned by St. Croix County in the Town of St. Joseph including Homestead Parklands at Perch Lake, a future Trailhead currently under development on the St. Croix River Crossing Trail and land on the St. Croix River, formerly owned by the Richards family.

Homestead Park is situated around the northern half of Perch Lake, off of Perch Lake Road. Perch Lake is the central feature of this 62-acre park. The crystal clear lake is an Outstanding Resource Waters (ORW) and in some areas is 90 feet deep. Park amenities include a swimming beach, shoreline fishing pier, picnic areas, picnic shelters, scuba diving, paved bookworm trail with reading stations, hiking trails, playground, scenic overlooks and rental of paddle boards, paddle boats, kayaks, canoeing and row boats.

The St. Croix River Crossing Trailhead is approximately 8 acres located near Houlton Elementary school and the new interchange with County Road E. The design is currently underway with development to follow. The Pedestrian and Bicycle Trail along with the St. Croix County Trailhead are expected to open to the public in 2018-2019.

The St. Croix River property is approximately 50 acres located along the St. Croix River west of Highway. 35 and County V. The property was recently acquired and park amenities have not yet been designed or developed. Planning for this property will begin in 2018.

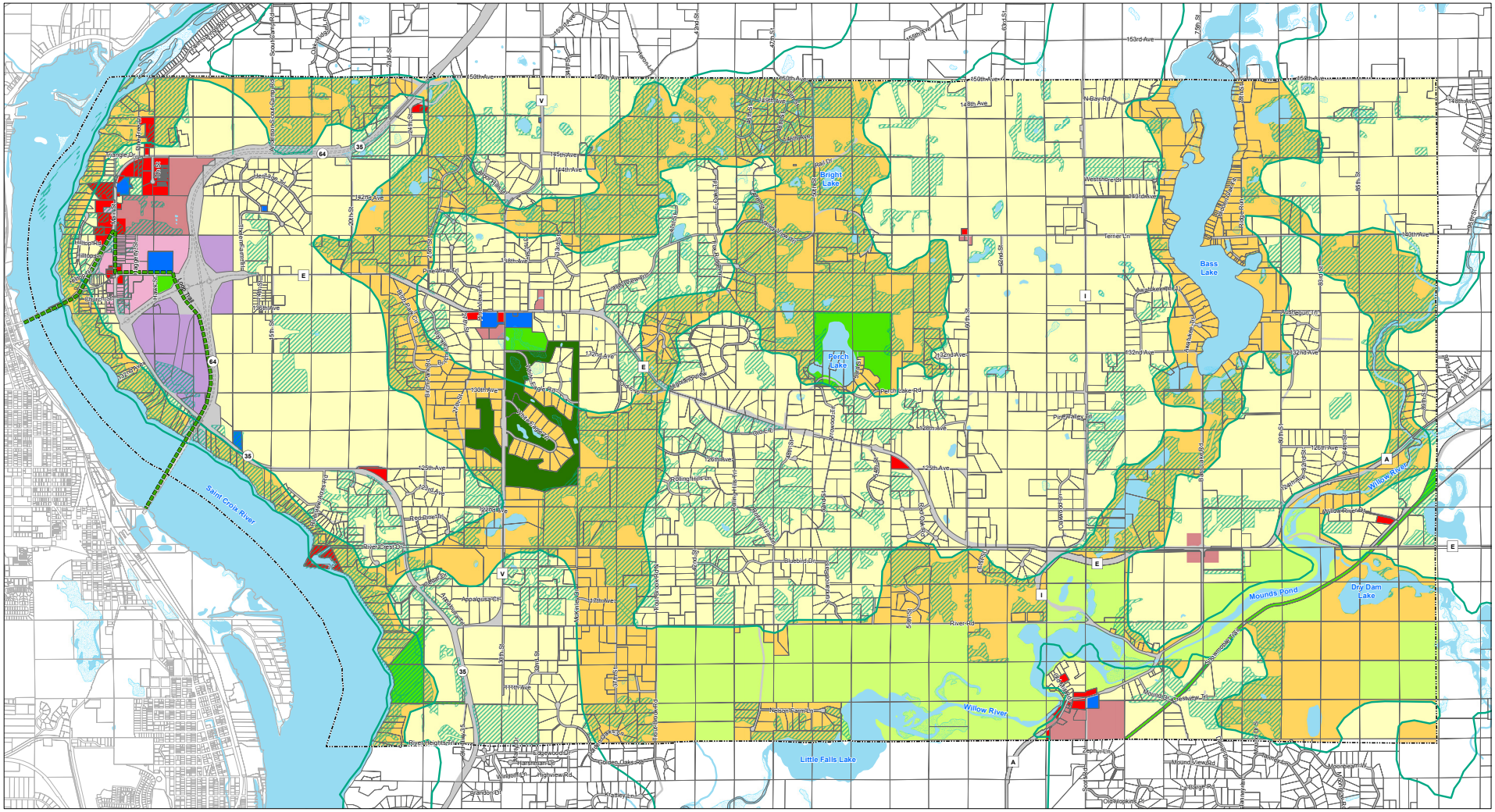
Approximately 210 acres of land are dedicated to Town/County Parks, approximately 1.0 percent of the Town's land.

State Parks
The land use designation State Parks designates public land within the Town's boundary that is not owned or maintained by the Town. This park land is accessible to residents, but charges a fee for use. In the Town of St. Joseph, there is one State Park: Willow River State Park. Parcels in the State Parks areas are primarily categorized as Rural Residential or Rural Mixed Use, but their current use is as State land. Approximately 1,496 acres of land are dedicated to State Parks.

Right-of-Way
The Right-of-Way use is dedicated to State, County, and Town roadways within the Town of St. Joseph. Roadways and other modes of transportation are discussed in Chapter 4: Transportation. Approximately 1,273 acres of land (5.8 percent) are dedicated to right-of-way in the Town of St. Joseph.

Open Water
There are numerous lakes, rivers, and wetlands throughout the Town of St. Joseph. These bodies of water include the St. Croix River, Willow River, Perch Lake, Bass Lake, and Little Falls Lake. Approximately 1,561 acres are dedicated to open water, comprising 7.1 percent of the Town.

Figure 9-2
Future Land Use



Future Land Use Plan

Town of St. Joseph Comprehensive Plan 2016

December 16. 2016

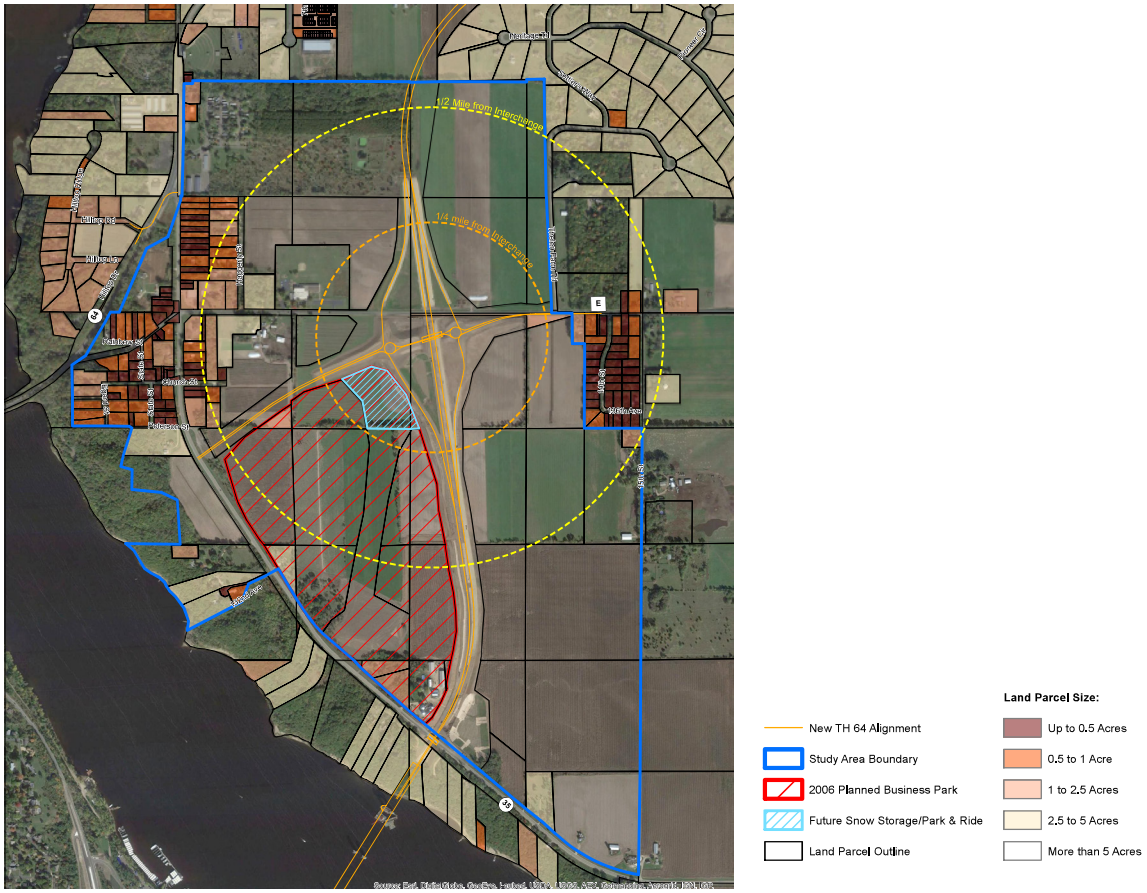
Stantec

V:\1938\active\193803109\GIS\Projects\Future Land Use 22X34.mxd

6. HOULTON TOWN CENTER MIXED USE CONCEPT

As part of the planning process, there has been discussion of potential development of a portion of the Houlton area as a mixed use town center which could be served with municipal sanitary sewer and water. A generalized study area for this analysis was identified to include most of Houlton plus an additional area within a half mile or so of the future interchange at Highway 64 and County Road E (illustrated in Figure 9-3). This study area is shown in the four concept plans on the following pages. These plans show general land uses and future roadways to estimate the total amount of development that could potentially take place within the study area. Both large scale and small scale water treatment facilities were studied and are reflected in the four concepts. Additional information about the development of these concepts and municipal services are included in Appendix F of this Plan.

Figure 9-3
Houlton Study Area



Development Concepts

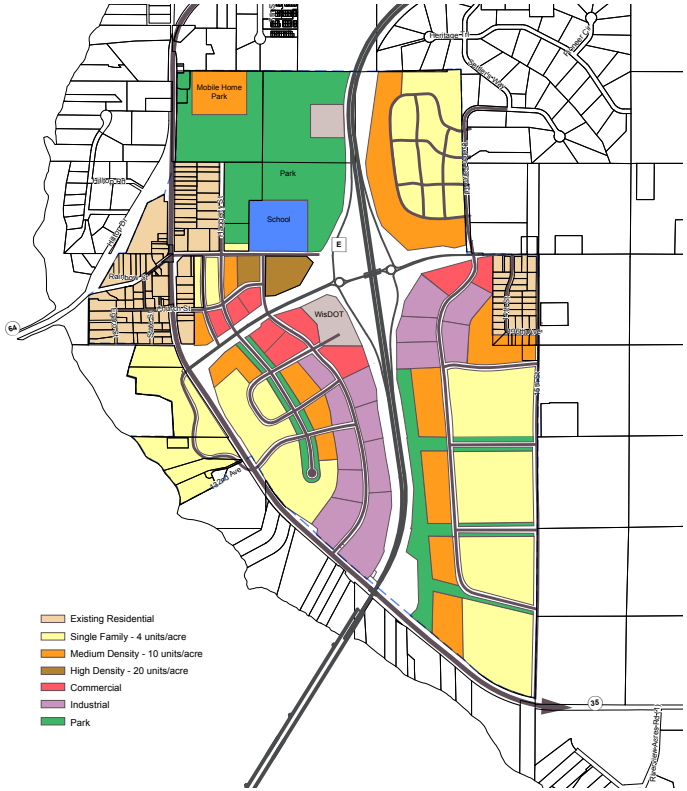
Full Development Concept
This original concept reflects full development of the study area. Sewer services would be provided to this new development in addition to existing properties in the area. This concept includes:

- 440 acres new development
- 2,000+ Residential units
- 100+ acres of Commercial/Industrial development (900,000+ square feet of space)
- 645,000 gallons/day treated in a new facility

The Town of St. Joseph Plan Commission decided this concept did not meet future planning needs.

The full development concept is illustrated below in Figure 9-4.

Figure 9-4
Full Development Concept

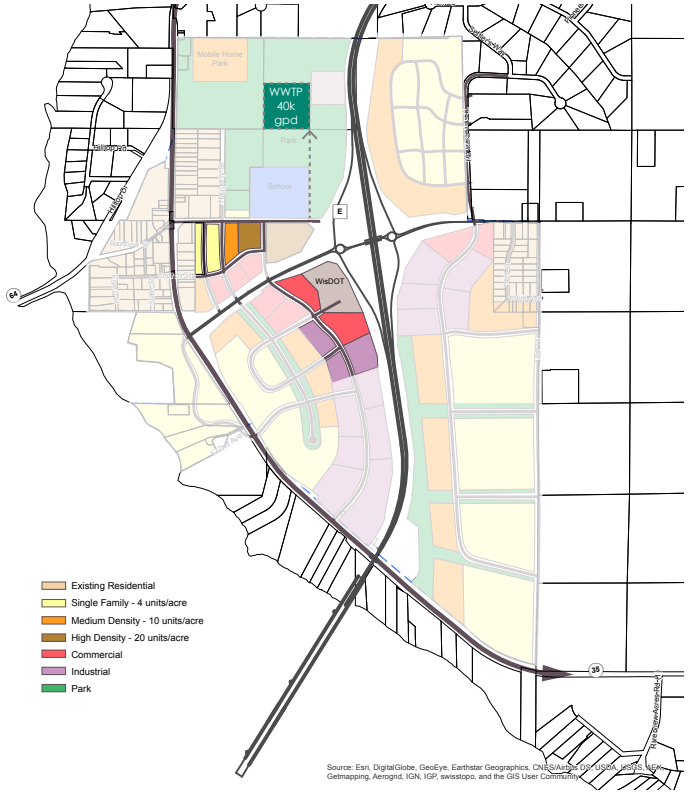


Limited Concept A
This concept reflects new, limited development within the study area. The proposed small scale water treatment facility would service all new development. Concept A includes:

- 30 acres new development
- 80 New Residential units
- 17 acres of Commercial/Industrial development (150,000 square feet of space)
- 40,000 gallons/day

Concept A is illustrated below in Figure 9-5.

Figure 9-5
Development Concept A

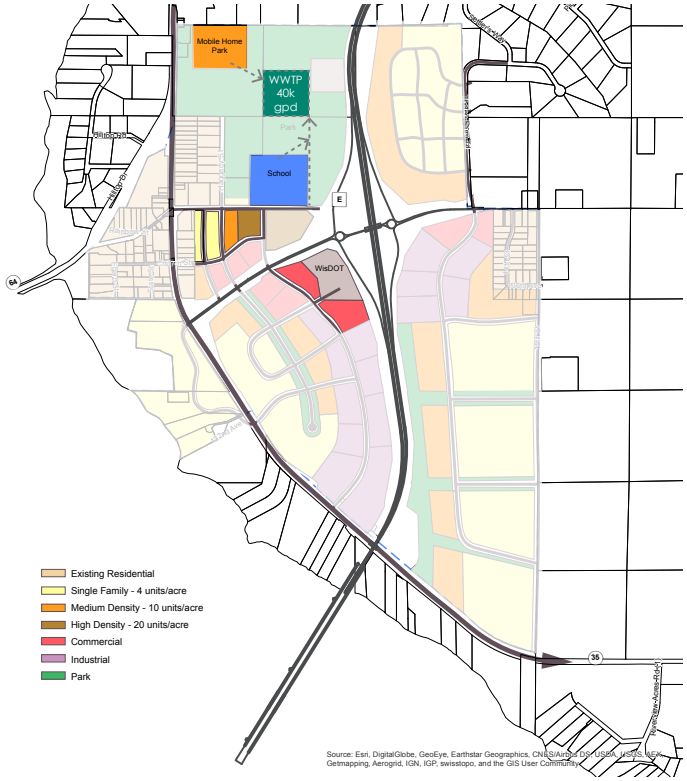


Limited Concept B
This concept reflects even less new development in the study area than Concept A. However, by limiting new development, the proposed small scale water treatment facility would be able to accommodate new development as well as Houlton Elementary School and the nearby manufactured home park. Concept B includes:

- 20 acres new development
- 80 New Residential units
- Sewer service for 50 existing mobile homes
- Sewer service for Houlton Elementary School (230 students)
- 8 acres of Commercial/Industrial development (70,000 square feet of space)
- 40,000 gallons/day

Concept B is illustrated below in Figure 9-6.

Figure 9-6
Development Concept B



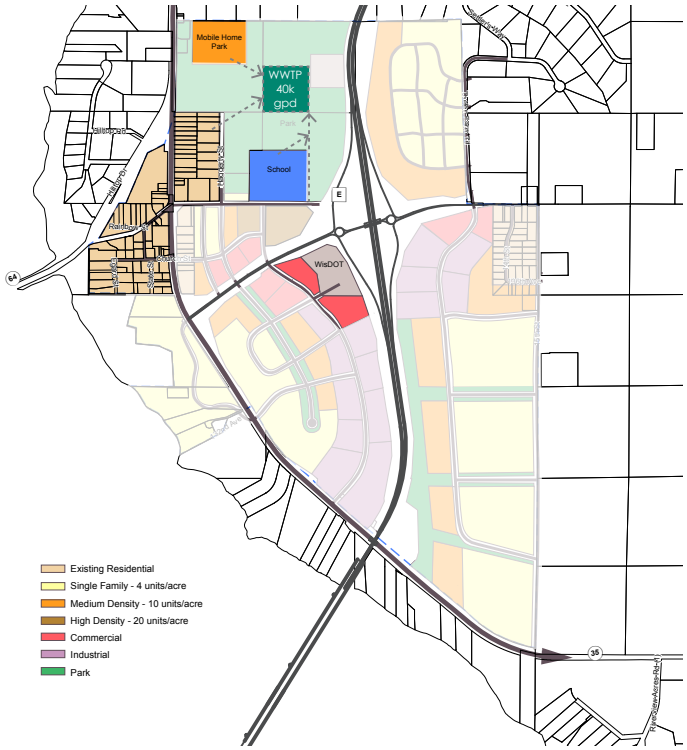
Limited Concept C

Concept C is the most limited of all the proposed concepts, eliminating all new residential development and significantly scaling back commercial and industrial development. However, additional existing homes would be serviced by the proposed treatment facility. Concept C includes:

- No new Residential development
- Sewer service for 80 existing Residential units
- Sewer service for 50 existing mobile homes (only if required at some point in the future)
- Sewer service for Houlton Elementary School (230 students)
- 7 acres of Commercial/Industrial development (65,000 square feet of space)
- 40,000 gallons/day

Concept C is illustrated below in Figure 9-7.

Figure 9-7
Development Concept C



Analysis of Alternatives

In analyzing alternatives, discussion has centered on the understanding that the Town is not in a position, financially or politically, to pay the cost for a new sewage treatment plant, even a very modest sized facility. The assumption is that a developer would need to pay this up-front development cost in order to make it happen. To explore this issue further, Stantec conducted interviews with three experienced residential developers to discuss the feasibility and attractiveness of such a development in Houlton. The interviews were conducted off the record and are summarized below as Developers A, B, and C.

Two of the developers are local representatives of large national residential development companies, each with many years of experience in the Twin Cities area market and many projects in the ground. The third developer is a successful local Twin Cities developer known for innovation and creative communities, including projects not served by municipal sewer and water.

Each developer was given a brief explanation of the context of the discussion – that the Town was updating its Comprehensive Plan, that the previous 2006 Plan had identified the potential for a mixed use "village" or town center, and that the current community discussion was open to the idea of exploring the concept further and had developed more information and analysis related to the concept. The overall study area, land use concepts and basic conclusions of the sanitary sewer facility study were shared. The three limited development concepts (Concepts A, B, and C) were shared with the interviewees.

The question to each developer was, would a developer be likely to develop such a town center project and pay up front for a small sewage treatment plant, and would such an area in St. Joseph be attractive and feasible in the market?

Findings

Based on the interviews, the following general conclusions can be drawn:

1. It is appropriate and laudable for the Town of St. Joseph to plan for the future, regardless of current market conditions or economic realities.
2. As has been demonstrated in the past decade, economic conditions can change quickly. What is true today may be very different in five, ten or twenty years.
3. A developer would benefit from the kind of study and analysis done in the Town of St. Joseph facility study. Making the results of the information publicly available would be supportive of future development.
4. In the current market and based on the current concept it is highly unlikely that a developer would pay for a large scale or small scale sanitary sewage treatment plant (as presented in the development concepts above) – the costs would be too high to add to the risk of developing the project.

5. In the current market, a Mixed Use concept would need to be significantly larger than the current Town of St. Joseph concept in order to justify the up-front cost. Other examples nationally of this kind of project involve thousands of residential units, not dozens as suggested for an initial phase in the Town of St. Joseph.
6. If a town center development were to be feasible it would need to be in an outstanding setting with significant amenities or other attractions.
7. The Town of St. Joseph needs to be seen in the context of the regional market – competitive projects in terms of location, availability and amenities. What are people looking for? Can they get equal or better elsewhere? How many lots are available in other communities?
8. How would a new Houlton Town Center compete in the market with Stillwater, Lake Elmo, West Lakeland Township, Hudson, Somerset, New Richmond, River Falls or other areas? What would people be looking for in driving to Wisconsin? The Town of St. Joseph and Houlton have good qualities and a good location. Is there a market for people who want to live there versus in the wider open areas of St. Joseph, or rural Stillwater, Lake Elmo, Somerset, etc.?

Interviewees' specific comments are included in Appendix H, following this Plan.

7. POLICY PLAN

The purpose of the land use policy plan is to develop a set of goals and policies that directly support how the Town would like to develop and use land in the future. The Town has the ability to shape and guide growth in the manner it prefers, and the subsequent goals and policies will help identify a way to encourage a development pattern that is consistent with the Town Vision.

Land Use Goal #1: Promote and encourage a development pattern that is responsive to the Town Vision.

Policies:

1. Work with developers and land owners to encourage development that maintains a rural, small town character.
2. Develop and enforce community site planning/architectural standards that maintain the rural character in the Town.
3. Plan for residential growth that considers the Natural Resource Corridor and results of the NRI.

Land Use Goal #2: Encourage a diversity of land uses within the Town to provide business development, living, and recreational opportunities.

Policies:

1. Develop ordinances that support the new land use designations identified in this Plan.
2. Work with land owners to ensure that the land uses designated in the Plan are understood and accepted.
3. Work with adjacent towns and jurisdictions to ensure that land uses are consistent with neighboring communities.

Land Use Goal #3: Enhance and encourage the preservation of open spaces and agricultural lands to maintain the rural character.

Policies:

1. Create land protection tools that support the preservation of important natural resources and agricultural lands.
2. Work with agencies, adjacent jurisdictions, the county, and state to identify ways to preserve open spaces in the most effective way.
3. Implement developer's agreements that reflect the context of the project and the goals of the Town.

Land Use Goal #4: Create and develop the Houlton Town Center which provides business, residential and recreational opportunities.

Policies:

1. Create a Houlton Town Center Plan that responds to the business and residential needs of current and future residents.
2. Develop design guidelines for the Houlton Town Center that supports the small town character.
3. Attract small business owners to the Houlton Town Center to maintain the rural, small town character of the Town.
4. Work to make the Houlton Town Center a destination with attractive businesses and structures.

Land Use Goal #5: Encourage a Burkhardt Mixed use area which will provide increased business opportunities.
Policies:

1. Maintain the Rural Residential for residences on Old Mill Road, except for current Commercial area.
2. Encourage multiuse zoning for Scott Road parcels from Co Rd A to the Town Line.
3. Maintain Burkhardt as a distinct area with alternative businesses and structures.
4. Work with the State to address shared issues of concern including parking and access to facilities and services in Burkhardt from the Willow River State Park.

Chapter 10 **Implementation Element**

1. IMPLEMENTATION PLAN

The Implementation Plan for the Town of St. Joseph Comprehensive Plan Update identifies specific action steps that the Town can take to implement key recommendations in the Plan. Within the various chapters are goals and policies laying out the Town's vision and aspirations for the future. Many of these goals and policies are generalized, and some describe ongoing activities that will be carried on in any event by the Town Plan Commission, Town Board or others. But the action steps below are more concrete steps that will address some of the most important issues facing the Town.

Not all goals and not all policies have action steps in this Implementation Plan. However, the action steps that are included below indicate which goal or policy in this Plan they are related to (colored by chapter), who would be responsible for taking action, and a time frame for accomplishing them. See table 10-1 for the Implementation Plan and associated action steps.

Section 2 of this chapter lists the goals and policies from chapters 2 through 9 for reference.

Table 10-1
Implementation Plan

	Action Step	Related Goal/Policy	Who	When
1	Review and adopt Subdivision Regulations that require a conservation-based approach to development, referencing and implementing the 2016 Natural Resource Inventory	General Goal #1 - Policy 2 General Goal #2 - Policies 1 & 2 General Goal #3 - Policies 1 & 2 Natural Resources Goal #1 - Policies 3, 4 & 5 Natural Resources Goal #5 - Policy 1 Land Use Goal #1 - Policy 3 Land Use Goal #2 - Policy 1 Land Use Goal #3 - Policy 1 Land Use Goal #4 - Policies 1 & 2	Plan Commission, Town Board	2017
2	Meet regularly with St. Croix County Community Development staff to insure the Town's goals and expectations are being met with St. Croix County zoning ordinances and with zoning and subdivision reviews	General Goal #1 - Policy 2 General Goal #3 - Policies 1, 2 & 3 General Goal #7 - Policies 2, 3 & 4 Natural Resources Goal #1 - Policy 8 Natural Resources Goal #5 - Policies 1, 3, 4 & 5 Land Use Goal #2 - Policy 1 Land Use Goal #3 - Policy 2	Plan Commission Chair and Town Board Chair and/ or selected members	Twice yearly, ongoing
3	Create recommendations and an information package to communicate to Town residents, related to the 2016 Natural Resource Inventory, , with recommendations on how best to preserve and protect natural resources in the community	General Goal #2 - Policy 1 Natural Resources Goal #2 - Policy 2	Plan Commission	2017
4	Create recommendations and an information plan to communicate to Town residents, on how best to protect groundwater in the community	General Goal #4 - Policies 1, 2, 3, & 4 Natural Resources Goal #3 - Policies 1-4	Plan Commission	2017

	Action Step	Related Goal/Policy	Who	When
5	Establish and support a Houlton Area Task Force to promote business and mixed use development in the Houlton area; contact potential businesses, developers, and housing builders; engage with current residents and property owners; and explore ways to capitalize on tourism and other visitors to the area as a result of the new highway, interchange, and Loop Trail.	Goal #7 - Policies 1-4 Housing Goal #2 - Policies 1-5 Transportation Goal #1 - Policy 1 Transportation Goal #2 - Policy 2 Community Facilities Goal #5 - Policies 1 & 2 Natural Resources Goal #4 - Policy 2 Natural Resources Goal #5 - Policy 5 Economic Development Goal #1 - Policies 1 & 2 Economic Development Goal #2 - Policies 1-6 Economic Development Goal #3 - Policies 1-4 Economic Development Goal #3 - Policies 1-4 Land Use Goal #4 - Policies 1-4	Plan Commission, Town Board	2017, ongoing
6	Prepare and adopt development design standards that implement the Comprehensive Plan goals	General Goal #1 - Policy 2 General Goal #3 - Policies 1, 2 & 3 General Goal #7 - Policies 2, 3 & 4 Economic Development Goal #4 - Policy 1 Natural Resources Goal #5 - Policy 6 Land Use Goal #1 - Policy 2 Land Use Goal #4 - Policy 2	NRDC Committee, Plan Commission, Town Board	2017
7	Establish a Town of St. Joseph Housing Task Force to research and make recommendations on housing maintenance and rehabilitation, including potential funding sources	Housing Goal #1 - Policy 1 Housing Goal #3 - Policies 1 & 2 Economic Development Goal #2 - Policy 5	Plan Commission	2017, ongoing
8	Contact the West Central Wisconsin Regional Planning Commission (WCWRPC) to research State and Federal funding opportunities for housing-related programs	Housing Goal #1 - Policies 2, 3 & 4 Housing Goal #3 - Policy 2	Plan Commission	2017
9	Meet with St. Croix County Community Development staff to discuss the approach and mechanism to permit accessory dwelling units in the Town, to promote alternative housing needs	Housing Goal #2 - Policy 4	Plan Commission	2017
10	Review the Comprehensive Plan annually to assess how the plans and policies have been implemented, and to determine if changes need to be made	General Goal #1 - Policy 3	Plan Commission	Annually

2. GOALS AND POLICIES

This Plan has resulted in the development of numerous goals and policies, outlined in Chapters 2 through 7 and Chapter 9. All goals and policies are included here, listed by chapter, for reference for the implementation plan above.

General Goals

General Goal #1: Enhance and maintain the rural character of the Town while providing opportunities to maintain and enhance St. Joseph as a unique and desirable place to live, learn, work, and recreate.

Policies:

1. Promote the development and implementation of a comprehensive plan that effectively and efficiently plans for land use, community facilities, transportation, housing, economic development and environmental protection.
2. Formulate and enforce ordinances to ensure development in accordance with the Comprehensive Plan.
3. Review and amend the Comprehensive Plan as necessary to ensure its usefulness as a practical guide for current and future development. Adhere to this Plan, which shall guide zoning changes, as closely as possible to ensure consistent development policy.

General Goal #2: Maintain and enhance the natural landscape by encouraging special consideration for places of natural significance in the Town.

Policies:

1. Preserve and protect key natural resources as identified through the natural resources inventory.
2. Provide incentives to developers and land owners to protect important natural resource areas.
3. Preserve and protect Bass Lake and Perch Lake by implementation and periodic updates to their respective Lake Management Plans.

General Goal #3: Encourage development that supports and enhances the Town's Vision.

Policies:

1. Update and refine current ordinances to be consistent with the goals set forth in this Plan.
2. Create and develop land use tools that promote development that is creative, unique, and consistent with the vision of the Town.
3. Work to develop design and architectural standards that support and guide future development.

General Goal #4: Protect groundwater supplies and surface water to assure high quality groundwater for all residents.

Policies:

1. Encourage and promote improvements in monitoring of all private wells and private septic systems in the Town to assure the highest standards are being maintained.
2. Encourage and promote improvements in monitoring of all waste disposal and management systems and practices to assure the highest standards are being maintained.
3. Develop and implement a stormwater management plan and best practices to guide future development.
4. Encourage, promote, and implement the Lake Management Plans for Bass Lake and Perch Lake in the Town of St. Joseph.

General Goal #5: Support strong, ongoing working relationships between the Town of St. Joseph and surrounding cities, towns, St. Croix County, and other jurisdictions in matters related to planning and the provision of public services.

Policies:

1. Continue to discuss and identify potential intergovernmental relationships that help promote efficient services to the Town and adjacent jurisdictions.
2. Pursue new collaborative planning efforts among local governments and organizations to address existing issues and new issues as they arise with regard to land use, transportation, parks, natural resources, delivery of services and other areas of mutual concern.
3. Promote information sharing between the Town of St. Joseph and surrounding towns, cities, and the county, and encourage them to participate in local issues.
4. Maintain communications, and collaborate where appropriate, with St. Croix County and state agencies involved in planning issues that affect the Town and region.

General Goal #6: Promote community input, information sharing and collaboration.

Policies:

1. Actively encourage and utilize resident participation in the local decision-making process.
2. Continue to improve and enhance communication among the Town, residents, businesses, civic groups and public agencies utilizing various media such as a Town newsletter, internet access and a community web page.

General Goal #7: Encourage the creation of the Houlton Town Center that preserves and enhances the small-town, quaint, atmosphere the Town values.

Policies:

1. Create a Houlton Town Center Plan that identifies the types of businesses that the Town would like to support.
2. Encourage and support a compact development pattern in the Houlton Town Center to support a mix of residential, small retail and businesses.
3. Encourage the use of the Town of St. Joseph's Non-Residential Design Guidelines for the Houlton Town Center to promote architecture and design which is consistent with the small-town, rural atmosphere of the Town (see Appendix I).
4. Encourage and support plans to improve accessibility for pedestrians and bicycles on existing town roads within Houlton.

General Goal #8: Encourage a Burkhardt Mixed use area which will provide increased business opportunities.

Policies:

1. Maintain the Rural Residential for residences on Old Mill Road, except for current Commercial area.
2. Encourage multiuse zoning for Scott Road parcels from County Road A to the Town Line.
3. Maintain Burkhardt as a distinct area with alternative businesses and structures.
4. Work with the State of Wisconsin and St. Croix County to address shared issues of concern including parking and access to facilities and services in Burkhardt from the Willow River State Park.

Housing Goals

Housing Goal #1: Promote cooperative efforts and utilize existing resources to foster housing development within the Town.

Policies:

1. Continue to study housing needs and resources; and monitor and update goals as needed.
2. Work closely with federal, state, and local agencies and organizations that can help the Town meet its housing goals.
3. Encourage public and private partnerships to expand affordable housing and housing rehabilitation opportunities in the Town.
4. Explore county-wide and other intergovernmental options to develop regional strategies and incentives to promote the expansion of affordable, work force, rental, life cycle and other housing opportunities.

Housing Goal #2: Promote a variety of housing types in the Town for citizens of all income levels, ages, abilities and needs.

Policies:

1. Encourage the appropriate mix of a variety of housing types throughout the Town's growth areas in accordance with the Future Land Use Plan.
2. Develop policies that allow neighborhoods with mixed housing types and/or other appropriate uses within residential areas.
3. Examine policies and other development standards to ensure they encourage the provision of affordable housing.
4. Develop options for providing accessory dwelling units to meet alternative housing needs.
5. Encourage housing developments that serve unique populations including seniors, low income residents, and residents with physical disabilities.

Housing Goal #3: Encourage well maintained residential neighborhoods.

Policies:

1. Develop and enforce the necessary codes to ensure the continued maintenance of the housing stock.
2. Identify or develop methods and funding options to encourage the rehabilitation or redevelopment of substandard housing.

Transportation Goals

Transportation Goal #1: Provide a safe, convenient and efficient multi-modal transportation system that:

- Ensures transportation system improvements are coordinated with land development plans.
- Maintains a cost effective level of service.
- Coordinates multi-jurisdictional transportation system improvements and maintenance.
- Plans for the extension of town roads and other arterials and collector streets as necessary to efficiently serve the users.
- Controls access through the road system to ensure the access, mobility and safety of affected road systems.

Policies:

1. Plan for the extension of Town roads and other arterials and collectors in order to complete connections and provide for future planned development access.
2. Consider planning and implementing a network of interconnected new roads to control highway access, preserve rural character, improve access to new development, minimize extensive road construction and decrease road maintenance costs.
3. Develop plans and new funding strategies for the regular structural maintenance of Town roads, including implementation of the WISLR Pavement Management program as required by WisDOT to provide for the upgrading and maintenance of Town roads.
4. Continue implementing Town road impact fees on any new building permit that places burden on or requires the upgrading of subcollector roads.
5. Continue implementing Town road fees on new developments that place burden on or require the upgrade of Town roads.
6. Continue posting weight restrictions on existing Town roads and consider the weight limits on local roads when reviewing development proposals.

Transportation Goal #2: Work to develop transportation system improvements for walking, hiking, biking and other transportation modes.

Policies:

1. Develop a shared community vision for bicycle and pedestrian facilities and recreational opportunities and build capacity to fund these activities in addition to utilizing Park Impact Fees for this purpose.
2. Encourage the connection of the Town of St. Joseph residents, economic opportunities and recreational destinations with the Loop Trail which is being constructed through the Town of St. Joseph as part of the St. Croix Crossing Bridge.
3. Encourage the connection to other recreational and trail facilities outside the Town of St. Joseph.
4. Encourage the connection of the Loop Trail with Willow River State Park.
5. Support the efforts of the St. Croix Bike and Pedestrian Trail Coalition.
6. Follow and update as warranted the 2013 Town of St. Joseph Outdoor Recreation Plan as it pertains to hiking, biking and other transportation modes.
7. Follow and update as warranted the 2014 Town of St. Joseph Bike and Pedestrian Trail Implementation Study.
8. Support the implementation of the St. Croix County Parks and Recreation Bicycle and Pedestrian Plan.

Community Facilities Goals

Community Facilities Goal #1: Enhance and maintain community facilities to provide meeting and gathering spaces for Town residents.

Policies:

1. Maintain and monitor community gathering and meeting spaces to ensure appropriate facilities are available to conduct Town Business and other community building activities.
2. Encourage the use of Houlton Elementary School as a community gathering space and facility that provides benefit to all Town residents.
3. Encourage Town participation in the Hudson Area Joint Library Board.

Community Facilities Goal #2: Maintain the educational quality and accessibility to the Town's residents.

Policies:

1. Work with the School Districts to monitor and project the number of students entering the school systems to ensure the educational levels are maintained.
2. Encourage families and residents to actively participate in the schools to ensure quality educational opportunities are available to students.

Community Facilities Goal #3: Work with adjacent jurisdictions, the County and the State to ensure that services and utilities are being provided to residents in the most efficient and effective manner.

Policies:

1. Coordinate with adjacent jurisdictions to identify ways to provide services and utilities to residents in a way that is cost-effective and efficient.
2. Participate with intergovernmental groups to identify and monitor issues and concerns of residents and adjacent jurisdictions to ensure the adequacy of services and utilities in the area.
3. Support the work of the Highway 64 Stormwater and Wastewater Coalition.

Community Facilities Goal #4: Maintain and enhance adequate park and recreational opportunities for residents that encourage an active and healthy lifestyle.

Policies:

1. Enhance and maintain current recreational facilities in the Town.
2. Work with Town Plan Commission to ensure the development of interconnected trails and paths that allow Town residents to easily walk and bicycle throughout the Town safely.
3. Work with residents to identify and obtain park lands for current and future needs.
4. Cooperate with other governmental agencies for development of park property.

5. Work with Wisconsin DNR to identify potential park lands within Willow River State Park that might better function as active parkland in the area.
6. Encourage and promote the goals, objectives and policies outlined in the Town of St. Joseph Outdoor Recreation Plan.
7. Pursue funding to design and construct bicycling and pedestrian facilities as identified in the 2013 Town of St. Joseph Outdoor Recreation Plan.

Community Facilities Goals #5: Explore the need for municipal services for Houlton

Policies:

1. Prepare a municipal sewer facility study for the Houlton area.
2. Support the work and participate as a member of the Highway 64 Corridor Communities Stormwater and Wastewater Coalition.

Natural Resources Goals

Natural Resources Goal #1: Agricultural Resources: Enhance and maintain the rural character of the Town of St. Joseph by encouraging the preservation of agricultural lands and uses.

Policies:

1. Create a land use category that preserves traditional agricultural practices on a limited scale in keeping with the agricultural and residential character of the community.
2. Encourage the development of ag-related and ag- tourism uses.

Natural Resources Goal #2: Improve and protect the quality of surface waters.

Policies:

1. Develop and implement a Surface Water Management Plan and policies, including the MS4 permit process in Houlton.
2. Work in partnership with the County's Priority Watersheds Program and local lake protection efforts.
3. Support and review Shoreland and Floodplain Ordinances as needed to protect surface waters.
4. Develop and adopt a wetland protection and buffers ordinance that sets minimum buffer standards.
5. Use park and open space dedication to protect significant water resources and adjacent habitat areas.
6. Promote wetland and shoreland restoration by private landowners.
7. Educate residents and developers regarding Best Management Practices and state and local stormwater regulations.

8. Support the development and implementation of a County Stormwater Management Ordinance to complement the Town's Erosion and Sediment Control Ordinance.
9. Support development designs that protect the quality of surface waters and other natural resources, and minimize development impacts.
10. Apply for DNR grants that support local efforts to control nonpoint source pollution.
11. Support the implementation and periodic updates to the Lake Management Plans for Bass Lake and Perch Lake.
12. Create a new ordinance for stormwater management to protect Outstanding Resource Waters (ORW) Bass Lake and Perch Lake.

Natural Resources Goal #3: Encourage preservation and restoration of sensitive natural resource areas and wildlife habitat.

Policies:

1. Adopt the Natural Resources Inventory Map.
2. Encourage public and private landowners and developers to restore native habitats and control invasive species.
3. Seek state and other funding for habitat protection and control of invasive species.
4. Incorporate natural resource areas in parks and open space areas.
5. Adopt incentives and regulations to protect environmental corridors and natural resource areas (described in the implementation section).
6. Work with other conservation agencies and organizations, both public and private, to further this goal.

Natural Resources Goal #4: Protect groundwater supplies and surface water to assure high quality groundwater for all residents.

Policies:

1. Encourage monitoring of al private wells and private septic systems in the Town to assure the highest standards are being maintained.
2. Encourage monitoring of all agricultural waste disposal and management systems and practices to assure the highest standards are being maintained.
3. Encourage enforcement of state rules regarding wellhead and groundwater protection.
4. Encourage protection of wetlands and other ground water recharge areas.

Natural Resources Goal #5: Provide for future open space and recreation needs.

Policies:

1. Implement the Town and St. Croix County's Outdoor Recreation Plans.
2. Develop the proposed bicycle and pedestrian trail systems identified in the 2014 Town of St. Joseph Bicycle and Pedestrian Facility Implementation Study.
3. Review and update park dedication requirements and fees included in the Town's impact fees, and use these fees along with grants, land dedication and donation to develop the Town's park and bicycle/ pedestrian trail system as growth occurs.

Natural Resources Goal #6: Preserve the character of the Town's landscape, and examples of native woodlands, prairies, and wetlands.

Policies:

1. Identify important views and implement subdivision and zoning ordinances to protect valued views and viewsheds.
2. Incorporate scenic areas and native habitats in parks and open space.
3. Encourage development of County regulations that protect the night sky.
4. Encourage development of St. Croix County telecommunications tower regulations that encourage towers that blend in with the landscape.
5. Work with the County on developing and implementing landscaping ordinances for commercial development that support the Town's character.
6. Implement the Town's sign ordinance.
7. Develop and use the tools identified in Chapter 10: Implementation to manage land use and natural resources for the long term.

Economic Development Goals

Economic Development Goal #1: Promote cooperative efforts and utilize existing resources for economic growth in the Town.

Policies:

1. Continue to identify and tap into local, state and federal resources to enhance economic development.
2. Explore county-wide economic development coordination options.
3. Promote coordination of the educational system and the business community to ensure the availability of qualified workers.

Economic Development Goal #2: Promote economic stability and diversity that provides job opportunities to residents.

Policies:

1. Support efforts to retain existing businesses and facilitate their expansion.
2. Support efforts to recruit new businesses and industries in appropriate locations and scales.
3. Recognize the need to maintain, upgrade and expand existing infrastructure in the Town, including but not limited to roadways, parks/trails, utilities and telecommunications infrastructure, to support and promote continued economic development.
4. Target financial resources and programs to attract businesses that have an emphasis on job creation and businesses that meet or exceed livable wage requirements.
5. Encourage the availability of a range of housing types and values to accommodate an ample work force.
6. Encourage adoption of new technologies and policies that support telecommuting.

Economic Development Goal #3: Promote efficient, planned commercial and light industrial development.

Policies:

1. Identify key commercial and light industrial development opportunities within the unincorporated hamlets, and the Town's planned growth areas in locations with access to major transportation systems.
2. Encourage and facilitate infill development on vacant parcels to ensure maximum efficiency of land use.
3. Encourage compact commercial developments that will make efficient use of infrastructure and resources.
4. Encourage industrial and office/business commercial development to locate within master planned light industrial parks or business parks or at the Houlton Center Mixed Use area.

Economic Development Goal #4: Enhance the character of the Town's commercial and light industrial development.

Policies:

1. Develop the use of architectural, design or other development standards such as landscaping, screening and other standards within the Town's commercial, business park and industrial developments.
2. Support the provision of open/green space within commercial and industrial development.
3. Promote the rehabilitation and redevelopment of older existing commercial facilities by pursuing and making available various financial programs and assistance.

Intergovernmental Cooperation Goal

Intergovernmental Cooperation Goal #1: Work with adjacent jurisdictions to ensure that Intergovernmental Cooperation and activities are pursued.

Policies:

1. Participate with Intergovernmental groups to identify and monitor issues to find common ground to more effectively manage separate and diverse opportunities within the Town of St. Joseph with similar Best Management practices.
2. Support and actively participate in the Hwy 64 Corridor Storm water/Wastewater Coalition, the Hwy 64 Corridor Trail Coalition, the St. Croix Bike and Pedestrian Coalition, the Bass Lake Rehabilitation District, the Intergovernmental Advisory Council(IGAC), the newly formed Hwy 64 Corridor Intergovernmental Cooperation group sponsored by the University of Wisconsin Center for Civic Engagement, and the Sportsman's Alliance.
3. To work closely with the County, the DNR, and the State staff.
4. Work with the three school districts which serve the Town of St. Joseph.

Land Use Goals

Land Use Goal #1: Promote and encourage a development pattern that is responsive to the Town Vision.

Policies:

1. Work with developers and land owners to encourage development that maintains a rural, small town character.
2. Develop and enforce community site planning/architectural standards that maintain the rural character in the Town.
3. Plan for residential growth that considers the Natural Resource Corridor and results of the NRI.

Land Use Goal #2: Encourage a diversity of land uses within the Town to provide business development, living, and recreational opportunities.

Policies:

1. Develop ordinances that support the new land use designations identified in this Plan.
2. Work with land owners to ensure that the land uses designated in the Plan are understood and accepted.
3. Work with adjacent towns and jurisdictions to ensure that land uses are consistent with neighboring communities.

Land Use Goal #3: Enhance and encourage the preservation of open spaces and agricultural lands to maintain the rural character.

Policies:

1. Create land protection tools that support the preservation of important natural resources and agricultural lands.
2. Work with agencies, adjacent jurisdictions, the county, and state to identify ways to preserve open spaces in the most effective way.
3. Implement developer's agreements that reflect the context of the project and the goals of the Town.

Land Use Goal #4: Create and develop a Houlton Town Center that provides business, residential and recreational opportunities.

Policies:

1. Create a Houlton Town Center Plan that responds to the business and residential needs of current and future residents.
2. Develop design guidelines for the Houlton Town Center that supports the small town character.
3. Attract small business owners to the Houlton Town Center to maintain the rural, small town character of the Town.
4. Work to make the Houlton town center a destination with attractive businesses and structures.

Land Use Goal #5: Encourage a Burkhardt Mixed use area which will provide increased business opportunities.

Policies:

1. Maintain the Rural Residential for residences on Old Mill Road, except for current Commercial area.
2. Encourage multiuse zoning for Scott Road parcels from Co Rd A to the Town Line.
3. Maintain Burkhardt as a distinct area with alternative businesses and structures.
4. Work with the State to address shared issues of concern including parking and access to facilities and services in Burkhardt from the Willow River State Park .

Appendices

APPENDIX A: RURAL CHARACTER MEMORANDUM

Memorandum

DATE: July 13, 2015

TO: Town of St. Joseph Plan Commission

FROM: Phil Carlson, AICP, Stantec

RE: St. Joseph Comprehensive Plan, Rural Character Discussion

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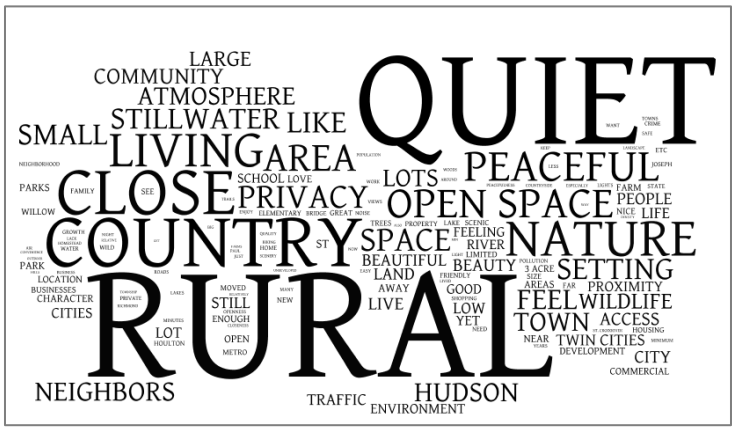
Introduction

One of the issues the Town agreed to discuss in the Comprehensive Plan Update is what is meant by "rural character". The issue was raised in part because the first goal in the 2006 Comp Plan is:

> *General Goal #1: Enhance and maintain the rural quality of the Town while providing opportunities to grow and develop into a unique and desirable place to live, learn, work, and recreate.*

The Plan Commission discussed the issue at their June 10, 2015 meeting, which included several resources:

- Selected Goals & Policies from the 2006 Comp Plan (see attached):
  - General Goals #1 and #2
  - Natural Resources Goal #5
  - Land Use Goals #1 and #3
- The Vision Statement from the 2006 Comp Plan (see attached).
- Summary of selected issues from the 2013 St. Joseph Planning Survey conducted by the Survey Research Center at UW-River Falls (see attached).
- The word cloud (at right) from the 2013 Planning Survey of the 150 most commonly used words among the 733 written responses to the question, "What do you like most about living in St. Joseph?".



Re: Rural Character Discussion

Discussion

After discussion of various issues and ideas, the Plan Commission assembled a list of the top ten qualities that make up rural character in St. Joseph:

1) *Groundwater.* This issue was placed first because it is so vital to basic living. It was noted that groundwater is invisible and that the Town's natural resources help protect groundwater.

2) Quiet. Including discussion of the lack of intrusive noise, such as traffic.

3) *Natural features.* Including vegetation and wildlife.

4) *Viewsheds*. Including lack of cell towers interrupting views.

5) *Farmland*.

6) *Limited, focused development in Houlton*.

7) *Lighting*. Including a generally dark sky at night and lack of intrusive street lights and other urban light sources.

8) *Signage*. Including a general lack of intrusive commercial signage.

9) *Architectural standards*.

10) *Parks, recreational and trails*.

GENERAL POLICY PLAN

The general policy plan identifies overarching goals for the community that helps define the characteristics and qualities of the Town. The General Policy Plan guided the specific goals presented in later chapters of this Plan. The General Goals are deliberately broad and are supported through the specific goals and policies developed in the Policy Plans of each chapter.

General Goal #1: Enhance and maintain the rural quality of the Town while providing opportunities to grow and develop into a unique and desirable place to live, learn, work, and recreate.

Policies:

1. Promote the development and implementation of a comprehensive plan that effectively and efficiently plans for land use, community facilities, transportation, housing, economic development and environmental protection for the Town of St. Joseph.
2. Formulate and enforce ordinances to ensure development in accordance with the Comprehensive Plan.
3. Review and amend the Comprehensive Plan as necessary to ensure its usefulness as a practical guide for current and future development. Adhere to this Plan, which shall guide all zoning changes, as closely as possible to ensure consistent development policy.

General Goal #2: Maintain and enhance the natural landscape by encouraging special consideration for places of natural significance in the town.

Policies:

1. Preserve and protect key natural resources as identified through the natural resources inventory.
2. Provide incentives to developers and land owners to protect important natural resource areas.

General Goal #3: Encourage unique and innovative development that supports and enhances the Town's Vision.

Policies:

1. Update and refine current ordinances to be consistent with the goals set forth in this Plan.
2. Create and develop land use tools that promote development that is creative, unique and consistent with the vision of the Town.
3. Work to develop design and architectural standards that support and guide future development.

Natural Resources Goal #4: Provide for future open space and recreation needs.

Policies

1. Develop the proposed parks and trail system for the Town.
2. Review and update park dedication requirements and fees included in the town's impact fees, and use these fees along with grants, land dedication and donation to develop the town's park and trail system as growth occurs.

Natural Resources Goal #5: Preserve the character of the Town's landscape, and examples of native woodlands, prairies, and wetlands.

Policies

1. Identify important views and implement subdivision and zoning ordinances to protect valued views and viewsheds.
2. Incorporate scenic areas and native habitats in parks and open space.
3. Develop and implement an outdoor lighting ordinance.
4. Develop and implement a wireless telecommunications tower ordinance.
5. Develop and implement a landscaping ordinance.
6. Revise the Town's sign ordinance.
7. Develop and use the tools identified in the Implementation Section to Manage land use and natural resources for the long term.

POLICY PLAN

The purpose of the land use policy plan is to develop a set of goals and policies that directly support how the Town would like to develop and use land in the future. The Town has the ability to shape and guide growth in the manner in which it prefers, and the subsequent goals and policies will help identify a way to encourage a development pattern that is consistent with the Town Vision.

Land Use Goal #1: Promote and encourage a development pattern that is responsive to the Town Vision.

Policies:

1. Work with developers and land owners to encourage development that responds to the rural, small town character.
2. Develop and enforce community site planning/architectural standards that are responsive to the rural character in the town.
3. Plan for residential growth that directly responds to the natural resource inventory.

Land Use Goal #2: Encourage a diversity of land uses within the Town to provide business development, living, and recreational opportunities in the Town.

Policies:

1. Develop ordinances that support the new land use designations identified in this Plan.
2. Work with land owners to ensure that the land uses designated in the plan are understood and accepted.
3. Work with adjacent Towns and jurisdictions to ensure that land uses are consistent with neighboring communities.

Land Use Goal #3: Enhance and encourage the preservation of open spaces and agricultural lands to maintain the rural character.

Policies:

1. Create land protection tools that support the preservation of important natural resources and agricultural lands.
2. Work with agencies, adjacent jurisdictions, the county, and state to identify ways to preserve open spaces in the most effective way.

TOWN VISION

(From 2006 Town of St. Joseph Comprehensive Plan)

The Town Vision is one that encompasses several central themes and ideas that were generated during the first community kick-off forum. There were several central ideas that became the core of the discussion at the initial kick-off meeting and survey of visual preferences. The following vision for the Town was developed in response to these central issues. This vision is meant to help define subsequent goals and policies defined throughout this plan.

The Town of St. Joseph shall be…

A Place Where Natural Resources are Preserved

The Town of St. Joseph prepared an extensive natural resources inventory to understand and identify the significant natural resource areas in the Town. The Town is blessed with beautiful natural resources including the St. Croix River, various streams and rivers, woodlands, and rolling topography. The abundance of natural resources makes the Town a unique place to live, and these resources should be maintained to preserve the rural quality of the Town.

A Place Where Development is Compatible with the Environment

The residents understand that there is likely to be growth in Town. The current residents are dedicated to maintaining the current natural and rural quality of the Town. The environmental quality of the Town is a part of what makes the Town desirable, and all growth and development should consider and respond to existing natural resources and topography.

A Place with an Accessible Village Center

The Town currently has two small unincorporated hamlets at Houlton and Burkhardt, which provide minimal services to the Town. In the future, the Town would like to develop small business opportunities that could support a small village center. This area would be walkable to encourage connectivity between adjacent homes and the village center. The village center will include various educational opportunities, small retail and service businesses, life-cycle housing options, and some parks and open spaces. This area would contribute to the quaint small town atmosphere the residents currently enjoy.

A Place that is Aesthetically Pleasing

Development should not only be sensitive to the natural surroundings, but also consider the impact it has visually on the character of the community. The community would like to improve the quality of development through consistent guidelines that address building materials, signage and scale, placement of public art, landscaping and vegetation, and attractive and harmonious streetscapes that support the community vision.

A Place that Residents Can Live, Work and Recreate

The Town would like to encourage a community that is sustainable and provides opportunities to live, work, and recreate within the community. The Town should provide basic service to its residents and should expand opportunities in the town to meet the needs of the current and future residents.

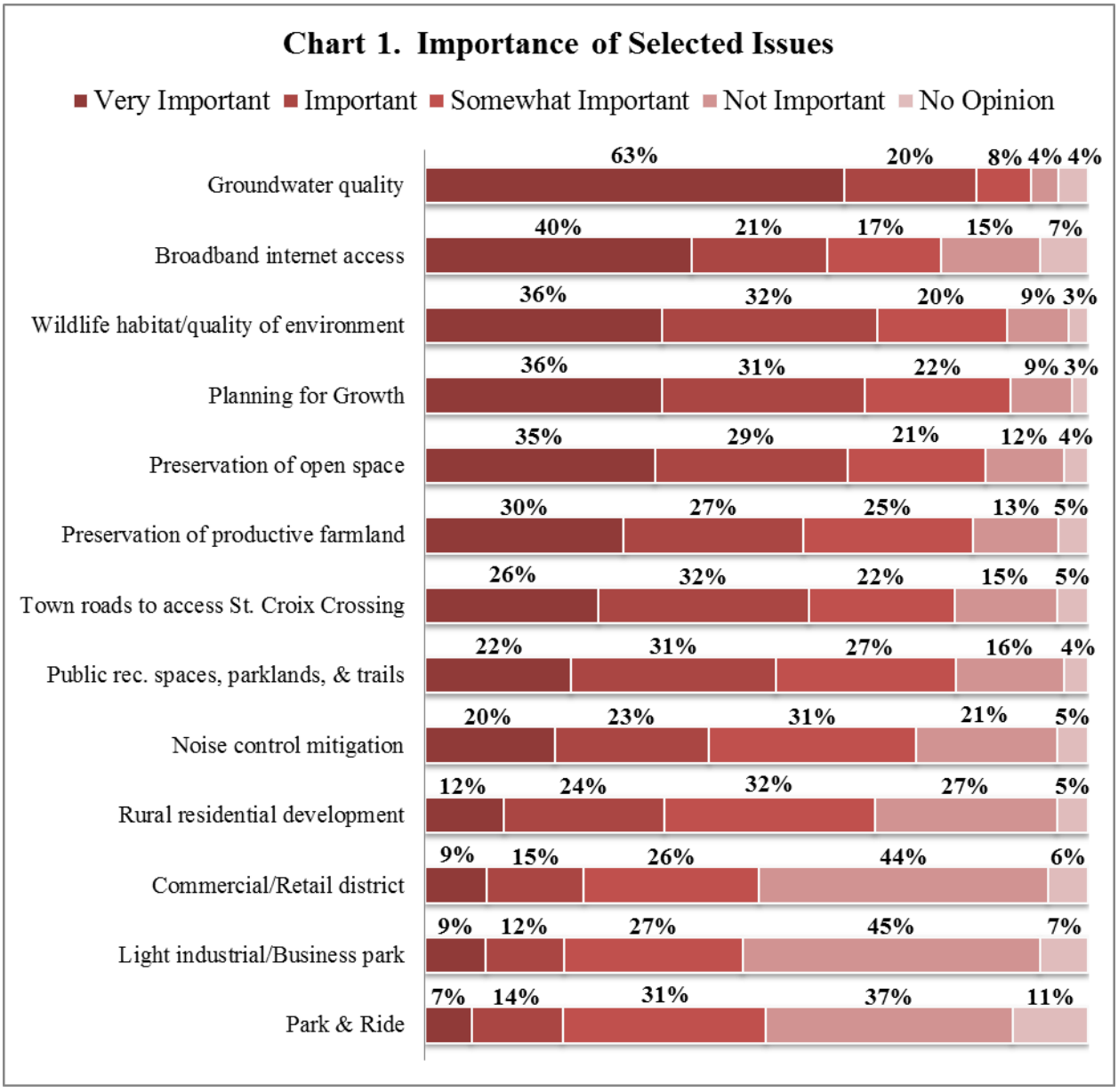
A Place of Recreational Opportunities

The Town has the opportunity to provide and plan for passive and active recreational areas within the Town. There are several areas that have been identified as preferred locations to provide park and recreational facilities to its residents. The Town would like to enhance active and passive park lands to meet the needs of existing and future residents.

Issues and Opportunities

Respondents were asked to indicate the importance of 13 issues and whether they would support a tax increase to address each of the listed issues. Chart 1 summarizes the importance ratings on a scale of very important to not important plus an option for those with no opinion.

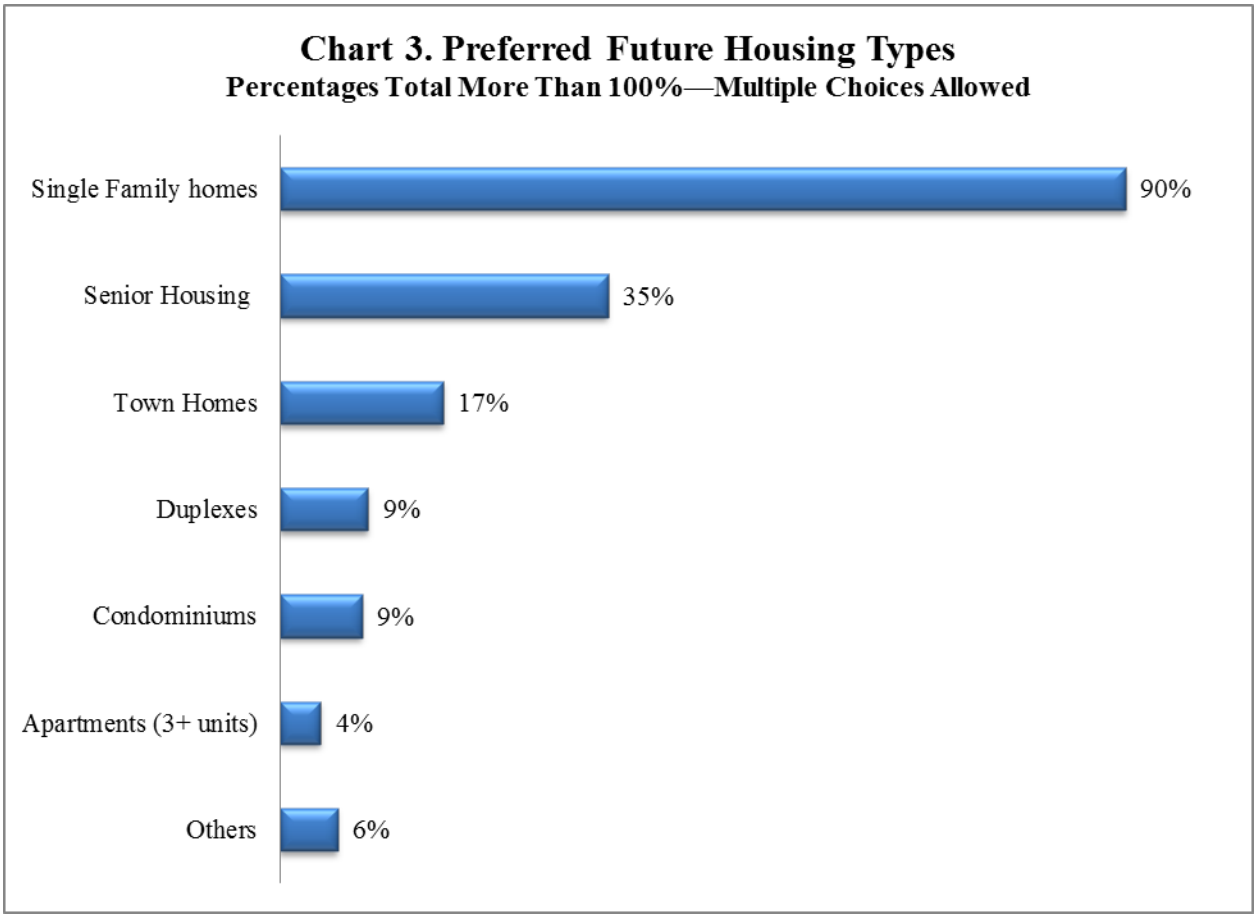
Groundwater quality stood out at the top of the importance ratings, with four in five respondents saying it is very important (63%) or important (20%). Since groundwater is the primary source of drinking water for Town residents, this result is not surprising. Broadband internet access placed second in the ratings. About 40% of respondents rated it as very important, and an additional 21% said it is important.



Housing

When asked for the types of housing that they would like to see encouraged in the Town, Chart 3 shows that respondents only favored single-family homes (90%). Senior housing came in a distant second with 35%. Multi-family housing types were substantially lower among the respondents' preferences, ranging from 17% for townhomes to 3% for apartment buildings with 3 or more units.

Among the written comments in the "other" category the most common themes were to keep large lot sizes for single-family homes and to oppose additional housing development.



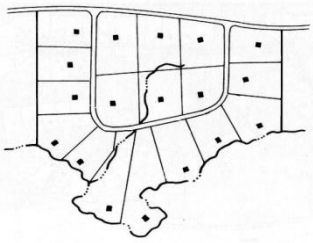
Demographic comparisons. Not surprisingly, a much larger proportion of respondents age 45 and above said they favor senior housing (41%) compared to younger respondents (12%). Over half of renters supported additional senior housing.

Respondents were asked to indicate their design preferences for rural housing developments. Two options were presented. The first design was for traditional rural housing development on large individual lots. The second option was for open-space design with smaller individual lots in which the remaining area is held as shared open space.

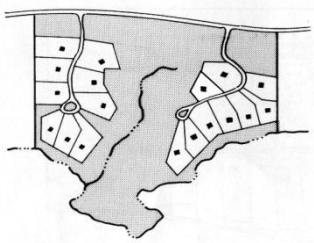
As shown in Figure 1 below, respondents were evenly split in their preference. The SRC has asked a similar question in nearly 100 other surveys. About two-thirds of respondents in those surveys favor the open-space design. So, the result for St. Joseph Town is somewhat anomalous.

Figure 1. Preference for Rural Subdivision Design

51% Conventional



49% Open-space

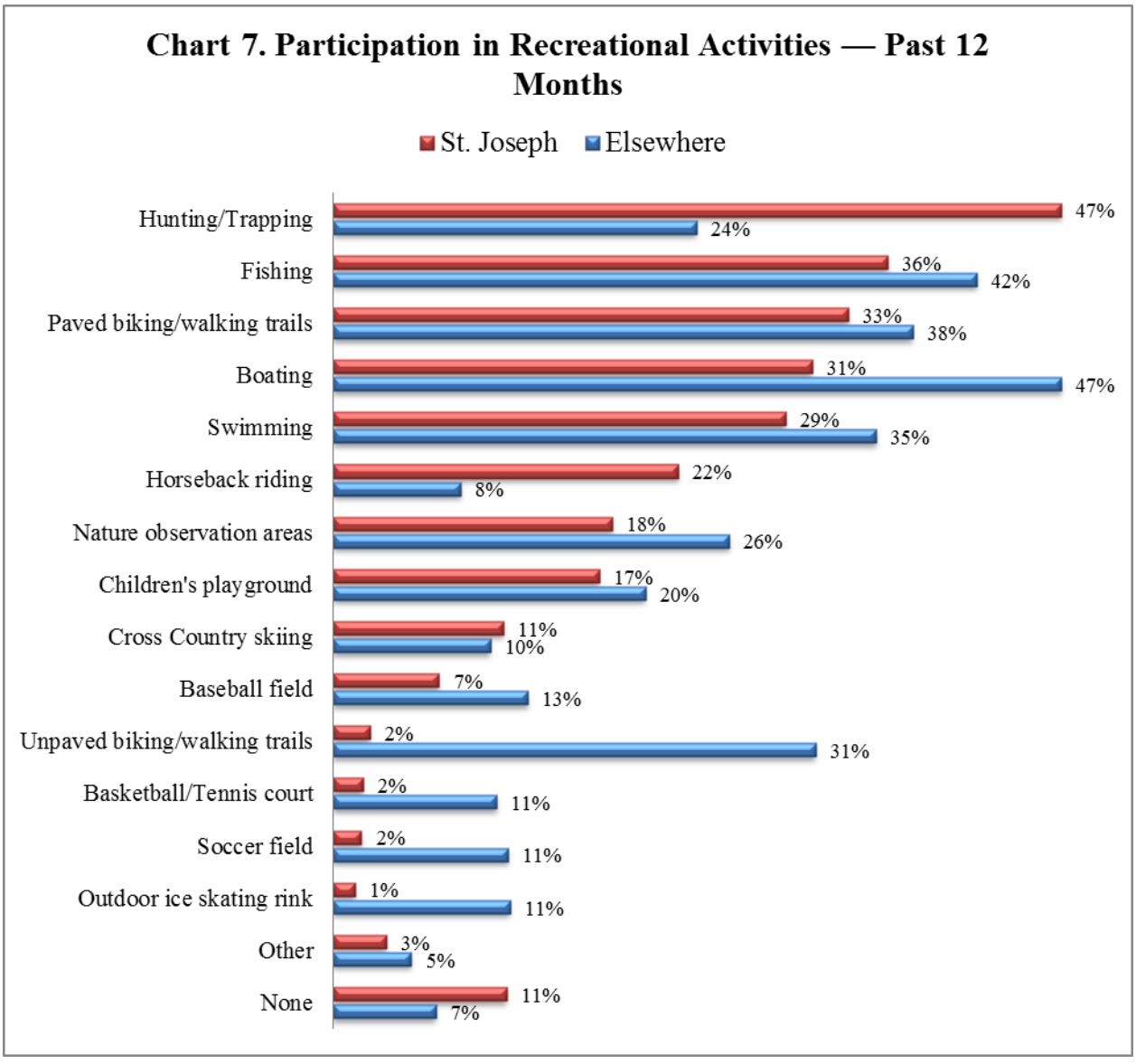


Demographic comparisons. Compared to respondents from the other three ZIP codes, respondents from the New Richmond ZIP code (54017) favored the open space subdivision design. Eight in ten respondents from 54017 chose the open space design, while 48% to 58% of respondents from other ZIP codes favored the open space design.

Respondents were next asked a similar question that focused on the types of recreational activities in which they or family members had participated in the past 12 months. Results are shown in Chart 7. Fourteen activities were listed and respondents were asked to indicate whether any family members had participated within St. Joseph (top bar) or at a location outside of St. Joseph (bottom bar).

With respect to activities within St. Joseph, hunting/trapping was the top ranked activity with 47% participation. About a third of respondents said a member of their family had participated in fishing (36%), biking/walking on paved trails (33%), boating (31%), and swimming (29%).

About one on five participated in horseback riding, nature observation trails, and children's playgrounds. Participation rates within St. Joseph were lower for cross-country skiing, baseball, biking/walking on unpaved trails, basketball, tennis, soccer, and outdoor ice skating.



With respect to recreational activities outside of St. Joseph, boating was the most popular (47%) followed closely by fishing (42%). About a third of respondents particpated in biking/walking on paved trails (38%), swimming (35%), and biking/walking on unpaved trails (31%).

Among the written comments in the "other" category, the most frequent activiteis were snowshoeing and snowmobiling.

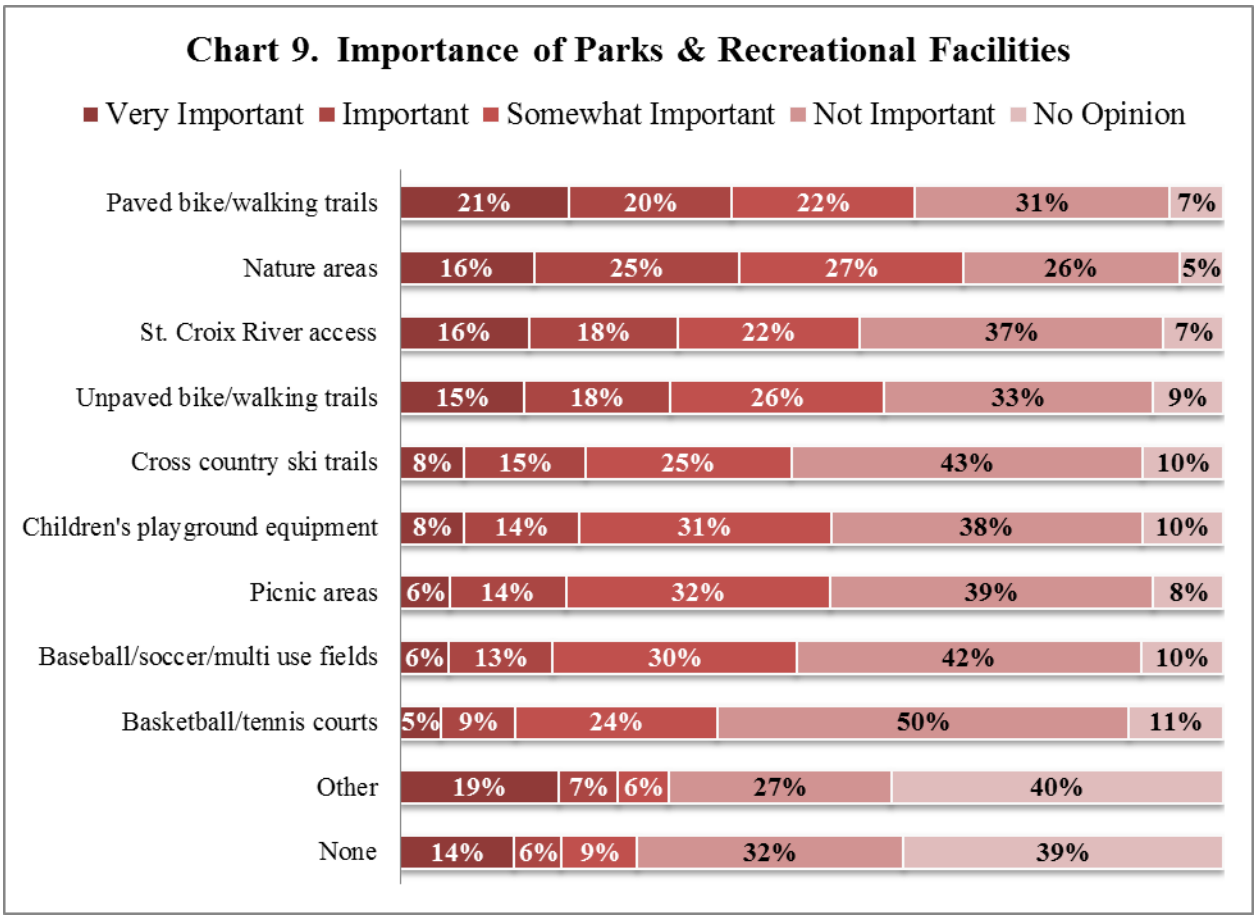
Demographic comparisons. Respondents under age 45 were more likely to participate in swimming outside of the Town (50%) than older respondents (34%). Slightly over half of respondents under age 45 have gone fishing outside of St. Joseph compared to 42% of respondents age 45 and older. About four in ten of younger respondents have used a playground both in the Town and elsewhere compared to about 14% of older respondents.

Over half of households with children have participated in swimming in St. Joseph in the past 12 months compared to 29% of respondents from households without children. Households with children were more likely to have used a children's playground within St. Joseph (34%) compared to households without children (12%). Similarly, 40% of households with children have used a children's playground outside of St. Joseph compared to 13% of households without children.

Respondents were next asked to rate the importance of nine types of parks and recreational facilities in St. Joseph. Answer choices were on a scale from very important to not important, plus no opinion. As shown in Chart 9, parks and recreational facilities tended to be viewed as somewhat important or not important, and none of the listed facilities were rated as important or very important by a majority of residents. The highest importance ratings were given to paved walking and biking trails (21% very important and 20% important) and to nature areas (16% very important and 25% important).

At least two-thirds of respondents said the following facilities were only somewhat important or not important: cross-country ski trails, children's playground equipment, picnic areas, baseball/soccer fields, and basketball/tennis courts. Twenty percent of respondents said no parks and recreational facilities are important or very important.

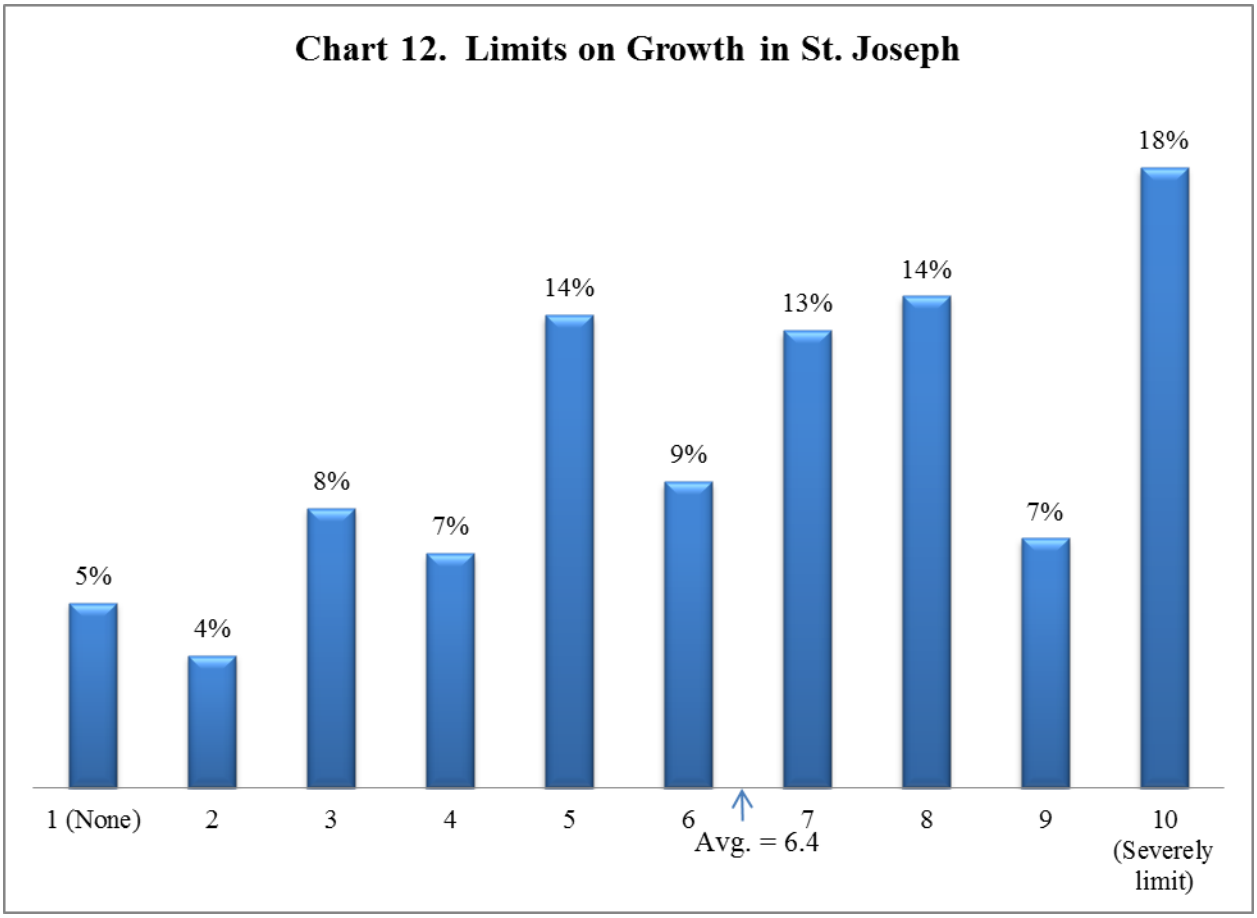
Among the written entries in the "other" category, the most frequently mentioned were horseback riding and snowmobile trails. Importance ratings were relatively low for the handwritten entries (26% important or very important).



Demographic comparisons. Majorities of farmland owners ranging from 56% (nature areas) to 67% (St. Croix River access) rated all the facilities in this question as not important. The combined average of the other groups who said these facilities are not important was between 30% and 41%. Non-resident respondents were more likely to have no opinion about children's palyground equipment, baseball/soccer multi-use fields, and basketball/tennis courts.

Economic Development

Respondents were asked to use a 10-point scale to indicate the degree to which they believe the Town should place limits on growth and development in St. Joseph. The results in are shown in Chart 12 (1=no limits on growth; 10=severe limits on growth). Although the largest percentage (18%) for any single score was for the severe limits ("10" category), the overall average was 6.4. Taken as a whole, respondents said they favored more limits than fewer limits, but not dramatically so.

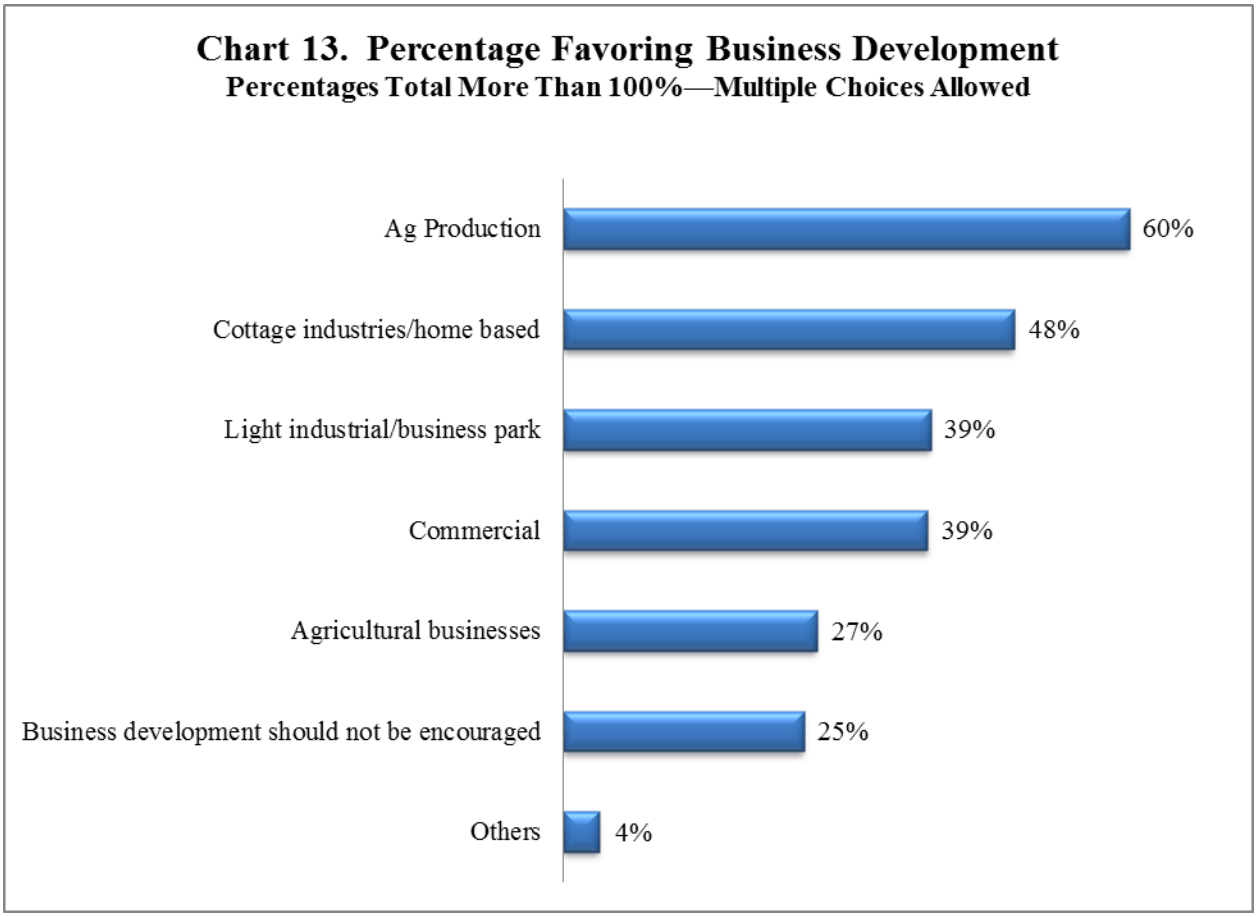


Demographic comparisons. Farmland owners were slightly more likely to prefer fewer limits on growth in the Town. Their average was 5.5, which is at the mid-point on the 10-point scale, and lower than the overall 6.4 average.

The questionnaire listed five types of businesses, and respondents were asked which types the Town Board should support (multiple choices were allowed) or if business development should not be encouraged. The results in Chart 13 show that agricultural production was the only type of business favored by a majority of respondents (60%). About half (48%) said cottage industries and home based businesses should be supported by the Town Board.

Four in ten respondents favored a light industry/business park and commercial development. Agricultural businesses (e.g., farm equipment, food processing) were favored by 27% of respondents. A quarter of respondents said no type of business development should be encouraged in St. Joseph.

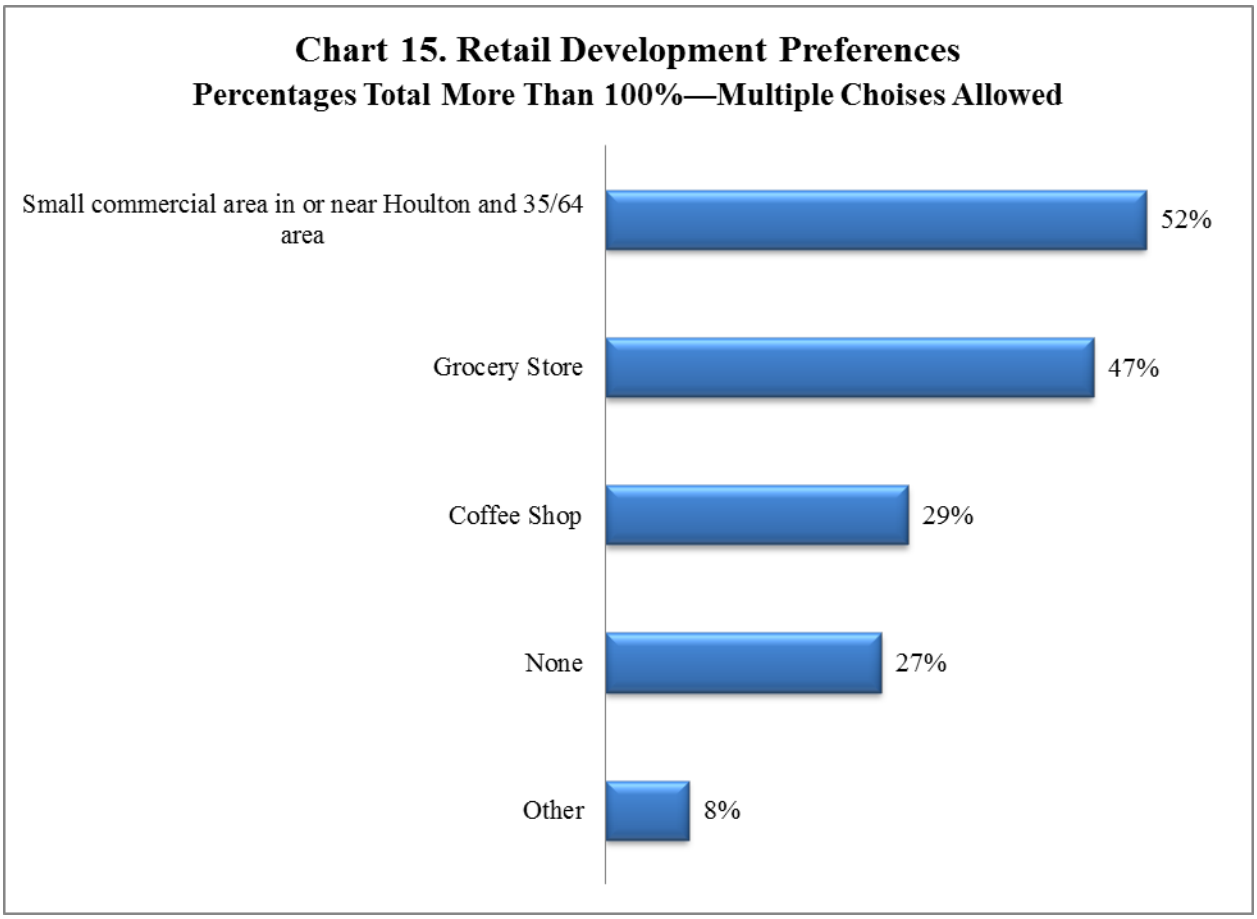
Among the written comment in the "other" category, the most frequent were for a grocery store or to oppose any additional commercial development.



Demographic comparisons. Respondents age 45 and older were more likely to favor light industry/business park (42%) compared to those under age 45 (27%). Respondents from ZIP code 54017 (56%) and ZIP code 54025 (50%) were more likely to favor light industrial/business park development than those from 54016 (36%) or 54082 (37%). Forty-one percent of farmland owners included agricultural businesses among their choices, while only 7% of non-resident respondents included agricultural businesses among their choices.

Asked specifically about retail development, Chart 15 indicates about half of respondents favored a small commercial area in or near Houlton (52%) or a grocery store (47%). A coffee shop was chosen by only 29% of respndents. Among the responses in the "other" category, the most frequent were a gas station/convenience store and a restaurant.

At the same time, 27% of respondents said they would not favor any commercial development in the Town.



Demographic comparisons. A majority of men (56%) said they would like to see a small commercial area in or near Houlton and the Highway 35/64 area compared to 47% of women. A majority of respondents under age 45 (57%) favor a grocery store compared to 47% of older respondents. Support for a coffee shop was also stronger among younger respondents (40%) compared to 27% among older respondents.

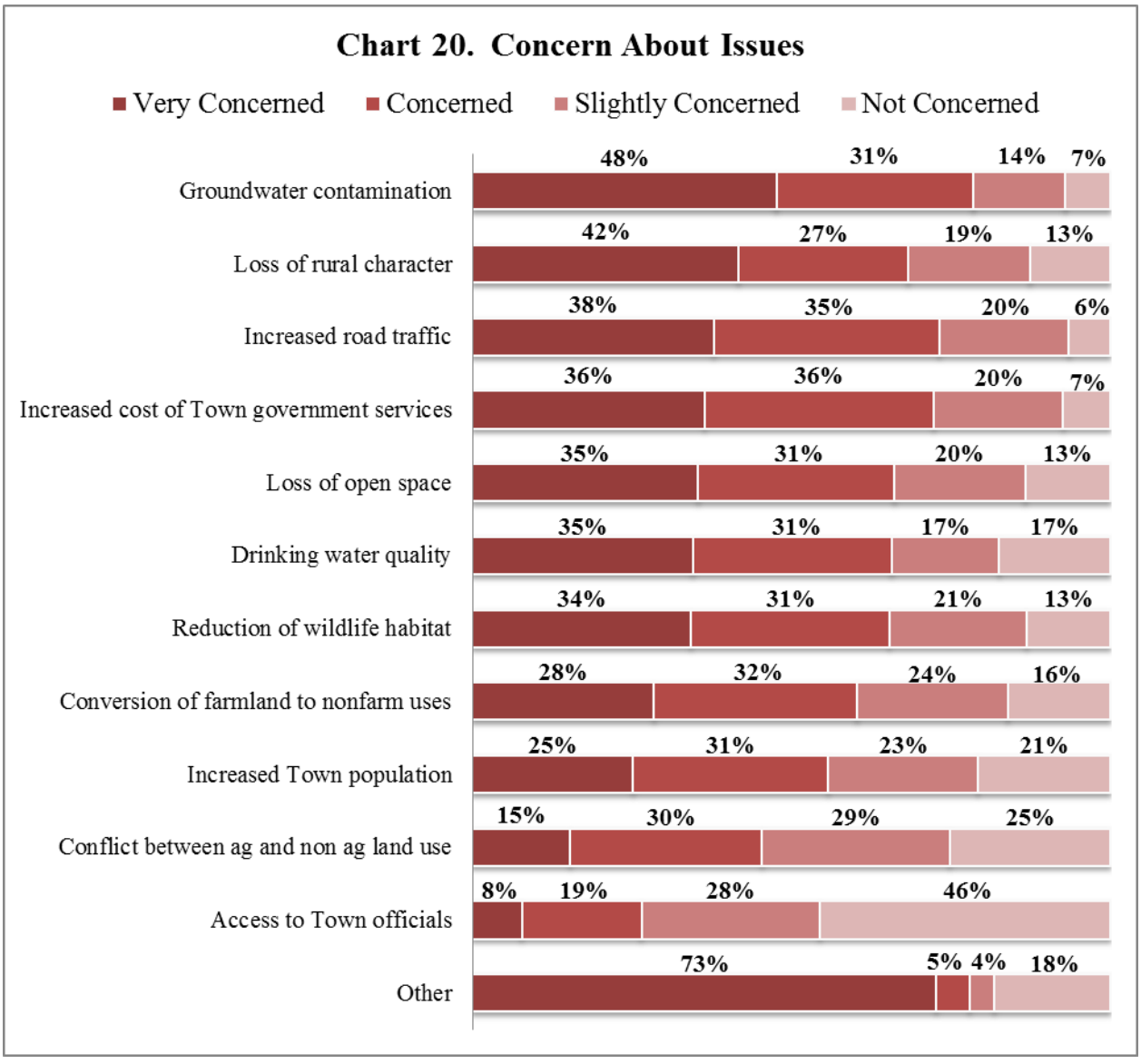
A grocery store was more strongly favored by respondents from ZIP code 54082 (53%) and 54016 (48%) compared to respondents from 54017 (40%) and 54025 (32%). Fifty-five percent of Houlton respondents favored a grocery store compared to 46% of non-Houlton respondents.

Houlton respondents were less supportive of a small commercial area near Houlton and the Highway 35/64 area than were respondents from outside Houlton. While 55% of non-Houlton respondents said yes, only 42% of Houlton respondents said yes.

Respondents were next asked their level of concern about 11 issues in St. Joseph on a four-point scale of very concerned to not concerned. As shown in Chart 20, at least half of the respondents said they are concerned or very concerned about nine of the 11 issues listed. The top concern is groundwater contaminiation, with more than eight in ten respondents saying they are concerned or very concerned. Majorities between 65% and 73% said they are concerned or very concerned about loss of rural character, increased road traffic, increased cost of Town government services, loss of open space, and reduction of wildlife habitat.

On the other end of the spectrum, three-fourths of respondents said they are slightly concerned or not concerned about access to Town officials.

Among the written responses in the "other" category, the most frequent were internet access and taxes. Among all the handwritten issues, 73% of respondents said they are very concerned. Not surprisingly, 73% said they were very concerned about the other issues.



The survey contained two open-ended questions for respondents to indicate what they like *most* about living in St. Joseph and what they like *least* about living in St. Joseph.

With respect to what they like *most* about St. Joseph, 733 respondents provided written comments. Nearly all comments related to a single common theme centered on the rural character of the Town of St. Joseph. Over 90% of the individual comments contained words and phrases associated with this theme, including rural, quiet/quietness, space/open space, country, peace/peaceful, nature/natural and private/privacy. The frequency distribution of the most frequent words and phrases is shown in Table 2. A single comment sometimes contained more than one word or phrase related to the common theme.

Table 2 also shows that 16% of the comments contained the words close or proximity. These words were often used in the context of nearness to the amenities of larger places such as Stillwater, Hudson, and the Twin Cities.

The following quotes are examples of these this theme:

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"The peace and quiet of a rural setting."

"The mix of open spaces and larger lot sizes"

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Table 2. What respondents <u>most</u> like about living in the Town of St. Joseph – Common Descriptors

Word	Count	%
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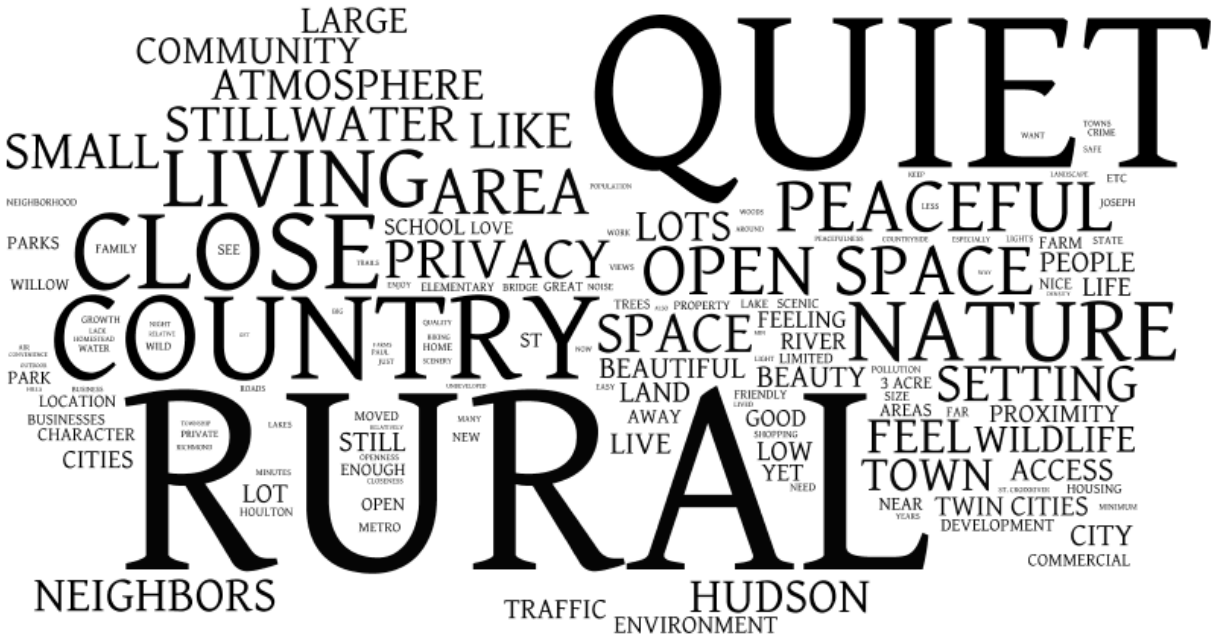
Country	114	16%
Peace/Peaceful	71	10%
Nature/Natural	76	10%
Private/Privacy	60	8%

Figure 2 is a word cloud of the 150 most commonly used words among the 733 written responses to this question. (A word cloud is a visual representation in which the font size of the word or phrase is proportional to its frequency in the text). The words rural, quiet, country, close, nature, open space, and peaceful stand out in this word cloud and confirm degree to which respondents like St. Joseph because of the attributes associated with living in the country.

Figure 2. Word Cloud: What Respondents Most Like About Living in St. Joseph



Conclusions

Respondents said they like St. Joseph because of the rural character but are particularly concerned or very concerned about the loss of rural character and loss of open space. They place importance on factors associated with maintaining the country atmosphere they value, including groundwater quality, maintaining environmental quality, preservation of open space, and preservation of productive farmland. A majority said it is important or very important to plan for growth.

Respondents expressed a cautious view about additional business and economic development in the Town. They want any commercial/retail development restricted to designated areas.

The largest percentage of respondents generally do not support tax increases to address issues. However, there often was a substantial proportion of respondents who said they are not sure about tax increases, which suggests their opinion depends on the particular circumstances.

Although a majority of responding households participate in some form of outdoor recreational activity, a majority of respondents rated recreational facilitites or parks as somewhat important or not important rather than important or very important. Again, the majority do not support tax increases for expenditures on recreation.

Solid majorities believe that Town services are generally good or excellent, though many lack first-hand experience and, hence, an opinion about the quality of many Town services.

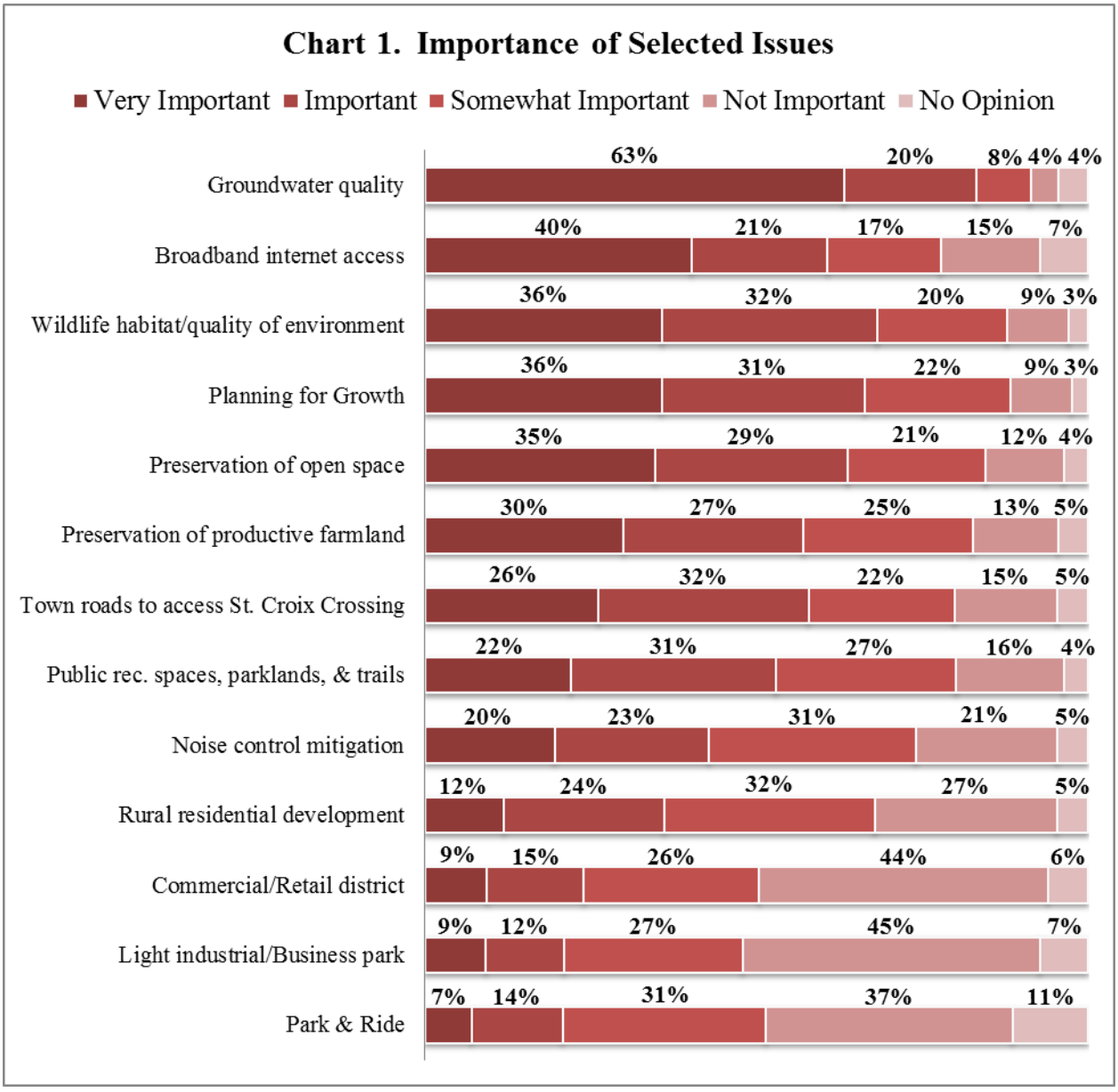
Broadband internet access is a concern for many respondents.

APPENDIX B: ST. JOSEPH PLANNING SURVEY, 2013 EXCERPTS

Issues and Opportunities

Respondents were asked to indicate the importance of 13 issues and whether they would support a tax increase to address each of the listed issues. Chart 1 summarizes the importance ratings on a scale of very important to not important plus an option for those with no opinion.

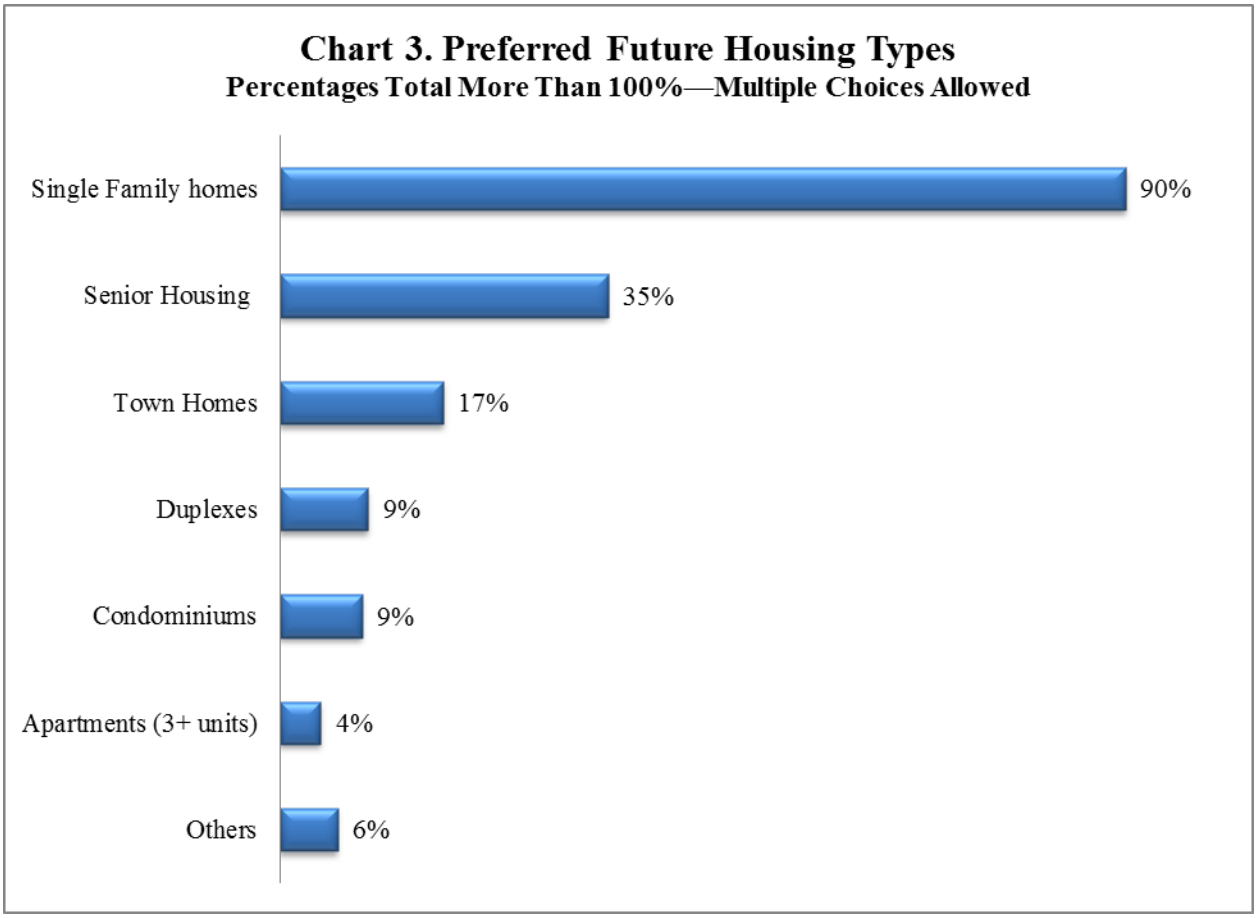
Groundwater quality stood out at the top of the importance ratings, with four in five respondents saying it is very important (63%) or important (20%). Since groundwater is the primary source of drinking water for Town residents, this result is not surprising. Broadband internet access placed second in the ratings. About 40% of respondents rated it as very important, and an additional 21% said it is important.



Housing

When asked for the types of housing that they would like to see encouraged in the Town, Chart 3 shows that respondents only favored single-family homes (90%). Senior housing came in a distant second with 35%. Multi-family housing types were substantially lower among the respondents' preferences, ranging from 17% for townhomes to 3% for apartment buildings with 3 or more units.

Among the written comments in the "other" category the most common themes were to keep large lot sizes for single-family homes and to oppose additional housing development.



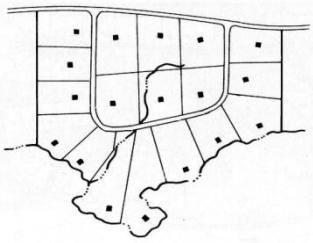
Demographic comparisons. Not surprisingly, a much larger proportion of respondents age 45 and above said they favor senior housing (41%) compared to younger respondents (12%). Over half of renters supported additional senior housing.

Respondents were asked to indicate their design preferences for rural housing developments. Two options were presented. The first design was for traditional rural housing development on large individual lots. The second option was for open-space design with smaller individual lots in which the remaining area is held as shared open space.

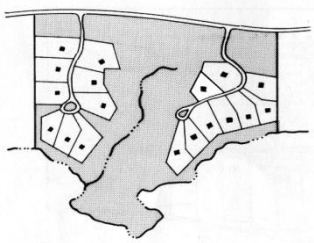
As shown in Figure 1 below, respondents were evenly split in their preference. The SRC has asked a similar question in nearly 100 other surveys. About two-thirds of respondents in those surveys favor the open-space design. So, the result for St. Joseph Town is somewhat anomalous.

Figure 1. Preference for Rural Subdivision Design

51% Conventional



49% Open-space

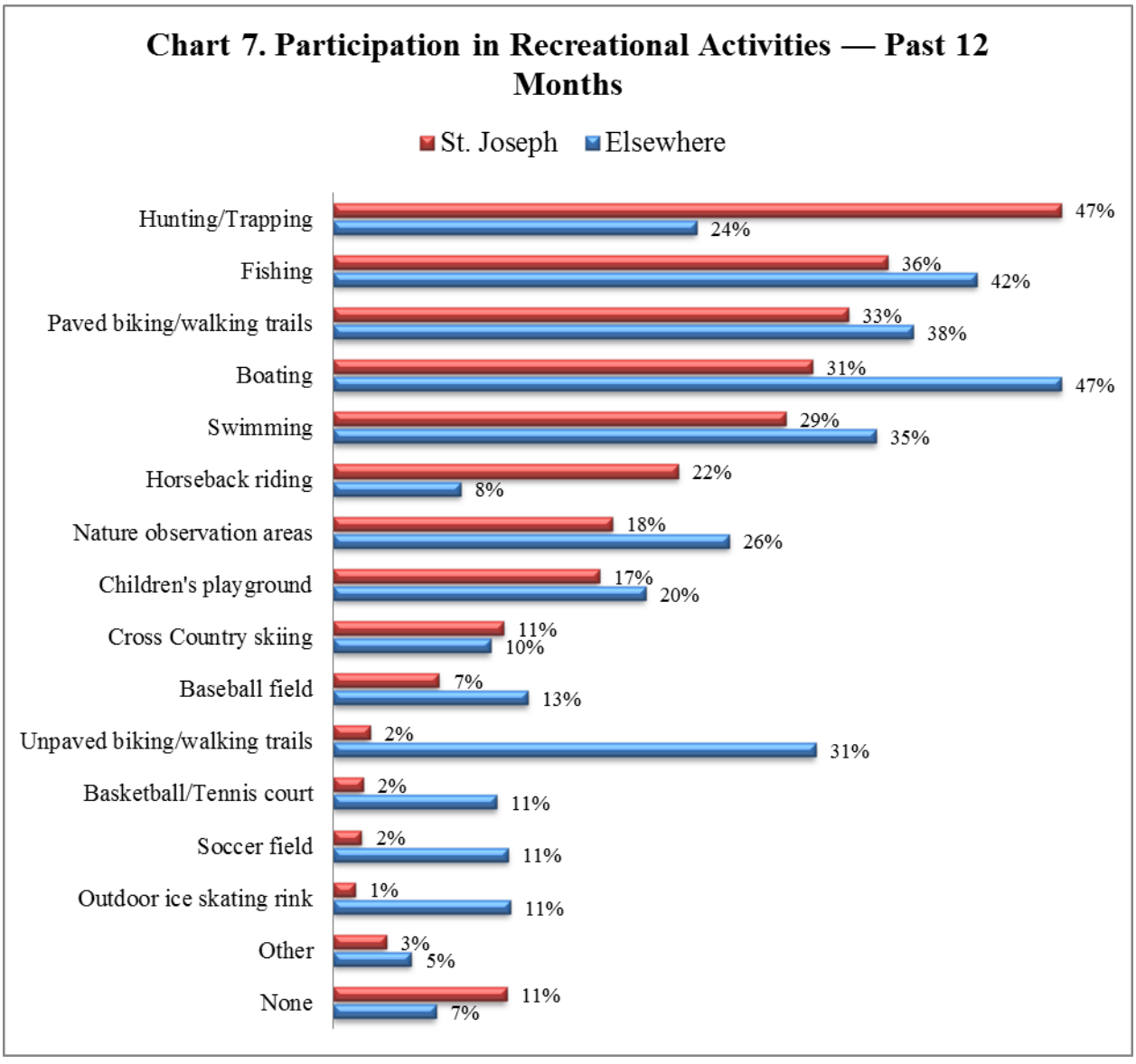


Demographic comparisons. Compared to respondents from the other three ZIP codes, respondents from the New Richmond ZIP code (54017) favored the open space subdivision design. Eight in ten respondents from 54017 chose the open space design, while 48% to 58% of respondents from other ZIP codes favored the open space design.

Respondents were next asked a similar question that focused on the types of recreational activities in which they or family members had participated in the past 12 months. Results are shown in Chart 7. Fourteen activities were listed and respondents were asked to indicate whether any family members had participated within St. Joseph (top bar) or at a location outside of St. Joseph (bottom bar).

With respect to activities within St. Joseph, hunting/trapping was the top ranked activity with 47% participation. About a third of respondents said a member of their family had participated in fishing (36%), biking/walking on paved trails (33%), boating (31%), and swimming (29%).

About one on five participated in horseback riding, nature observation trails, and children's playgrounds. Participation rates within St. Joseph were lower for cross-country skiing, baseball, biking/walking on unpaved trails, basketball, tennis, soccer, and outdoor ice skating.



With respect to recreational activities outside of St. Joseph, boating was the most popular (47%) followed closely by fishing (42%). About a third of respondents particpated in biking/walking on paved trails (38%), swimming (35%), and biking/walking on unpaved trails (31%).

Among the written comments in the "other" category, the most frequent activiteis were snowshoeing and snowmobiling.

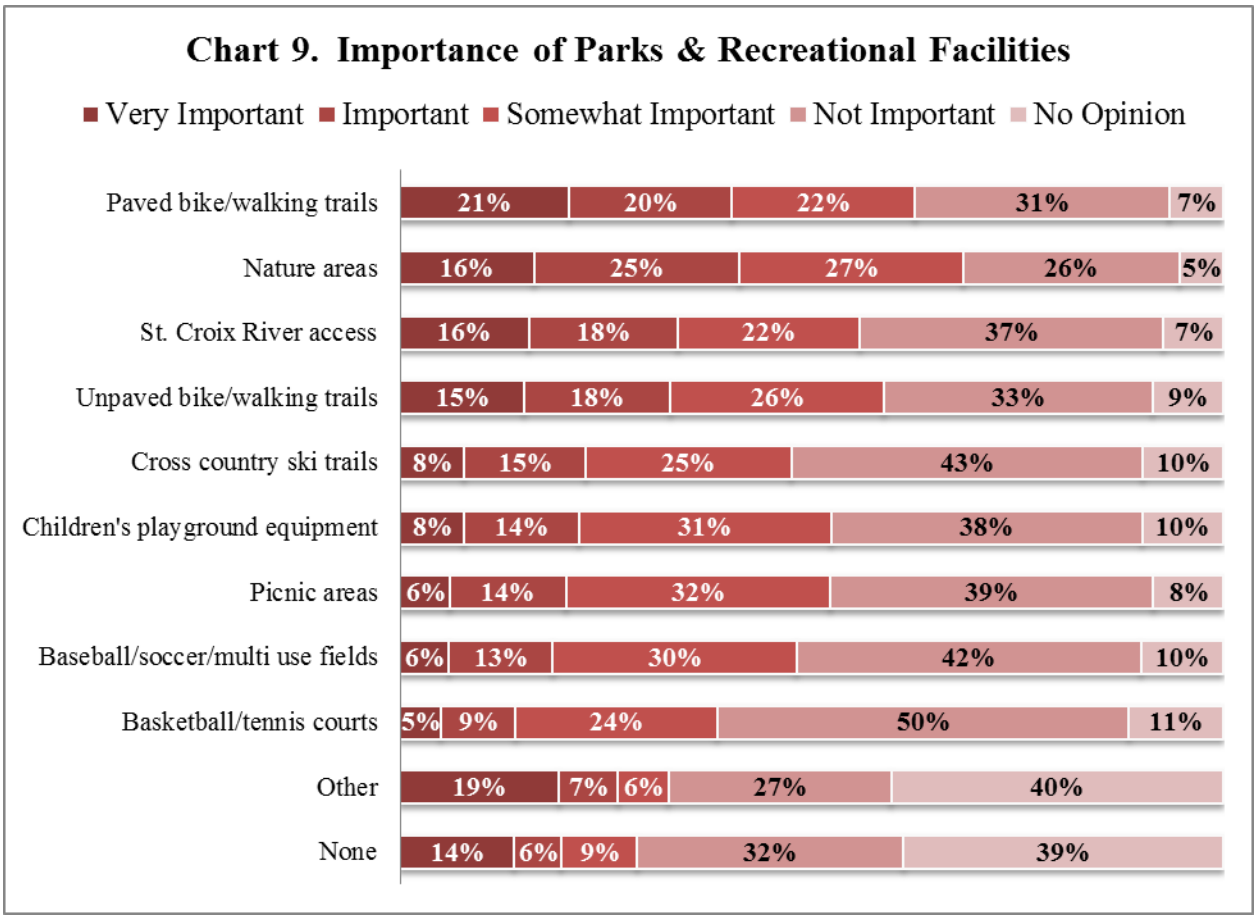
Demographic comparisons. Respondents under age 45 were more likely to participate in swimming outside of the Town (50%) than older respondents (34%). Slightly over half of respondents under age 45 have gone fishing outside of St. Joseph compared to 42% of respondents age 45 and older. About four in ten of younger respondents have used a playground both in the Town and elsewhere compared to about 14% of older respondents.

Over half of households with children have participated in swimming in St. Joseph in the past 12 months compared to 29% of respondents from households without children. Households with children were more likely to have used a children's playground within St. Joseph (34%) compared to households without children (12%). Similarly, 40% of households with children have used a children's playground outside of St. Joseph compared to 13% of households without children.

Respondents were next asked to rate the importance of nine types of parks and recreational facilities in St. Joseph. Answer choices were on a scale from very important to not important, plus no opinion. As shown in Chart 9, parks and recreational facilities tended to be viewed as somewhat important or not important, and none of the listed facilities were rated as important or very important by a majority of residents. The highest importance ratings were given to paved walking and biking trails (21% very important and 20% important) and to nature areas (16% very important and 25% important).

At least two-thirds of respondents said the following facilities were only somewhat important or not important: cross-country ski trails, children's playground equipment, picnic areas, baseball/soccer fields, and basketball/tennis courts. Twenty percent of respondents said no parks and recreational facilities are important or very important.

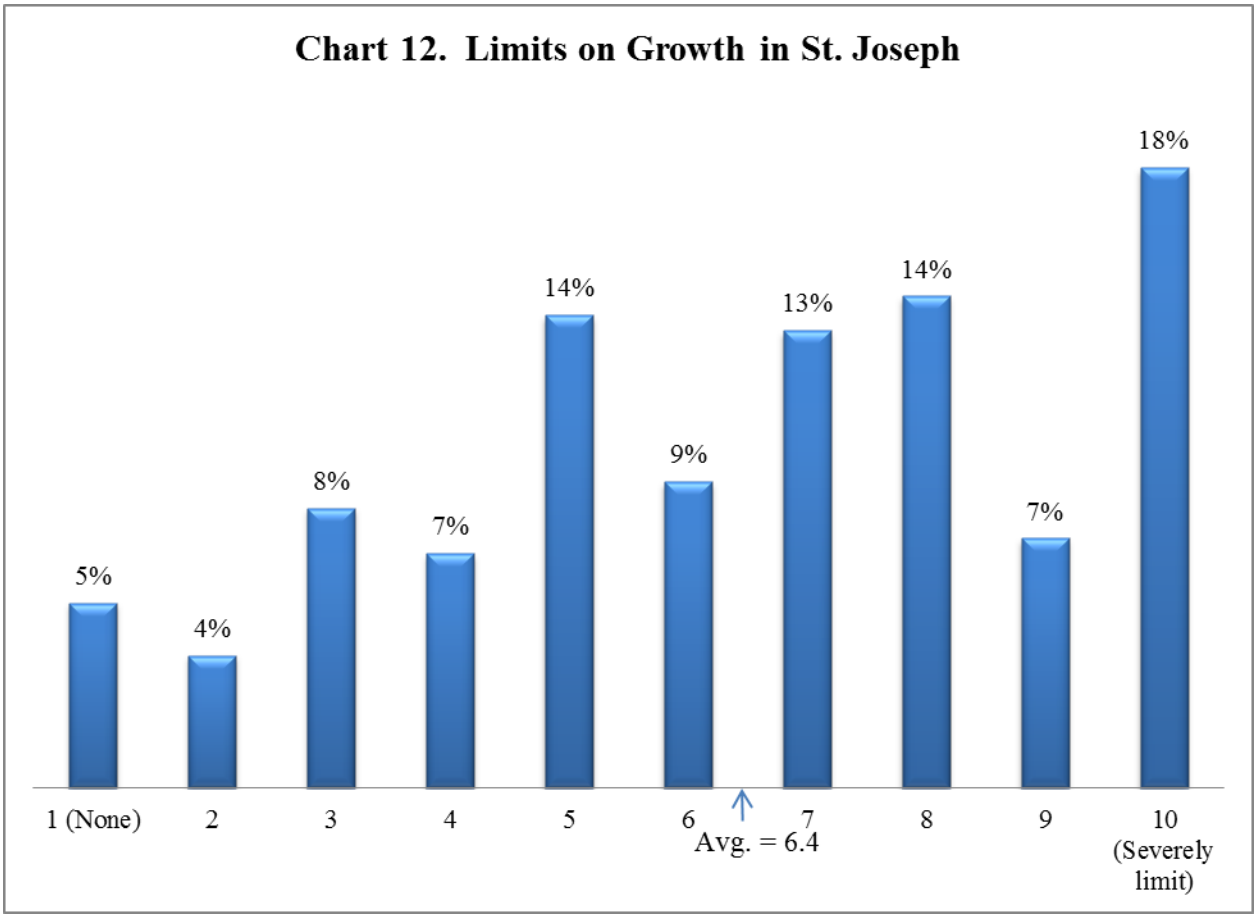
Among the written entries in the "other" category, the most frequently mentioned were horseback riding and snowmobile trails. Importance ratings were relatively low for the handwritten entries (26% important or very important).



Demographic comparisons. Majorities of farmland owners ranging from 56% (nature areas) to 67% (St. Croix River access) rated all the facilities in this question as not important. The combined average of the other groups who said these facilities are not important was between 30% and 41%. Non-resident respondents were more likely to have no opinion about children's palyground equipment, baseball/soccer multi-use fields, and basketball/tennis courts.

Economic Development

Respondents were asked to use a 10-point scale to indicate the degree to which they believe the Town should place limits on growth and development in St. Joseph. The results in are shown in Chart 12 (1=no limits on growth; 10=severe limits on growth). Although the largest percentage (18%) for any single score was for the severe limits ("10" category), the overall average was 6.4. Taken as a whole, respondents said they favored more limits than fewer limits, but not dramatically so.

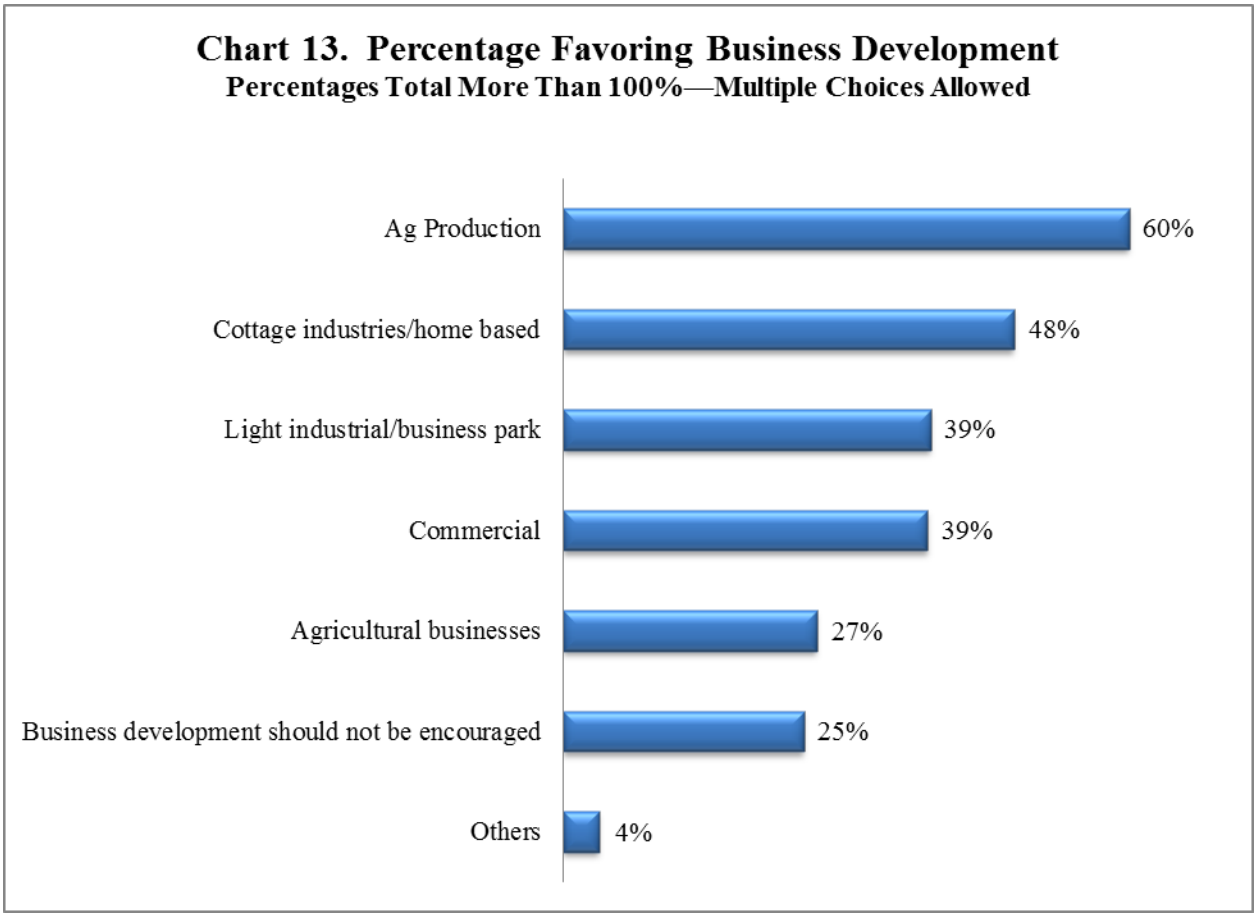


Demographic comparisons. Farmland owners were slightly more likely to prefer fewer limits on growth in the Town. Their average was 5.5, which is at the mid-point on the 10-point scale, and lower than the overall 6.4 average.

The questionnaire listed five types of businesses, and respondents were asked which types the Town Board should support (multiple choices were allowed) or if business development should not be encouraged. The results in Chart 13 show that agricultural production was the only type of business favored by a majority of respondents (60%). About half (48%) said cottage industries and home based businesses should be supported by the Town Board.

Four in ten respondents favored a light industry/business park and commercial development. Agricultural businesses (e.g., farm equipment, food processing) were favored by 27% of respondents. A quarter of respondents said no type of business development should be encouraged in St. Joseph.

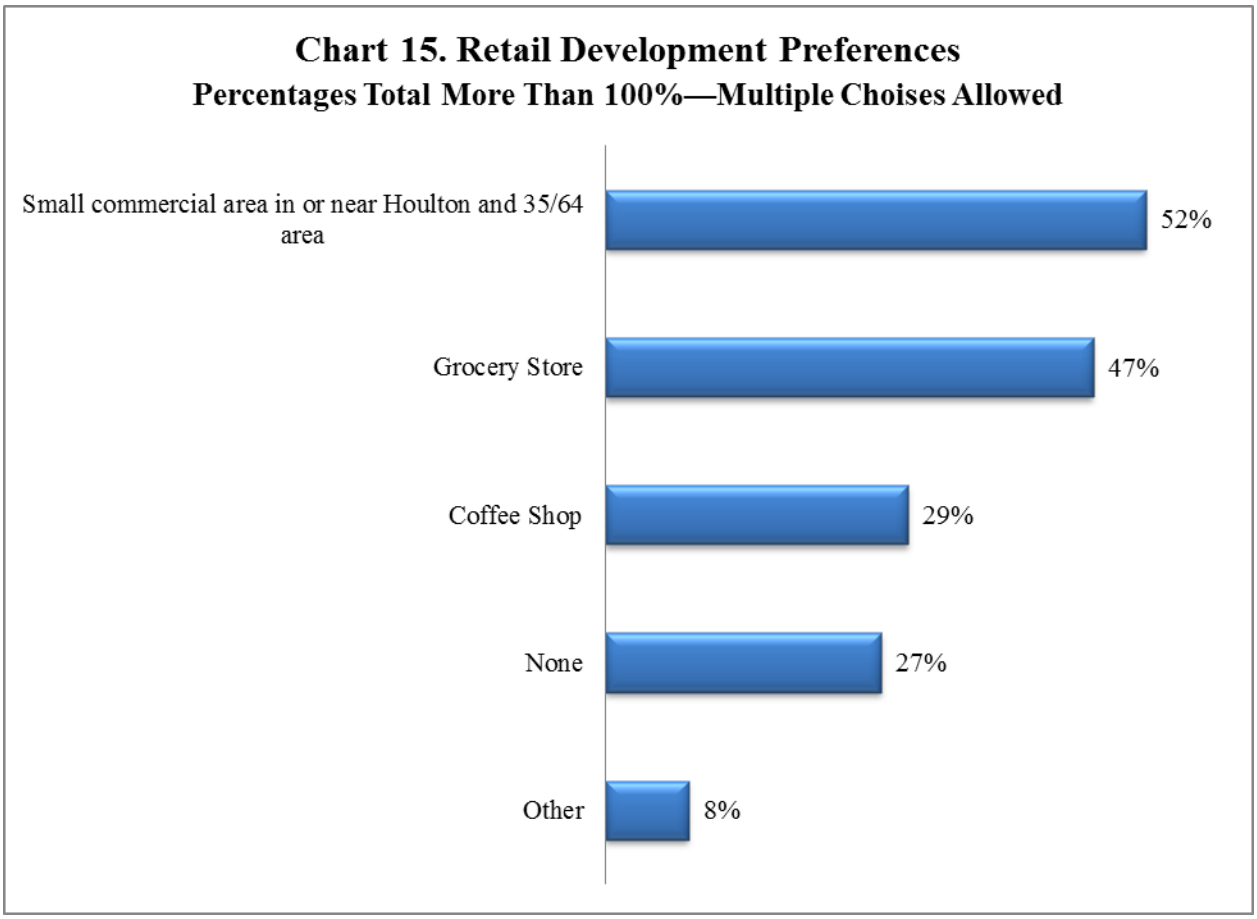
Among the written comment in the "other" category, the most frequent were for a grocery store or to oppose any additional commercial development.



Demographic comparisons. Respondents age 45 and older were more likely to favor light industry/business park (42%) compared to those under age 45 (27%). Respondents from ZIP code 54017 (56%) and ZIP code 54025 (50%) were more likely to favor light industrial/business park development than those from 54016 (36%) or 54082 (37%). Forty-one percent of farmland owners included agricultural businesses among their choices, while only 7% of non-resident respondents included agricultural businesses among their choices.

Asked specifically about retail development, Chart 15 indicates about half of respondents favored a small commercial area in or near Houlton (52%) or a grocery store (47%). A coffee shop was chosen by only 29% of respndents. Among the responses in the "other" category, the most frequent were a gas station/convenience store and a restaurant.

At the same time, 27% of respondents said they would not favor any commercial development in the Town.



Demographic comparisons. A majority of men (56%) said they would like to see a small commercial area in or near Houlton and the Highway 35/64 area compared to 47% of women. A majority of respondents under age 45 (57%) favor a grocery store compared to 47% of older respondents. Support for a coffee shop was also stronger among younger respondents (40%) compared to 27% among older respondents.

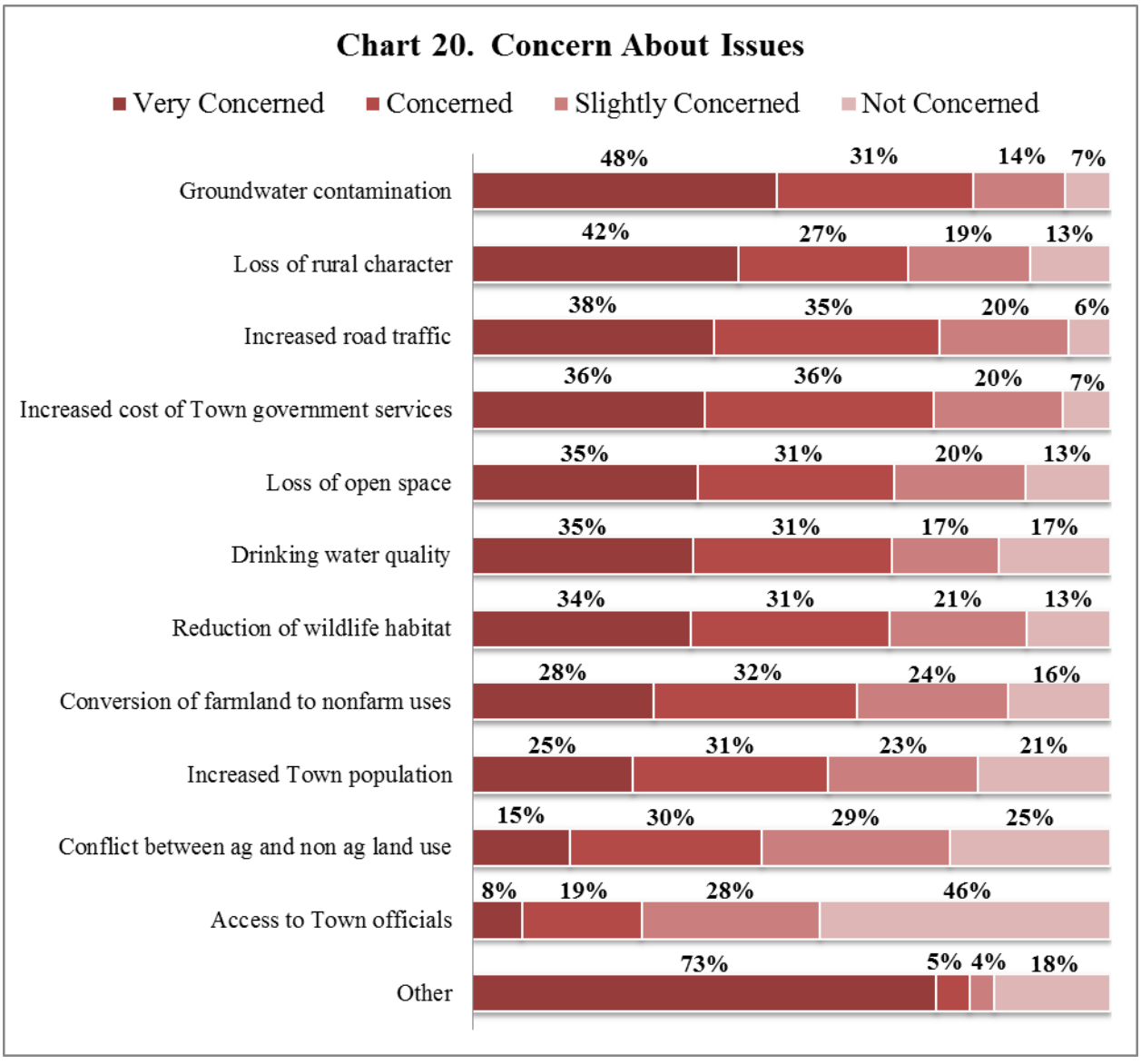
A grocery store was more strongly favored by respondents from ZIP code 54082 (53%) and 54016 (48%) compared to respondents from 54017 (40%) and 54025 (32%). Fifty-five percent of Houlton respondents favored a grocery store compared to 46% of non-Houlton respondents.

Houlton respondents were less supportive of a small commercial area near Houlton and the Highway 35/64 area than were respondents from outside Houlton. While 55% of non-Houlton respondents said yes, only 42% of Houlton respondents said yes.

Respondents were next asked their level of concern about 11 issues in St. Joseph on a four-point scale of very concerned to not concerned. As shown in Chart 20, at least half of the respondents said they are concerned or very concerned about nine of the 11 issues listed. The top concern is groundwater contaminiation, with more than eight in ten respondents saying they are concerned or very concerned. Majorities between 65% and 73% said they are concerned or very concerned about loss of rural character, increased road traffic, increased cost of Town government services, loss of open space, and reduction of wildlife habitat.

On the other end of the spectrum, three-fourths of respondents said they are slightly concerned or not concerned about access to Town officials.

Among the written responses in the "other" category, the most frequent were internet access and taxes. Among all the handwritten issues, 73% of respondents said they are very concerned. Not surprisingly, 73% said they were very concerned about the other issues.



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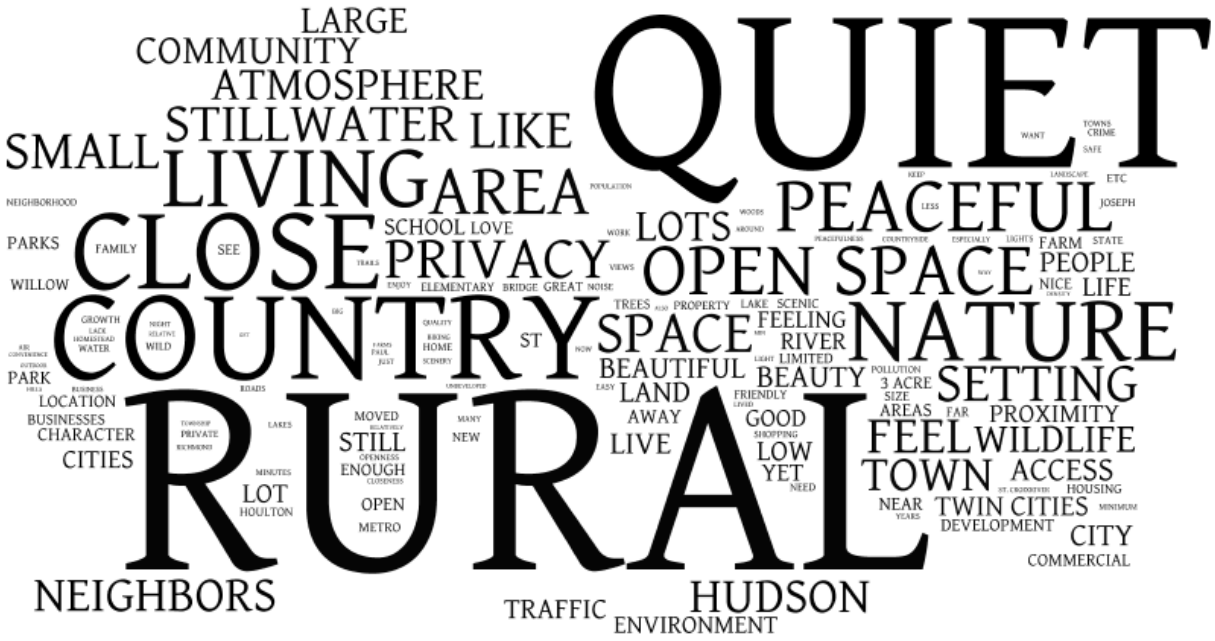

Conclusions

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APPENDIX C: ECONOMIC IMPACTS OF THE ST. CROIX RIVER CROSSING

Image Credit: Minnesota Department of Transportation

Community and Economic Impacts of the St. Croix River Crossing

A St. Croix County Perspective

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Community and Economic Impacts of the St. Croix River Crossing

A St. Croix County Perspective

Prepared for
St. Croix County, Wisconsin

By
Matt Kures

Assistance from
Lindsay Amiel

University of Wisconsin-Extension
Center for Community and Economic Development

With contributions from
Gillaspy Demographics

The information and opinions in this report are those of the authors and do not reflect those of St. Croix County, financial supporters, the River Crossing Advisory Committee, or the University of Wisconsin-Extension.

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Acknowledgements

St. Croix River Crossing Advisory Committee

- Ken Arvey
- Daniel Bakken
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Financial support provided by St. Croix County, University of Wisconsin-River Falls and University of Wisconsin-Extension.

Introduction

The scheduled opening of the St. Croix River Crossing in 2016 creates uncertainty for St. Croix County.[1] A number of studies have considered the project's environmental and traffic impacts. However, more limited information is available on how the Crossing may affect future population growth and economic development along the Highway 64 Corridor and within greater St. Croix County. To better understand potential impacts stemming from the River Crossing, this study is conducted to: 1) explore how the improved crossing could influence the region's population growth and economic development opportunities; 2) provide communities with information and tools to plan for the economic and fiscal impacts of the River Crossing; and 3) suggest opportunities for shaping future growth.

In identifying potential impacts of the River Crossing, this study must address several distinct challenges. First, the regional economy is still recovering somewhat from the effects of the Great Recession. The economic upheavals after 2007 broadly affected the region's housing market and employment levels. As discussed later in this analysis, the economic downturn may also have affected population growth rates. The economy has undoubtedly improved, but is unknown if the recent recessionary period will continue to have lingering impacts on population and economic growth.

Second, separating the future impacts of the River Crossing from other factors influencing community change is a technical and methodological challenge. While transportation infrastructure can influence growth rates, community and regional development are also affected by a host of local, regional and national factors. The presence of the Interstate 94 major river crossing less than 10 miles to the south compounds this issue. Consequently, this analysis must rely on identifying broad rather precise impacts.

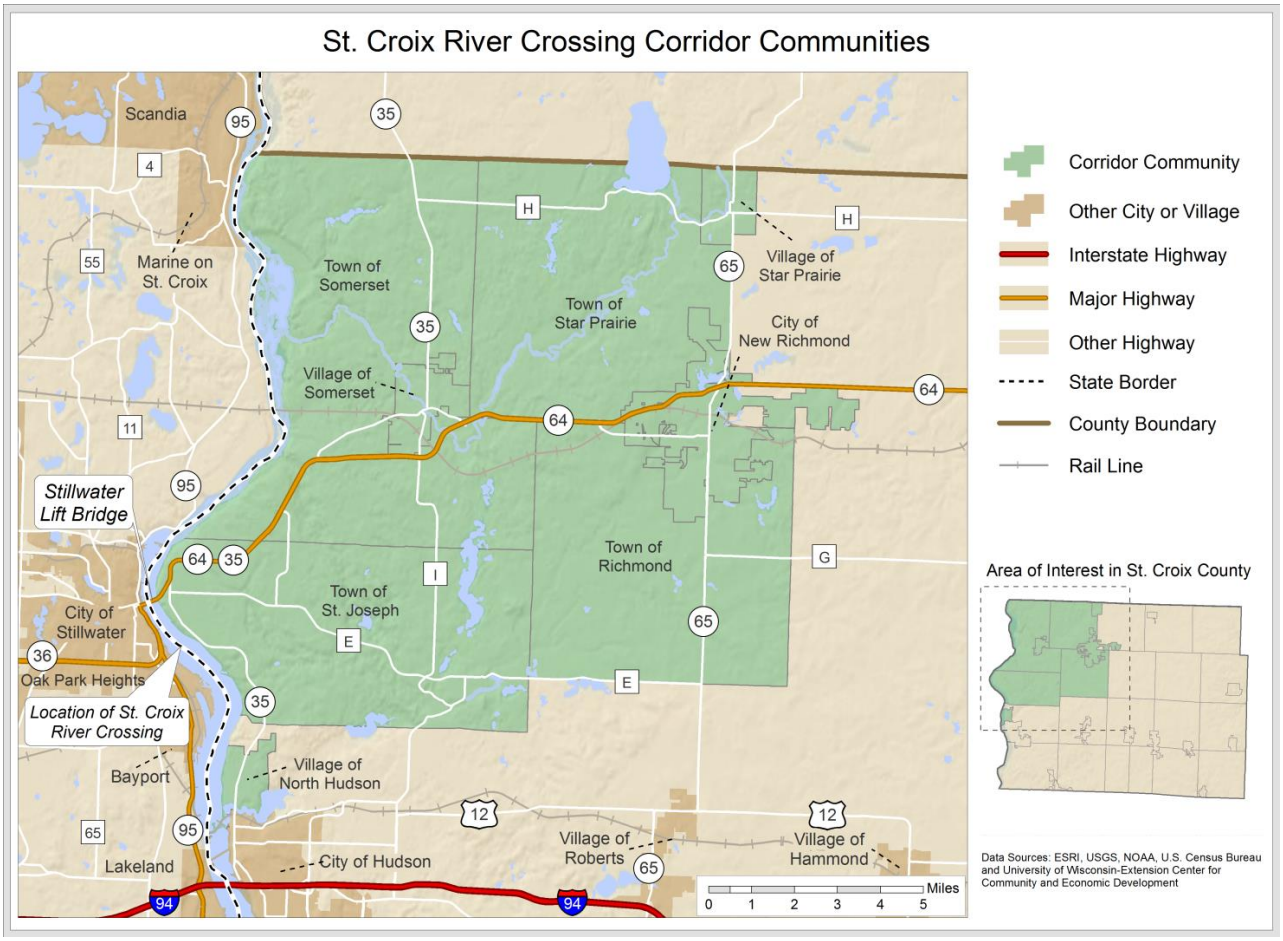
Geographic scale creates a final challenge for this analysis. The River Crossing undoubtedly will affect some portions of St. Croix County more so than others. However, future impacts are difficult to predict in small geographic areas. Consequently, this analysis does not pinpoint or specify impacts in individual communities. In fact, communities have an opportunity to shape local effects of the Crossing somewhat. Therefore, the study does not attempt to forecast or dictate future land use patterns in communities along the Highway 64 Corridor.

Despite the challenges in identifying small area impacts, the analysis does consider some potential aggregate effects in the combined cities, villages and towns most likely to be impacted by the Crossing. The communities primarily are located along Highway 64 and are referred to as "the Corridor" or "Corridor Communities" throughout this analysis. These Corridor Communities are depicted in Map i.1 and include:

- Town of St. Joseph;
- Village of Somerset;
- Town of Somerset;
- Village of North Hudson;
- City of New Richmond;
- Town of Richmond;
- Village of Star Prairie;
- Town of Star Prairie.

[1] The St. Croix River Crossing is also referred to as the River Crossing or the Crossing throughout this study.

Map i.1 – St. Croix River Crossing Corridor Communities



Study Outline

To examine potential community and economic impacts of the St. Croix River Crossing, the following analysis is partitioned into three sections:

- *Section 1 – Perspectives on Transportation Infrastructure, Population Growth and Economic Development:* Section 1 considers how transportation infrastructure broadly impacts population change and economic growth. The analysis relies on a review of existing research that largely considers how highways (and other factors) influence community growth and development. The analysis also examines how so-called comparable bridge improvement projects have impacted other counties throughout the United States.

- *Section 2 - Forecasting Population Change in St. Croix County and Corridor Communities:* Over the past few decades, St. Croix County has been one Wisconsin's fastest growing counties in terms of both population and employment. In fact, the Census Bureau identified St. Croix County as one of the fastest growing counties in the United States between 2000 and 2005. Given these trends, it is not surprising

that population and employment growth rates in the county also have well-surpassed those of the United States and the State of Wisconsin. While recent population growth has slowed somewhat due to the recession, the question is whether the River Crossing will help growth rates return to past levels, or will growth occur at some other rate? In examining this question, Section 2 examines historical perspectives on population growth; considers current trends that could shape future rates of change; and develops population growth forecasts for the coming decades.

- *Section 3 - St. Croix River Crossing and Economic Development Opportunities*: The Crossing creates a number of potential economic impacts for the region. Some of these impacts may need to be managed by local communities, while others could create opportunities for growing jobs and income. In particular, Section 3 considers the potential economic impacts of new residents; potential comparative advantages offered by the Crossing; and recreational development opportunities that could arise.

Finally, this study should serve as a starting point for understanding the St. Croix River Crossing's impact on St. Croix County. The precise impacts are yet to be determined. As the River Crossing opens to public use, there will be opportunities for updating and modifying the analyses in this document.

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Section 1 – Perspectives on Transportation Infrastructure, Population Growth and Economic Development

Transportation infrastructure undoubtedly has an important role in regional growth and development (Mikelbank, 1996). However, the St. Croix River Crossing's precise future impacts on St. Croix County are unknown. In addition to transportation networks, existing research strongly supports the notion that community change is influenced by many factors; each having various impacts on population growth or economic development. In fact, the diverse factors affecting population and economic change defy simple interpretation and raise problems in statistical modeling methods. Even an integrated framework, or one that combines many factors into a single analysis, provides limited information on the causes or determinants of population change (Chi and Ventura, 2011a). Consequently, isolating the impact of the River Crossing on future growth is neither an easy nor straightforward task.

While it is unlikely that this analysis can identify the exact impacts of the River Crossing, broader potential effects can be explored. Specifically, there are numerous studies that consider the influence of transportation infrastructure on population change and economic growth. In fact, a number of these studies are based on Wisconsin communities and provide local perspectives on how highway improvements might impact regional growth. The potential implications of this existing research and their transferability to the River Crossing are examined below.

In addition to academic and technical studies, so-called comparison projects in other communities may also provide perspectives. Over the past several decades, a number of other metropolitan communities around the nation also have undergone bridge improvements. Considering changes to population and employment within these areas may provide insights to the future trajectory of St. Croix County. The potential impacts arising from five comparable projects are described later in this section.

1.1 - Overview of Transportation Infrastructure Improvements and Population Change

Understanding the various mechanisms that affect population change is important to communities that are seeking to plan for future development. A breadth of research across many disciplines considers the factors influencing regional population growth and decline. While a complete review of the literature on population change is beyond the scope of this overview, it is worth reviewing research on how transportation infrastructure may influence population growth in a community. Unfortunately, the theoretical explanations and empirical findings that connect highways and population change are somewhat varied (Chi, Voss and Deller, 2006). Furthermore, there is little systematic research that explicitly explains the connections between regional growth and bridge construction. Research on the influence of highway expansions on population change also is somewhat limited (Chi, 2012). Nonetheless, a number of existing studies can inform this analysis of the River Crossing.

The impact of the River Crossing is the focus of this analysis, but it is also important to consider broader national trends that have affected population growth and decline over the past several decades. Of particular interest in St. Croix County are the influences of so-called *period effects, population de-*

concentration and regional restructuring (Frey and Speare, 1992). While these three factors are often viewed from historical perspectives, they remain relevant to this discussion. Specifically, these influences could affect future St. Croix County population changes in several manners:

- *Period effects are population influences stemming from short-term economic, demographic and political influences.* The recent downturn in the national housing market, and subsequent recessionary period, is an important period effect continuing to influence population change in the Minneapolis-St. Paul-Bloomington metro area and elsewhere. The potential impact of this period effect is considered further in Section 2;

- *De-concentration refers to the gradual dispersal of metropolitan populations into the low-density, high-amenity locations preferred by many residents*. De-concentration has occurred as transportation and communication innovations provided greater flexibility in choosing where to live and work. While there may be limits to the effects of declining transportation costs on locational decisions (Partridge, Rickman, Ali and Olfert, 2008), the River Crossing's role in providing a new transportation option could potentially influence de-concentration patterns in the metro area. Frey and Speare (1992) also suggest that de-concentration was driven previously by the emergence of unattached populations whose residential choices were not dictated by workplace considerations. Current (and future) residential choices among certain demographic segments could also drive de-concentration in the region as well. As with period effects, population change factors related to de-concentration are considered further in Section 2 of this analysis;

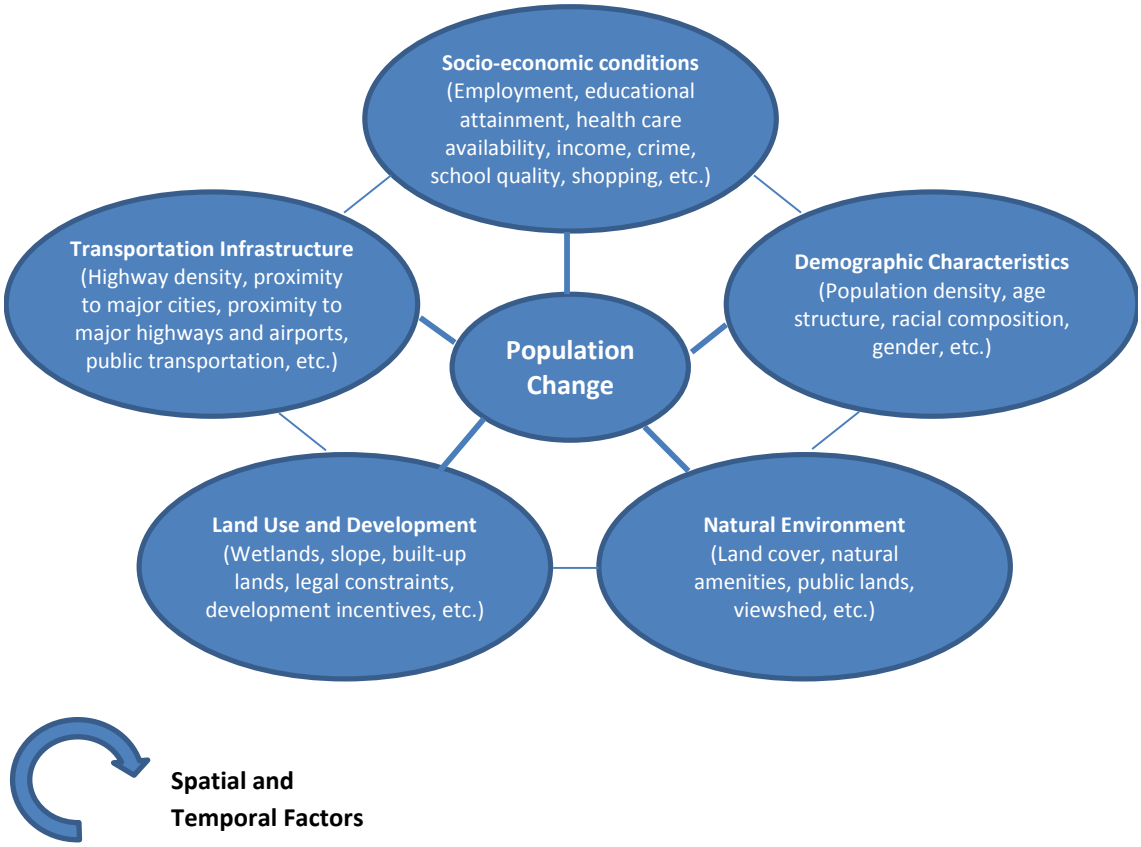
- *Regional restructuring considers how structural forces, such as industrial composition, may influence population change*. The de-industrialization of many Great Lakes metro areas provided examples of how regional restructuring has shaped population growth. As many manufacturers moved to rural locations to reduce operating costs, rural communities experienced population gains while urban areas suffered the loss of residents. However, the regional restructuring perspective could also result in urban growth. For instance, areas specializing in high-tech or knowledge-based industries may continue to grow and drive population increases in metro areas (Frey and Speare, 1992). While this assumption is not a guarantee of growth, it does suggest that a region's economic structure and trajectory is a potential driver of population change. Accordingly, St. Croix County's position in the metro area economy is examined in Section 3;

In addition to these broader influences on population change, many other factors also affect local population growth and decline. Highways and other forms of transportation infrastructure certainly are features that need to be considered as contributors to population change. However, Chi and Ventura (2011a) suggest that transportation infrastructure is but one factor in a broader integrated framework of population change (Figure 1.1). This framework includes additional factors that have been identified in prior research such as demographic characteristics; socioeconomic conditions; the natural environment, and land use and development.[2] The influence of these other factors on population change suggests that the River Crossing cannot be considered in isolation.

[2] For other reviews of the factors influencing population growth, see: Chi, 2009; Chi and Marcouiller, 2011; Chi and Ventura, 2011b.

The factors affecting regional population change can influence growth or decline through different mechanisms. Demographic characteristics (including age, sex, and race) can shape migration, fertility and mortality rates. Socioeconomic conditions, such as income, school quality, health care and employment levels, can drive migration into and away from communities. The natural environment can influence population change by attracting migrants into regions with high levels of natural amenities. Furthermore, land use and development factors, (including land availability, built-up lands, geophysical features, and legal constraints) can affect the amount of land available for growth in a municipality and its neighboring communities (Chi and Ventura, 2011a).

Figure 1.1 – Integrated Framework of Population Change



Source: Chi and Ventura, 2011a

Within this framework, the connections between transportation infrastructure and population change are of particular interest. These connections are rooted in a number of regional economic theories. One perspective comes from *location theory*, or the view that individuals and firms choose to locate in places that maximize their well-being. From a population change perspective, location theory suggests that households choose residences partially on the basis of transportation costs (Cho, Rodriguez and Song, 2008; Roback, 1982). In particular, households have a preference for low cost locations that provide accessibility to high wage jobs and allow access to urban and rural amenities (Tabuchi and Thisse, 2006; Isserman, 2001). In turn, improved transportation infrastructure is a mechanism for increasing the access among households, jobs and amenities.

Growth pole theory also provides perspectives on the potential connections between transportation infrastructure and population change. Growth pole theory attempts to explain the economic dependence of metropolitan areas and their surrounding suburban and rural areas (Chi, 2010; Henry, Barkley and Bao, 1997; Chi, Voss and Deller, 1996). Metropolitan areas can influence broader regional population changes and economic activity through two mechanisms. First, growth in an urban area can spur growth in surrounding communities. That is, urban economic development can spillover (or spread) into adjacent areas. Conversely, growth in one location can also cause decline (or backwash) in surrounding areas. Backwash occurs when growth is attracted into the urban core away from rural or suburban communities. The exact role of highways in promoting population change can vary over time and depends on broader spread and backwash effects in the metro area. *Importantly, growth pole theory views highways as a catalyst or facilitator of population change. That is, an improved highway is neither necessary nor sufficient to cause population change independent of other factors (Thiel 1962).*

The viewpoints of location theory and growth pole theory are particularly relevant to suburban communities (such as those in western St. Croix County). From a locational perspective, suburban areas are positioned to benefit the most as locations that can provide optimal access to urban job centers *and* rural/urban amenities. Furthermore, suburban areas inherently are part of metro areas that will be subject to the spread and backwash effects of metropolitan growth and development. Consequently, this analysis is largely interested in research that assesses how transportation infrastructure affects suburban population growth or decline, rather than studies that might only consider urban or rural change.

Despite the complex factors affecting population change, a number of empirical studies have attempted to measure the impact of highways on regional growth and decline. As noted by Chi (2012), these studies are performed at various geographic scales and yield both disparate and contradictory results. In some studies, such as those by Boarnet (1994), Cervero (2003) and Goetz et al. (2010), highways are found to promote population and economic growth. However, other studies either find highways to have no impact on growth, or suggest highways are a secondary influence (Jiwattanakulpaisarn et al., 2009; Voss and Chi, 2006).

Inconsistent or secondary effects of population change attributed to highway expansions are common findings in prior studies. For instance, Voss and Chi (2006) found evidence that recently completed highway expansions had positive impacts on population change in Wisconsin communities. Specifically, Wisconsin communities within 20 miles of a highway expansion experienced elevated growth rates for a period after the expansion was completed. However, the significance of highway expansions was not consistent across all time periods. While highway expansions had a positive impact on population growth from 1990 to 2000, expansions instead suggested a *negative* impact on population change in the years between 1980 and 1990.

These contradictory findings possibly are connected to broader population trends in the state. That is, the state of Wisconsin had an unprecedented slow period of population growth between 1980 and 1990 (a rate of just 4.0 percent). However, Wisconsin had a 9.6 percent population growth rate between 1990 and 2000. Accordingly, highway expansions may have simply served to facilitate broader growth trends already in place as the highway expansions began (Voss and Chi 2006).

The argument that highway expansions facilitate statewide population growth trends is reasonable, but is not supported by any specific theory. In reconsidering the role of highways in population change, Chi (2010) used a more integrated spatial approach partially rooted in the aforementioned framework of population change (see Figure 1.1).[3] The results of this analysis suggested that highway expansions can have direct and indirect effects on population change. Two findings are particularly relevant to the St. Croix River Crossing:

1. Highway expansions directly influenced population change in suburban Wisconsin communities through effects tied to growth pole theory. In the 1980s, metropolitan areas grew as rural areas faced economic upheavals stemming from deindustrialization, the farm debt crisis, and urban revival. During this period, highway expansions facilitated population movements from suburban to urban areas. In contrast, improving economic conditions in the 1990s induced residents to move to suburban areas that allowed access to both growing urban economies and rural amenities (Chi, 2010). Again, highway expansions helped to facilitate these changes. Given that population changes in suburban areas were influenced by regional economic trends, it may be that future growth patterns stemming from the St. Croix River Crossing could also depend on broader conditions in the Minneapolis-St. Paul-Bloomington metro area;

2. Highway expansions also indirectly influenced population change in suburban areas. Chi (2010) found that population change in one community was spatially dependent on change in surrounding communities. More specifically, a community surrounded by other growing communities also tended to gain population. Conversely, a community surrounded by communities with declining populations was likely to lose residents. It may be that population growth in one community leads to higher housing prices; driving residents to choose neighboring areas as an alternative until home prices reach equilibrium. Expanded highways indirectly facilitate this change by allowing residents to easily move among communities and respond to regional housing prices and other quality of life factors. This recognition of spatial dependence is particularly important for Corridor Communities, as population trends in one community will likely influence change in other communities along Highway 35 and Highway 64.

In another study of Wisconsin communities, Chi and Ventura (2011b) considered the impact of transportation accessibility on population growth. For purposes of this study, accessibility was measured using five factors: 1) proximity to central cities; 2) proximity to airports; 3) proximity to major highways; 4) highway density; and 5) percent of workers using public transportation to work. Interestingly, the analysis found that these accessibility measures largely had *no* significant effects on population change in rural, suburban or urban areas across a three decade period. Echoing findings from other studies, Chi and Ventura (2011b) instead suggest that transportation accessibility is a facilitator of population flows, but does not directly create population growth and decline. That is, when metropolitan areas grow, transportation accessibility promotes the flows that allow people to interact among residential locations, work locations, and shopping locations.

[3] The analysis from Chi (2010) builds upon the prior study from Voss and Chi (2006). The integrated spatial approach used included four components that considered: 1) the determinants of population change (e.g. demographics, land use, environmental factors, transportation, etc.); 2) simultaneous consideration of spatial lag and spatial error dependence; 3) spatial variations in impacts; and 4) an improved approach to creating a spatial weight matrix.

While transportation accessibility was not significantly associated with population growth, Chi and Ventura (2011b) found other factors that influenced population change. Some of these factors varied across both time and geographic space. For instance, demographic factors related to age structure had erratic effects across rural, suburban and urban areas, with no consistent influence on population change. *However, characteristics related to a community's livability (i.e. educational attainment, income, and housing characteristics) were found to have an important role in affecting population change in suburban areas. That is, convenient lifestyles and quality of living are community assets valued by migrants.*

Two other findings from Chi and Ventura (2011b) are particularly important for this analysis of the River Crossing. First, factors related to the developability of an area had positive influences on population growth across several decades. *Specifically, the more lands that are available for development, the greater the likelihood that population growth will occur*. This finding is intuitive as greater amounts of developable land create additional opportunities for increasing a community's housing supply. Second, population growth or decline in a community again was found to be spatially dependent on surrounding communities. Reinforcing the findings from Chi (2010), population growth or decline in a community was strongly influenced by growth or decline in surrounding areas. As previously stated, the spatial dependency of population growth suggests that Corridor Communities will need to monitor conditions throughout the region, not just within an individual community's boundaries.

In yet another study focusing on Wisconsin communities, Chi (2012) again examined the impacts of transportation accessibility on population change. Accessibility was measured in terms of highway density, distance to highway expansions, and distance to the nearest airport (adjusted for the airport's number of passenger boardings). *Again, investments in the form of highway expansions were not found to have a significant effect on suburban population growth*. Instead, highway investment was suggested to be a secondary factor in promoting suburban population growth (Chi 2012).

In summary, the literature related to transportation infrastructure improvements and population change shows mixed results in terms of how the St. Croix River Crossing might influence population growth in the region. While some prior studies suggest that highway expansions provide some positive direct or indirect effects on population growth, other studies show little significant impact. However, this research does provide several key conclusions for evaluating future population trends in Corridor Communities and St. Croix County:

1. Highway improvements are likely best viewed as a facilitator of suburban population growth. That is, highway improvements enable flows of populations that partially are dependent on larger trends in the region;

2. Transportation infrastructure is but one of many factors that influence population change. Population growth or decline also depends on many other demographic, socio-economic, environmental and land use considerations. The influence of these factors may also vary over space and time;

3. Population growth is spatially dependent. Population growth or decline in one community is tied to growth or decline in surrounding communities. These findings suggest that this examination of the River Crossing must consider many factors (including broader metropolitan trends) that could influence future growth, rather than relying on a single set assumptions.

While not discussed in the aforementioned studies, St. Croix County communities may also want to consider questions about the causality between highway expansion and population change. The relationship between highway expansions and population growth is sometimes viewed as bi-directional or subject to "the chicken and the egg effect." That is, expanded highways initially may contribute to new population change or economic growth. However, growth also creates congestion and drives the need for expanded highways (Mikelbank, 1996; Boarnet and Haughwout, 2000; Cevero, 2003; Chi, Voss and Deller, 2006). Accordingly, population change may be facilitated initially by the Crossing, but this influence may decline over time as increased population creates new congestion.

1.2 - Overview of Transportation Infrastructure Improvements and Economic Development

Transportation infrastructure is often viewed as an important driver of economic development. Indeed, highway construction is often touted as an economic development strategy that can create better access to jobs and markets (Rephann and Isserman, 1994; Chandra and Thompson, 2000). However, the effects of transportation infrastructure on economic development are complex. As with population change, transportation infrastructure is again just one of many variables that impact economic growth (for example see: Garcia-Mila and McGuire, 1992; Halstead and Deller, 1997; Boarnet and Haughwout, 2000; Camagni, 2002; Chi and Marcouiller, 2009). Economic development in a region also is driven by factors related to labor force quality; industry structure; the availability of developable land; business climate; and quality of life characteristics. National or international events, such as the recent recessionary period, also shape local and national growth. In fact, local and global factors interact to shape the broader economy (Thisse, 2009).

The connections between transportation infrastructure and economic growth can be viewed from several perspectives. Neoclassical growth theory views transportation infrastructure as a factor in the production process that can lower costs. For instance, improved infrastructure can reduce the cost of transporting raw materials or finished products between locations. Efficient transportation networks also can enhance the productivity of labor inputs by reducing the commuting times of workers (Chi, Voss and Deller, 2006; Glaeser and Kohlhase, 2004; Dalenberg and Partridge, 1997; Vickerman, 1991). Reduced transportation costs may also increase consumer's income through the time-value of money. In fact, modeling performed for the St. Croix River Crossing suggests that the new bridge could have annual economic gain of $1.8 million dollars in consumer surplus (Zhu and Levinson, 2010).[4]

[4] Note that these impacts do not compare construction or operational costs. They also do not account for other factors such as travel time reliability, the value of redundant networks, or changes in land use.

As with population change, transportation infrastructure and economic growth are also connected through growth pole theory. Again, metropolitan areas can influence broader economic change in several manners. Growth in an urban area can spur growth in surrounding communities through spread or spillover effects. Conversely, growth in one location can also cause decline in surrounding areas when growth or spending is attracted into the urban core away from rural or suburban communities (e.g. through economic leakage). Highways in turn are the facilitators of this movement within the metropolitan area, but are not sufficient to cause changes independent of other factors (Thiel, 1962).

There are also questions about the connections between population change and employment growth patterns that potentially arise through growth pole theory. For instance, employment growth may follow population growth in a good economy, while people migrate to places with employment opportunities in a negative economy (Carlino and Mills, 1987). However, other studies suggest that population and employment changes are endogenous in nature. Regardless, population change and employment change are highly correlated (Chi, Voss and Deller, 2006).

The ties connecting economic growth and transportation infrastructure can also be viewed through the lens of location theory. As noted earlier, location theory suggests that firms will choose a geographic location that either minimizes their costs or maximizes the demand for their goods or services. As transportation expenditures can influence the cost of doing business, firms will choose locations along transportation corridors that can lower costs of moving products to final markets or increase the access of customers traveling to an establishment. Transportation infrastructure may also provide better access to labor that is needed by businesses (Chi, 2010; Nadiri and Mamuneaus, 1998; Halstead and Deller, 1997).

The perceived importance of transportation infrastructure from a location theory perspective varies somewhat. For instance, one annual survey of site selectors suggests that highway accessibility ranks second to only skilled labor availability as a factor in choosing new business locations (Area Development Magazine, 2014). Chandra and Thompson (2000) also found that new infrastructure in the form of Interstate highways had a positive effect on manufacturing and retail industry growth. However, others find that transportation costs are a somewhat limited factor in industrial site selection. A mature highway system combined with technological advances have greatly reduced freight transportation costs and created diminishing returns (Giuliano, 1989 and Glaeser and Kohlase, 2004), In fact, the average cost of moving one ton dropped from 18.5 cents to 2.3 cents between 1890 and 2001[5] (Glaeser and Kohlhase, 2004).

In reality, the importance of transportation as a location factor likely varies across time, space and industry sector. Access is likely more important to manufacturing, retail and logistics industries where transportation constitutes a larger share of operational costs. Moving people (i.e. labor and consumers) also remains expensive due to urban congestion, which in turn can reduce productivity (Glaeser and Kohlhase, 2004; Schrank, Eisele and Lomax, 2012). Furthermore, a highway improvement may influence local economic changes. That is, a given infrastructure project may not offer wide improvements to metropolitan accessibility, but it might reduce travel times in the immediate areas surrounding the project (Boarnet and Haughwout, 2000).

[5] In 2001 dollars

As with efforts to quantify the impacts of transportation infrastructure on population change, studies attempting to isolate the causal effects of public infrastructure on economic growth are also somewhat inconclusive and conflicting. In one review of past research, Shatz et al. (2011) concluded that there are economic benefits to regions that arise from new highway investments. Nadiri and Mamuneaus (1996) also found that public highway investment contributed to economic growth and productivity increases at both national and industry levels. However, the impacts of infrastructure were much larger during the 1950s and 1960s when the Interstate Highway System was under construction. As highway networks became built-up and highway expenditures moved to maintenance, the impacts of public highway investments declined.[6]

In contrast, some research suggests that the effects of publicly-funded infrastructure is either overstated or secondary to other factors of economic growth (Garcia-Mila and McGuire, 1992; Krol, 1995) or has no link to productivity increases (Hulten and Schwab, 1993; Tatom, 1993). A somewhat local study of transportation investments in several Minnesota communities also found limited connections between infrastructure improvements and economic growth. Specifically, Iacono and Levinson (2013, pg. 53) examined four highway projects and found "no convincing evidence of statistically significant effects on private earnings and employment in the locations where these projects were implemented." The authors note that these findings are subject to caveats surrounding the limited timeframe in which to measure effects and the comparability of these projects in terms of their size and scope.

Yet other research on public highway investments suggests that the economic impacts are somewhat uneven. As suggested earlier, Chandra and Thompson (2000) found that new interstate highway construction increased earnings across many sectors in those counties that contained the highway. Manufacturing earnings also increased in counties adjacent to the interstate highway. However, a reduction in retail and government earnings also occurred in adjacent counties. In other words, it may be that highway investments can increase activity in some industries, but can also re-allocate activity in the region. *Accordingly, Chandra and Thompson (2000) suggest that highways may serve to re-arrange activity somewhat in a metropolitan area, but provide no net gain in overall economy activity in the region.* This observation follows the aforementioned findings of Chi and Ventura (2011b) and Chi (2012) that highways are facilitators of change in suburban areas, but do not directly contribute to population growth.

Hicks (2014) also found somewhat uneven economic impacts of highway infrastructure. In exploring the impacts of highway access on firm productivity levels, potentially different effects were apparent in urban versus rural areas. Specifically, proximity to a highway had a significant, positive impact on firm productivity (for firms with more than one employee). However, these impacts were limited to businesses located in rural regions, and were not found in estimations that included urban areas. These findings also echoed the impacts of Hicks (2006) where highway construction was found to have effects on retail concentrations in rural areas, but not metro areas.

[6] Research from Nadiri and Mamuneaus does not include the impacts of consumers or commuters that might accrue additional benefits from highway investments.

As with population change, research provides varied and uneven findings on the potential connections between transportation infrastructure improvements and economic growth. The research also raises a counterfactual question. That is, regardless of the measured economic impacts, would economic activity in a community or region occurred "but for" the presence of the infrastructure improvement (Iacono and Levinson, 2013)?[7] If not, would the activity still occur in another location in the community? Or in the county or region? The counterfactual is a difficult question to answer, but is worth considering nonetheless. Other important conclusions from existing research also can inform this study of the St. Croix River Crossing:

- Economic growth is influenced by a wide variety of regional, national, and international factors. Consequently, the impacts of the River Crossing cannot be assessed without considering the broader influence of other conditions across the local-to-global continuum;

- Similar to population movements, it may be that highway improvements help to facilitate change or re-allocate economic activity in metro areas rather than create net new growth. While St. Croix County communities may be positioned to benefit from these re-allocation mechanisms, growth likely will be also dependent on broader trends and conditions in the metro area;

- Transportation accessibility is a factor for businesses that are making locational decisions. Not only can efficient transportation networks reduce the cost of transporting raw materials and finished products, but may also create better connections among labor and employers. However, the precise importance of transportation will likely vary across space and industry. When considering the role of the St. Croix River Crossing, Corridor Communities and the broader county will need to consider two questions: First, what types of industries might benefit the most from transportation infrastructure such as the River Crossing? Second, does the River Crossing create comparative advantages for Corridor Communities greater than other potential locations in the region? That is, how do these highway improvements increase labor accessibility or lower transportation costs relative to other locations in St. Croix County or the metro area? These questions are considered further in Section 2 and Section 3.

- Finally, population growth and employment growth are correlated. While it is unknown exactly how the River Crossing will affect either population or employment levels in the future, it is likely that the River Crossing will continue to facilitate some level of growth. New residents will create demand for local services that generate economic impacts on local communities. Furthermore, new employment in local businesses needed by a growing population will create direct, indirect and induced impacts as well. These potential impacts are considered in Section 3.

[7] A good overview of the counterfactual question in impact studies is available in Siegfried, Sanderson and McHenry (2006).

1.3 - Comparable Projects

The prior review of existing research clearly shows that transportation infrastructure improvements affect population change and economic growth. However, the exact impacts will be influenced by many other factors. Impacts can also vary by project and by community. Despite this potential variability in impacts, the academic research reviewed here tends to generalize findings across groups or categories of communities. To supplement these broader conclusions, a number of so-called comparable projects are examined for their potential impacts on regional change. These projects are scattered across the United States and provide additional information about how individual county populations and employment levels may have differed before and after the completion of an improved river crossing. Comparable projects also offer some insights into how communities have responded to these changes.

For a transportation infrastructure project to be considered comparable to the St. Croix River Crossing, it must meet several criteria. First, the project *must replace or expand* an existing bridge rather than create a new crossing. Second, the bridge *must be located in a metropolitan statistical area*, preferably connecting the exterior of the metro area to its interior portions. Finally, the bridge project *must not be part of a major interstate crossing* with significantly larger traffic counts. Unfortunately, bridge projects that match these criteria are somewhat limited. While there is a surge of bridges in the planning or construction phases, these projects do not yet allow for comparisons to be made. Furthermore, many other large metropolitan bridges were built prior to the 1980s and subsequently offer limited time-series data to be examined.[8]

The lack of a large number of comparable projects precludes a more detailed econometric study of the population and economic impacts associated with bridge improvements. Therefore, this examination is somewhat limited and anecdotal. Nonetheless, the National Bridge Inventory and searches of newspaper archives reveal a number of bridge improvement projects that are somewhat similar to the St. Croix River Crossing. These projects include:

- *The Route 370 Corridor in St. Charles County, Missouri* - Completed in 1996 and located within the St. Louis, MO-IL metropolitan statistical area;
- *The Bloomington Ferry Bridge in Scott County, Minnesota* - Also finished in 1996 and part of the Minneapolis-St. Paul-Bloomington, MN-WI MSA;
- *The George P. Coleman Memorial Bridge in Gloucester County, Virginia* – Completed in 1995 and found in the Virginia Beach-Norfolk-Newport News, VA-NC MSA;
- *The Arthur Ravenel Jr. Bridge in Charleston County, South Carolina* – Opened in 2005 and located in the Charleston-North Charleston-Summerville, SC MSA;
- *The Blennerhassett Bridge between Wood County, WV and Washington County, OH* - Completed in 2008 and situated in the *Parkersburg*-Marietta-Vienna, WV-OH MSA.

[8] Many of the data sets used in this analysis begin with 1969.

Importantly, St. Croix County also experienced a prior bridge improvement project at the Interstate 94 crossing at Hudson. The project was performed in the late-1980s and provides an additional historical perspective for the county.

Some potential impacts arising from bridge improvements are assessed using population and employment growth patterns. Examining how population and employment levels may have changed in the periods before and after a project was completed could suggest whether an improved bridge induced additional growth. Accordingly, county population and employment changes for each comparable project are evaluated between the years of 1970 and 2013. A qualitative overview of each project is also provided.[9]

Population and employment trends are considered using two measures: 1) percent change in population or employment since 1970; and 2) percent change in population or employment from the prior year. Measuring change since 1970 allows for a long-term outlook, while assessing change from the prior year provides perspectives on year-over-year trends. When examining population and employment change on a year-over-year basis, readers should note that a downward trend line usually does not indicate negative growth. Instead, downward trends on many of the following charts suggest that growth rates are slowing.

Route 370 Corridor and the Discovery Bridge – St. Charles County, Missouri

The Route 370 Corridor connects St. Charles County and St. Louis County in the St. Louis MO-IL metropolitan statistical area (MSA). The St. Louis MSA is the 19th largest metro area in the nation with a population of approximately 2.8 million people. St. Charles County is the peripheral county in this analysis and is home to approximately 373,000 residents and 142,000 employees. Faced with rapid population growth, St. Charles County encountered several transportation infrastructure issues in the 1980s. First, the Missouri Route 115 bridge spanning the Missouri River was deteriorating rapidly and needed to be either repaired or replaced. Second, congestion on nearby Interstate 70 was causing extensive traffic bottlenecks in the area. In fact, traffic counts across the I-70 Bridge at the Missouri River (also known as the Blanchette Bridge) had reached 100,000 cars per day with further increases expected.

To address congestion issues, the 12-mile Route 370 Corridor and Discovery Bridge across the Missouri River were proposed in the mid-1980s. The Route 370 Corridor and Discovery Bridge connect to both Interstate 70 and Interstate 270, providing an alternate route across the Missouri River. The City of St. Charles, Missouri sits at one end of the Corridor and largely supported the project. The community backed the project as the new bridge and highway bypass would re-route commuter traffic around the city and ease traffic congestion in downtown St. Charles. Support for the project was also based on the notion that new transportation infrastructure could help attract light industry to the mostly under-developed region north of the city and expand the community's tax base. Similar support was echoed by county officials who hoped that the new Route 370 Corridor would open the region to development opportunities (Miller, 2006; Bryant, 2006).

[9] The qualitative overviews of each project largely were assembled by Lindsay Amiel.

Construction of the new corridor commenced in early 1989 and ended in 1996. Originally, Missouri Department of Transportation officials predicted that the Route 370 Corridor would carry 40,000 to 50,000 vehicles daily. However, average daily traffic volumes across the Discovery Bridge totaled 60,000 vehicles by 2006; a large increase from the 17,000 vehicles per day that used the previous Route 115 bridge. By the Discovery Bridge's 10th anniversary, 7.5 million square feet of farmland had been converted to mixed use developments and approximately 10,000 jobs were added to the local economy (Miller, 2006; Bryant, 2006).

The Discovery Bridge and Route 370 Corridor project share some similarities with the St. Croix River Crossing. Both river crossings are located in large metropolitan statistical areas. The St. Louis MSA is home to approximately 2.8 million residents, while the Minneapolis-St. Paul-Bloomington MSA has a population of approximately 3.3 million people. Furthermore, both bridges replace existing structures; adding additional lanes and rerouting traffic flows around downtown areas. These projects intend to reduce congestion on city streets and improve safety. *Finally, both bridges are secondary crossings into their respective counties.* The Discovery Bridge sits several miles from the adjacent Interstate 70 crossing while the St. Croix River Crossing is located less than ten miles from the Interstate 94 bridge at Hudson.

Despite some similarities, there are several important differences that distinguish the Discovery Bridge from the St. Croix River Crossing. First, St. Charles County's population was much larger than that of St. Croix County before the construction of the Discovery Bridge. According to the 1990 Decennial Census (before the Discovery Bridge was finished), St. Charles County had 212,913 residents. In contrast, St. Croix County's population was 86,000 people in 2013. Second, St. Charles County is more centrally located in the metro area while St. Croix County is at the metro fringe. Specifically, St. Charles County is situated directly adjacent to the City of St. Louis while St. Croix County is further from the urban cores of Minneapolis and St. Paul. Finally, the Route 370 Corridor provides direct access to the interstate highway system while the new St. Croix River Crossing does not.[10]

From outward appearances and anecdotal evidence, the bridge seems to have been a success in terms of easing congestion and spurring growth. However, the exact impact of the project is somewhat more complicated when considering longer-term patterns of growth in St. Charles County. The county's growth rate since 1970 has been significantly faster than the rates found in the state of Missouri and the United States. Population growth in St. Charles County also has occurred at a much faster rate than that of the St. Louis MSA (Figure 1.2). *In fact, St. Charles County traditionally has been one of the fastest growing counties in Missouri and is among the fastest growing counties in the lower Midwestern states*[11]

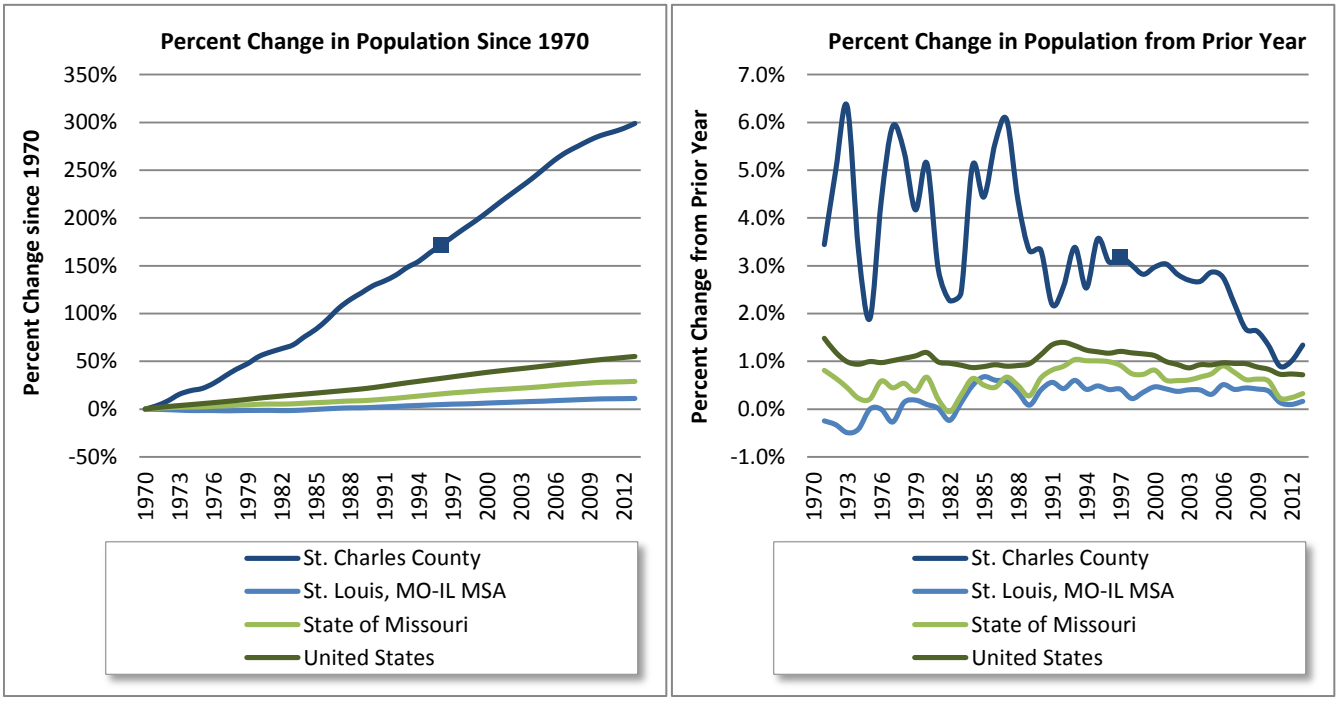
A closer examination of population trends in St. Charles County before and after the completion of the Discovery Bridge/Route 370 Corridor shows little change in growth rates. While the county's growth rate has remained high, it has not changed appreciably with the addition of the bridge. In fact, year-over-year population growth rates have actually declined steadily since the completion of the infrastructure project in 1996. Growth rates within the two communities linked by the Route 370 Corridor, the City of St. Charles

[10] Route 370 connects to I-270 on the east side of the Missouri River and to I-70 on the west side of the river.

[11] Including Missouri, Illinois, Iowa, Nebraska, Kansas, Oklahoma, Arkansas, Tennessee and Kentucky.

and the City of St. Peters, have also slowed since the completion of the bridge (Figure 1.3). Specifically, the combined populations of these two cities grew by 89 percent between 1980 and 1990, but increased by only 11 percent between 1990 and 2000. Moreover, their combined populations grew by just six percent from 2000 to 2010.

Figure 1.2 – St. Charles County, MO Population Trends 1970 to 2013



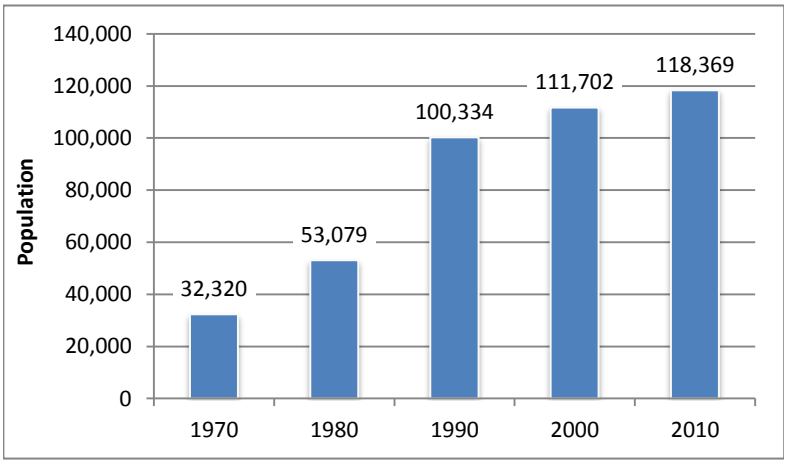
■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

A comparison of population trends also shows that population growth in St. Charles County has somewhat mimicked patterns within the overall the St. Louis metro area. While the growth rates in St. Charles County are amplified relative to rates in the metro area, periods of increasing growth rates in the St. Louis MSA also tend to be reflected in St. Charles County. Similarly, periods of slower growth in the metro area also echo declining growth rates in St. Charles County (Figure 1.2).

Similar to population change, employment growth before and after the bridge project also has remained relatively steady. From 1970 to 2013, employment grew from 19,000 to 142,000 jobs, an impressive 643 percent increase (Figure 1.4). However, year-over-year growth rates in the five years (1996 to 2001) after the Route 370 Corridor and Discovery Bridge was

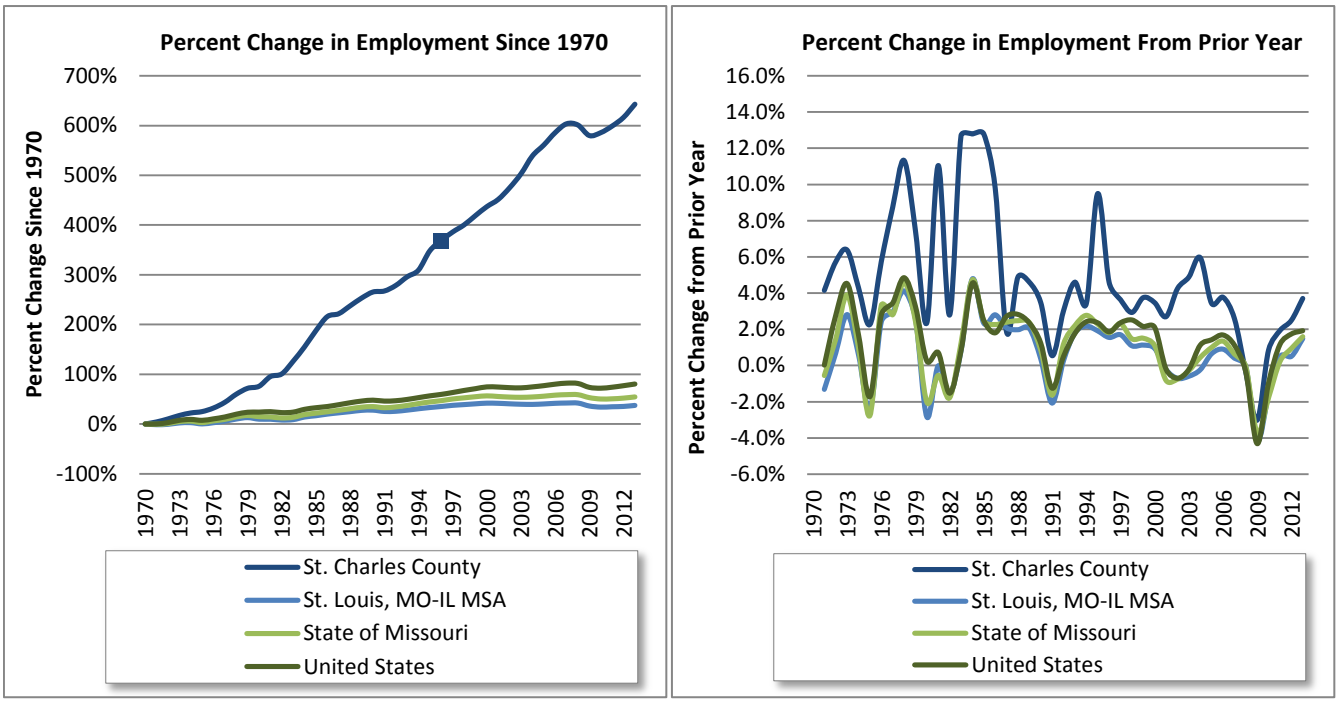
Figure 1.3 – City of St. Charles and City of St. Peters, MO Population Growth – 1970 to 2010



Source: U.S. Census Bureau

completed are generally the same or lower than the growth rates in the years directly before the project was finished. Growth rates during the five-year period after completion are also similar to the rates found St. Charles County during many other non-recessionary periods. While employment growth rates in St. Charles County increased again after 2001, this period also coincides with the economic recovery that occurred after the mild national recession that lasted from March to November of 2001.

Figure 1.4 – St. Charles County, MO Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

Neither population nor employment growth rates increased appreciably after the completion of the Route 370 Corridor and Discovery Bridge. *However, these trends should not suggest that the Discovery Bridge project did not have an impact on growth in St. Charles County.* Instead, these trends may reflect the observation that transportation infrastructure projects facilitate suburban growth rather than directly cause it. It may be that the Discovery Bridge and Route 370 project removed a transportation bottleneck in the region and opened access to land that helped St. Charles County remain economically competitive (despite low growth rates in the St. Louis metro area). Consequently, these infrastructure changes allowed growth in the county to continue at rates that largely exceeded those of the metro area. Nonetheless, it is difficult to isolate the exact impact of the project on St. Charles County.

The completion of the Discovery Bridge and Route 370 Corridor also provides one model of regional collaboration that could provide an example for St. Croix County communities. As noted earlier, population and economic change in a given community are also influenced by conditions in surrounding communities. Given that transportation infrastructure is one means for enhancing these connections, those communities most affected by a transportation project will likely need some level of cooperation to manage this change. Recognizing this challenge along the Route 370 Corridor, a regional civic group known as *DISCOVER! 37*0

was formed in the year 2000 with the goal of promoting business opportunities along the Route 370 Corridor. Comprised of communities, governmental agencies and businesses, the group provides marketing, planning and information dissemination along the Corridor. More information about DISCOVER! 370 is available at: www.discover370.com

Bloomington Ferry Bridge – Scott County, Minnesota

The Bloomington Ferry Bridge spans the Minnesota River, connecting the City of Bloomington in Hennepin County and the City of Shakopee in Scott County. Completed in 1996, the bridge carries U.S. Highway 169 and was part of a larger infrastructure project that involved the U.S. Highway 169 bypass around Shakopee. The project helped address flooding issues at the crossing. The old bridge approach was at grade with the Minnesota River on the Shakopee side of the crossing and would flood occasionally in the spring or summer. A typical flooding event would close the road and require traffic to be diverted. However, the prior crossing was often congested regardless of floods on the Minnesota River.

The Bloomington Ferry Bridge and the St. Croix River Crossing have a number of parallels. Both bridges replace existing structures with crossings that add traffic lanes to improve safety and reduce construction. The two structures are also connected to counties that were found among the nation's 100 fastest growing counties in the 1990s.[12] Additionally, Scott County, MN and St. Croix County, WI are both located in the Minneapolis-St. Paul-Bloomington MSA and are influenced by a shared regional economy.

As both the Bloomington Ferry Bridge and the St. Croix River Crossing are located in the same metro area, it may be tempting to assume that any impacts experienced in Scott County will be replicated in St. Croix County. However, several important differences distinguish the Bloomington Ferry Bridge and the St. Croix River Crossing. First, Scott County's population grew at a notably faster rate than that of St. Croix County. Between 1970 and 1995, Scott County's population grew by almost 118 percent, almost double the St. Croix County rate of 61 percent. Second, Scott County is located closer to the metro area's urban core than St. Croix County. This more central location places Scott County closer to a number of large employment centers, including downtown Minneapolis, allowing commuters greater access.[13] *Furthermore, the Bloomington Ferry Bridge provides the primary means of access to the metro core for most Scott County residents*. In contrast, the I-94 crossing at Hudson is St. Croix County's largest point of access, not the St. Croix River Crossing.

Population growth in Scott County has been impressive in the decades both before and after the completion of the Bloomington Ferry Bridge. With a few exceptions, year-over-year population growth rates have largely exceed the rates found in the Minneapolis-St. Paul-Bloomington metro area, the state of Minnesota and the United States (Figure 1.5). Comparing these growth rates before and after the completion of the project reveals a number of noteworthy trends:

[12] Among the fastest growing counties with a population greater than 10,000 residents.

[13] Differences in commuting access are examined further in Section 2.

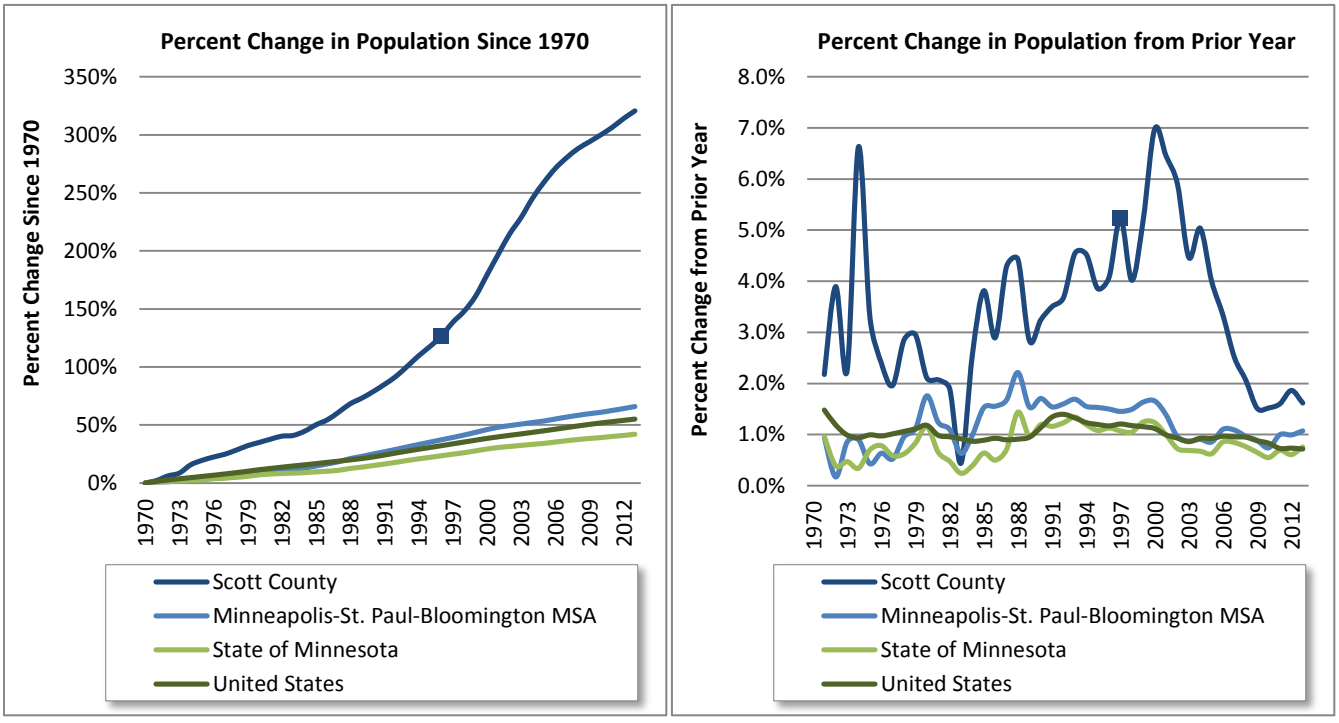
- Year-over-year population growth rates in Scott County began to increase steadily after the end of the dual recessionary periods in the early 1980s. Between 1985 and 2006, annual growth rates remained above three percent for all but several years;

- Moreover, population growth in the Minneapolis-St. Paul-Bloomington metro area also was elevated across this period, albeit at a lesser rate than Scott County. This extended period of higher growth rates suggests that the growth trajectory in Scott County (and the metro area) started well before the construction of the Bloomington Ferry Bridge;

- Scott County also experienced elevated population growth rates for a period after the bridge was completed. Between 1998 and 2003, annual growth rates were higher than the rates before the Bloomington Ferry Bridge was completed. The completion of the bridge, and the accessibility it created, likely was a factor in allowing population growth rates to remain high over this period. However, the exact impact of the bridge relative to other factors in the region is unknown;

- Growth rates in Scott County slowed dramatically between 2005 and 2013. The declining rates coincide with similar trends found in many counties throughout the metro area and are partially attributed to the onset of the recession in December 2007 (e.g. a period effect noted earlier in this section). *These changes should serve as a caution that growth is influenced by many factors and should not be expected to continue at previous rates into perpetuity*.

Figure 1.5 – Scott County, MN Population Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

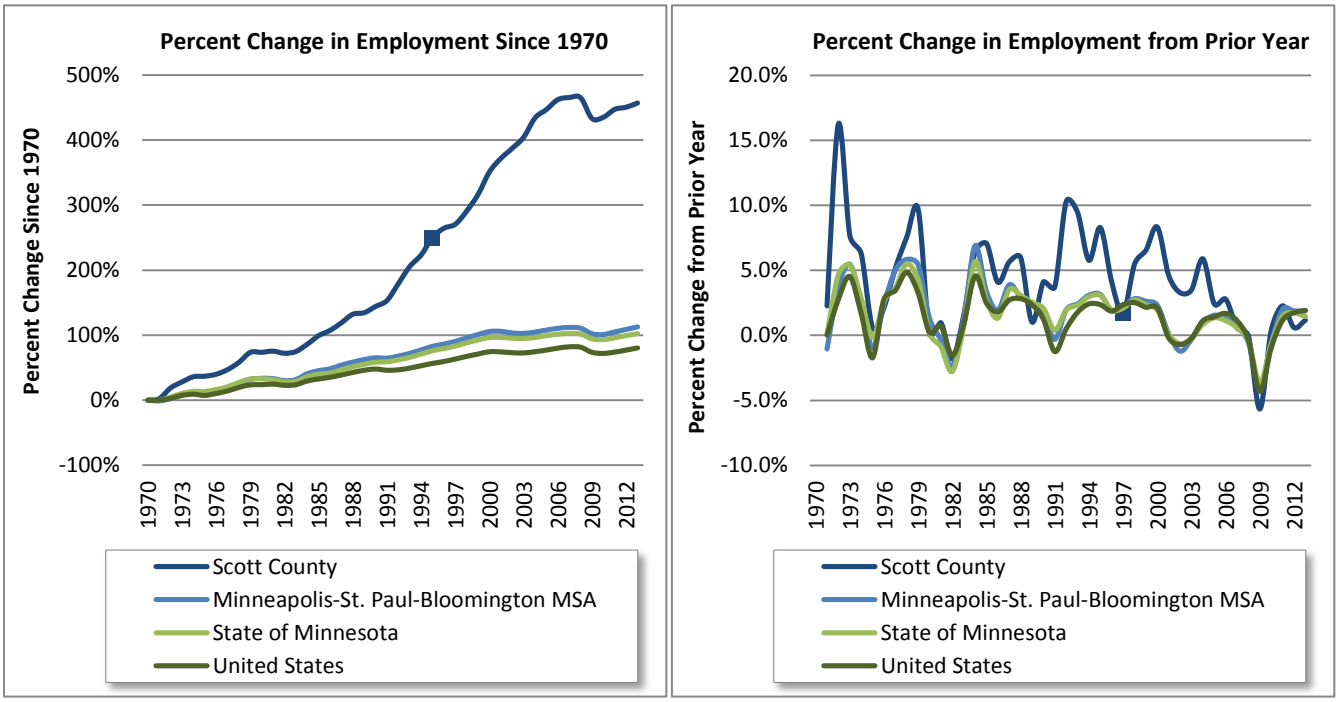
As with population growth, Scott County has also experienced significant increases in wage and salary employment. Between 1970 and 2013, employment in Scott County establishments increased by 321 percent; significantly greater than the 64 percent increase in the metro area and the national increase of 54 percent (Figure 1.6). Year-over-year changes in employment growth rates also reveal several trends in Scott County:

- While year-over-year employment changes in Scott County tend to show greater rates of increase and decrease than the metro area, overall county trends tend to follow those found in the Minneapolis-St. Paul-Bloomington MSA. That is, when employment growth rates increase in the metro area, rates also tend to increase in Scott County. Conversely, when employment growth rates slow in the metro area, they also slow in the county. *Many of these trends are tied to employment declines during recessionary periods, and employment increases in times of national economic expansion*;

- The correlations between employment change rates in Scott County and the Minneapolis-St. Paul-Bloomington metro area are not surprising given that metropolitan economies have a regional influence. The trends in Scott County and the metro area may also be tied to the aforementioned spread effects associated with growth pole theory;

- Employment growth rates in Scott County were greater in the five-year period prior to the completion of the Bloomington Ferry Bridge in 1996. Growth rates returned to pre-construction levels again after the bridge and bypass were completed. This temporary decline in growth rates possibly could be attributed to local businesses being affected by construction activity that limited accessibility. However, the metro area and the United States also experienced slight declines in employment growth rates in the mid-1990s.

Figure 1.6 – Scott County, MN Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

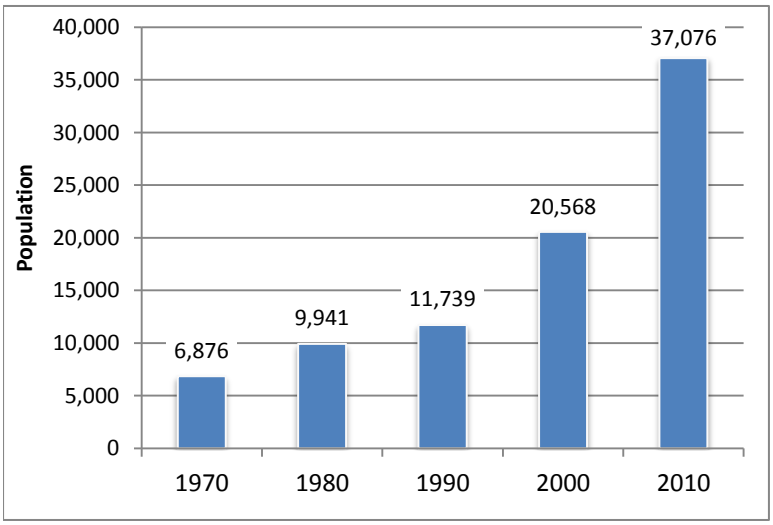
Source: Bureau of Economic Analysis and Author's Calculation

Similar to the Discovery Bridge in St. Charles County, Missouri, it may be that the completion of the Bloomington Ferry Bridge and U.S. Highway 169 removed a growth bottleneck. Both St. Charles County, MO and Scott County, MN were growing rapidly before the completion of their respective infrastructure projects. The removal of local traffic constraints in turn allowed growth to continue and accelerate somewhat in the case of Scott County. The new bridges relieved congestion, at least temporarily, and created improved access to new development opportunities.[14] Consequently, the bridges allowed growth to continue at notable paces. In the absence of these projects, growth potentially may have been more constrained.

A significant share of Scott County's growth was directed to the City of Shakopee, which is located at the base of the Bloomington Ferry Bridge. Shakopee's population grew dramatically between 1990 and 2010 (Figure 1.7). While Shakopee's population grew by just 18 percent between 1980 and 1990, the community's population increased by 75 percent between 1990 and 2000. Furthermore, the number of residents in Shakopee also increased by 80 percent from 2000 to 2010.

Population growth rates in the City Shakopee could reflect the ability of transportation infrastructure to re-direct growth. In the decades prior to the completion of the Bloomington Ferry Bridge, growth rates in Shakopee either trailed the rates found in the balance of Scott County (e.g. those areas excluding Shakopee) or were somewhat similar. After the bridge was completed, growth rates in both Shakopee and the balance of Scott County continued their growth paths. However, post-construction population growth rates in Shakopee well-exceeded those found in the balance of the county.

Figure 1.7 – City of Shakopee, MN Population Growth – 1970 to 2010



Source: U.S. Census Bureau

The growth patterns in Shakopee and Scott County, Minnesota could provide some lessons for Corridor Communities in St. Croix County.[15]

- Growth may follow several paths and communities should over-plan for the potential population and economic outcomes that arise from bridge improvements. Relying on an assumed rate of growth or a single population projection could cause a community to be either unprepared for rapid growth or

[14] While the Bloomington Ferry Bridge initially eased commuting times, travel demand from new population growth again created congestion at the crossing. For more background on how this induced demand may be generated, see Cervero (2003).

[15] Some insights come from Paul Bilotta, formerly with the City of Shakopee and now the community development coordinator of Rosedale, MN. Paul was interviewed by Lindsay Amiel in the summer of 2014.

make decisions based on growth rates that are overestimated. Planning for many contingencies will allow communities to be more fully prepared for change;

- Regardless of future growth rates, change will occur in Corridor Communities. Residents should discuss how they want their respective communities to look in 10, 20 or 30 years. Based on these discussions, communities could consider constructing strong zoning and planning strategies to ensure they attract the types and quantities of developments that match their long-term visions. Communities also may want to target developers that can meet community desires, rather than attempting to entice any firm that is willing to develop in the area;

- Even with a strong planning process, new residents and long-term citizens may not share similar ideas for the future of their community. Depending on the demographic composition and geographic origins of new residents, they may expect amenities or retailers that are not present in the community. However, long-term residents may want their community to remain unchanged or maintain a character to which they are accustomed. Conflicts may arise when new residents characterize old residents as stubborn and unwilling to accept progress. Similarly, old residents may not understand why new residents moved to a different area with the expectations it would be similar to the place from which they moved;

George P. Coleman Memorial Bridge - Gloucester County, Virginia

The George P. Coleman Bridge carries U.S. Route 17 between the communities of Gloucester Point and Yorktown in the Virginia Beach-Norfolk-Newport News metro area. First constructed in 1952, the original Coleman Bridge was a two lane crossing with a planned capacity of 15,000 vehicles a day. However, increased travel demand attributed to population growth led to more than 27,000 vehicles crossing the bridge by the mid-1990s. To address this deficiency, the bridge was reconstructed as a four-lane crossing in 1995. The new bridge has a double-swing construction that allows for ships on the York River to pass through its openings. The bridge currently carries almost one million vehicles each month (Virginia Department of Transportation).

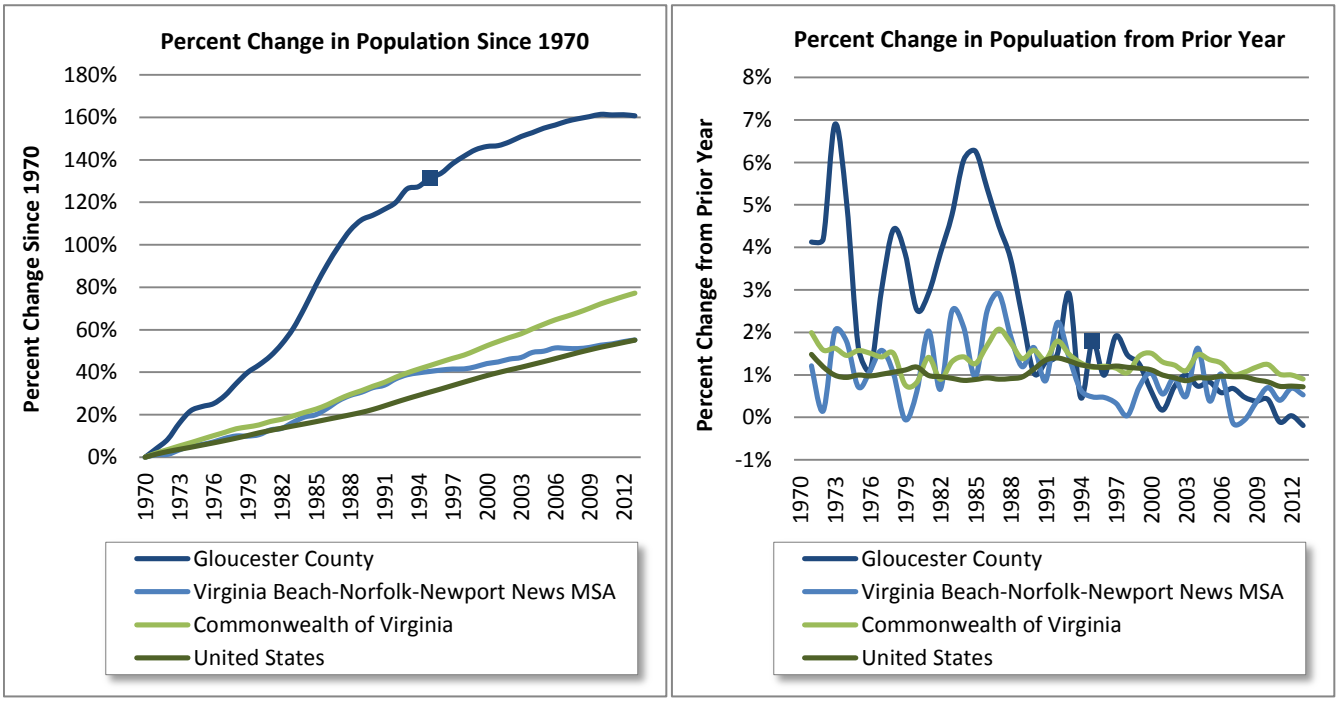
The Coleman Bridge connects Gloucester County and York County. Similar to St. Croix County, Gloucester County sits on the fringe of the metropolitan area. However, Gloucester County is smaller than St. Croix County in terms of both population and employment. In 2013, Gloucester County was home to almost 37,000 residents compared to 86,000 individuals in St. Croix County. Similarly, Gloucester County establishments accounted for 10,000 wage and salary employees while St. Croix County was home to 34,000 jobs. Employment in Gloucester County is biased toward industries that typically serve the local population, such as retail trade, health care and hospitality. In contrast, St. Croix County has a higher share of its employment in manufacturing and professional/technical services.

As suggested earlier, Gloucester County experienced rapid population growth throughout the 1970s and 1980s (Figure 1.8). In the decade before the Coleman Bridge was completed (1985 to 1995), Gloucester County's population increased by 27 percent; a rate almost double that of the Virginia Beach-Norfolk-

Newport News metro area and the Commonwealth of Virginia. However, growth rates have slowed considerably since the completion of the bridge. In the 10 years after the bridge was completed (1995 to 2005), Gloucester County's population growth rate increased by only 10 percent. *In fact the county's growth rate from 1995 to 2013 was just 12.6 percent.*

The declining population growth rates in Gloucester County could be partially attributed to slowing growth in the metro area. Growth in both the Commonwealth of Virginia (13.6 percent) and the United States (11.6 percent) was faster than that of Gloucester County in the decade after the bridge was completed. However, the Virginia Beach-Norfolk-Newport News metro area population increased by just 6.8 percent. Gloucester County still grew faster than the MSA over this period, but declining population growth in the metro area likely affected local growth rates as well. Specifically, the spread effects that are attributed to metropolitan growth patterns were likely reduced in suburban Gloucester County.[16]

Figure 1.8 – Gloucester County, VA Population Trends 1970 to 2013



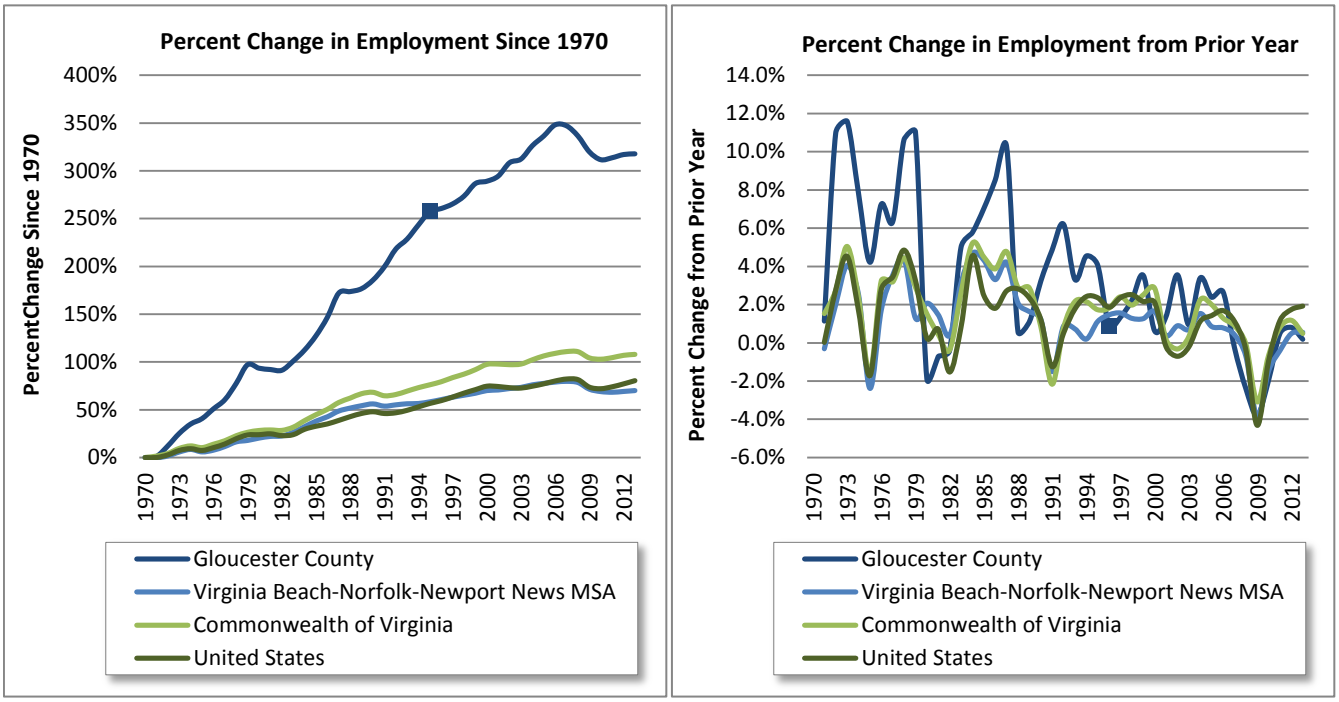
■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

When compared to population trends, employment growth in Gloucester County shows a somewhat similar pattern. In the decade prior to the completion of the Coleman Bridge, wage and salary employment in Gloucester County increased by 57 percent (Figure 1.9). In comparison, employment grew by 15 percent in the metro area, 22 percent in Virginia and 18 percent in the United States. In the decade since construction was completed, employment in Gloucester County increased by just 25 percent. However, employment in the Virginia Beach-Norfolk-Newport News metro area grew by only 13 percent. As with population trends, Gloucester County's employment growth rate declined after the construction of the bridge, but remained greater than that of the metro area.

[16] See the discussion of growth pole theory earlier in this section.

Figure 1.9 – Gloucester County, VA Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

In summary, population and employment trends in Gloucester County, Virginia show an example where growth rates slowed after the construction of an expanded bridge. However, both employment and population increases in Gloucester County continued to outpace rates in the Virginia Beach-Norfolk-Newport News metro area. It may be that the Coleman Bridge was partially responsible for this difference. Other factors may be responsible as well. *Nonetheless, slowing growth patterns in both Gloucester County and the metro area suggest that these two areas are inherently linked and improved transportation infrastructure may not be sufficient for a county to overcome larger regional trends.*

Arthur Ravenel Jr. Bridge – Charleston, South Carolina

The Arthur Ravenel Jr. Bridge, also known as the Cooper River Bridge, spans the Cooper River between Charleston, South Carolina and the town of Mount Pleasant. Planning for the Cooper River Bridge started in 1998 when a study determined that two existing bridges, the Grace and Pearman bridges, were deteriorating and needed to be replaced. Both bridges also were considered obsolete. The structures were too narrow; had weight restrictions that prevented traffic flow; and were too low to accommodate large shipping vessels.

The Arthur Ravenel Jr. Bridge is North America's longest cable-stayed bridge and consists of an eight-lane highway with bicycle and pedestrian paths. With a total cost of $623 million, construction of the bridge commenced in 2001 and was opened to traffic in July 2005 (Skanska, 2008). Since its completion, traffic accidents and fatalities decreased substantially. Traffic congestion has eased considerably and commute times have decreased by five to ten minutes (depending on the time of day).

Environmental considerations were a top priority when designing the bridge. Similar to the St. Croix River Crossing, the Arthur Ravenel Jr. Bridge crosses a historical and environmentally vulnerable waterway. Specifically, 75 percent of the bridge span was constructed either directly over or adjacent to sensitive wetland environments. After construction was complete, wetlands were restored to their original conditions and 80 percent of the waste material from the old bridges was used to create artificial reefs for fish habitats. Bridge lighting also was designed to minimize light pollution disturbances during nesting seasons for loggerhead sea turtles and migratory birds (Skanska, 2008).

The communities of Mount Pleasant and Charleston also were concerned about the aesthetic and economic impacts of the bridge. A mitigation plan was developed with local communities who would be impacted by the bridge construction. The plan outlined provisions for parks and green space; affordable housing; local employment and educational training; as well as other economic opportunities. For example, the bridge contract required that on-the-job training be offered in the building trades to local low income residents. As a result, 62 unemployed or underemployed residents of Charleston's upper peninsula earned journeyman's status in at least one job area (Skanska, 2008).

As with other comparable areas, there are several similarities and differences between the Arthur Ravenel Jr. Bridge and the St. Croix River Crossing. Both bridges replaced existing structures, adding additional lanes and rerouting traffic flows in order to reduce congestion on city streets and improve safety. However, the Cooper River Bridge replaces two existing bridges and re-routes traffic in order to align and merge with the interstate highway system. Both bridges also are on historic waterways that require a significant amount of environmental mitigation. The Cooper River Bridge won several awards for its environmental mitigation efforts. Bridge projects that also cross historical or vulnerable waterways, such as the St. Croix River Crossing, might consider the Cooper River Bridge project as an example.

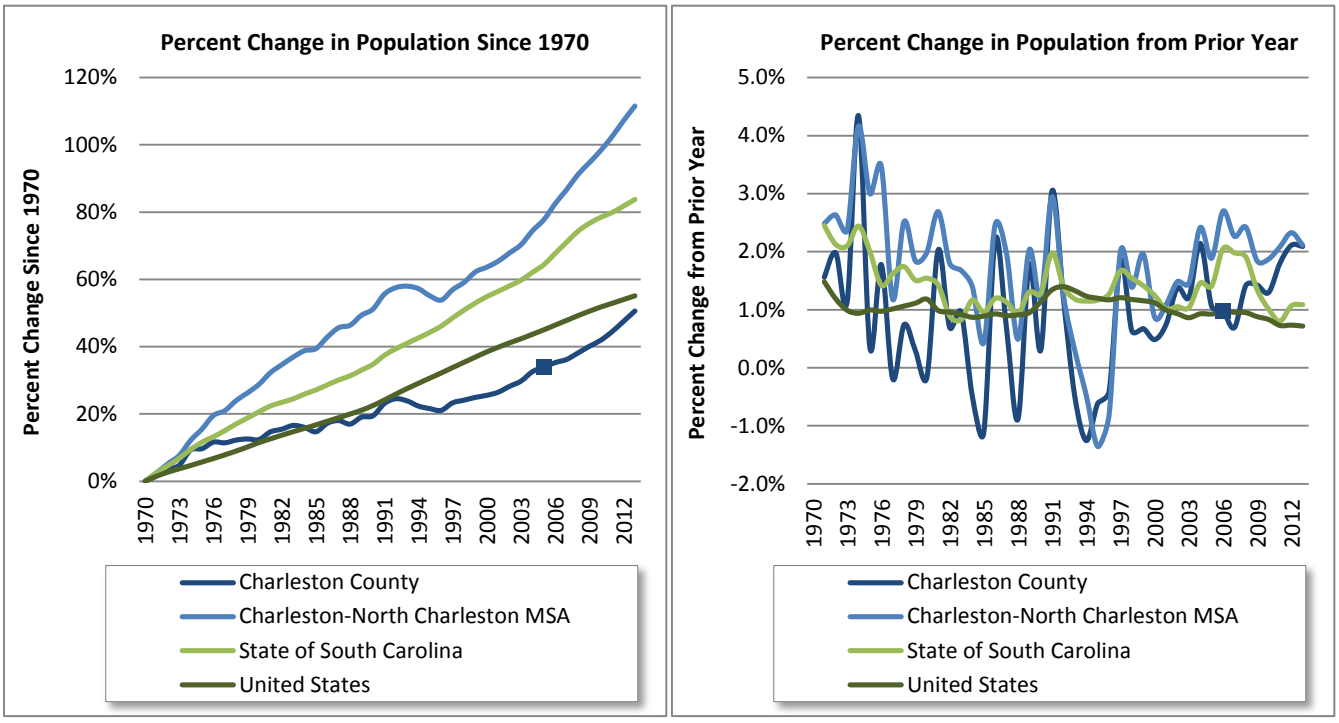
While both river crossings are located in metro areas, the Charleston MSA has a population of just 712,220 while 3.3 million residents live in the Minneapolis-St. Paul-Bloomington metro area. Furthermore, the Arthur Ravenel Jr. Bridge is located in the interior of its metro area whereas the St. Croix River Crossing is on the fringe of the Minneapolis-St. Paul-Bloomington MSA. Charleston County also has greater racial and income diversity than St. Croix County. In particular, the bridge is located in an area with a concentration of lower-income households that is undergoing gentrification.

Unfortunately, analyzing population and employment growth trends before and after the completion of the Arthur Ravenel Jr. Bridge is constrained somewhat by its completion date. The bridge opened in 2005, just several years prior to the start of the Great Recession. Furthermore, the period prior to the construction of the bridge was marked by a period of economic recovery stemming from the 2001 recessionary period. Consequently, it may be difficult to draw many conclusions from the data.

Readers will also notice that the population in Charleston County and the greater Charleston metro area dipped in the early 1990s (Figure 1.10). Between 1992 and 1996, Charleston County lost 8,500 residents while the total metro area population declined by over 12,000 people. This population decline reflects the closure of the Charleston Naval Base, which was announced in 1993 and completed in 1996. Consequently, the region experienced a large change to its economy that is reflected in both population and employment figures.

Between 1997 and 2005, Charleston County's population increased by 8.6 percent; a rate somewhat slower than that of the entire Charleston-North Charleston MSA (13.2 percent) and the state of South Carolina (10.6 percent). After the completion of the Arthur Ravenel Jr. Bridge, Charleston County's population grew by 12.4 percent between 2005 and 2013, a rate faster than that of the eight year period before construction concluded. Importantly, Charleston County's 12.4 percent population increase over this period outpaced growth rates in South Carolina (11.8 percent) and the United States (7.0 percent). *However, population in the Charleston-North Charleston metro area increased by a notable 19 percent over this same period and continued to grow faster than Charleston County. Consequently, it is difficult to separate any effects stemming from the bridge and overall conditions in the metro area.*

Figure 1.10 – Charleston County, SC Population Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

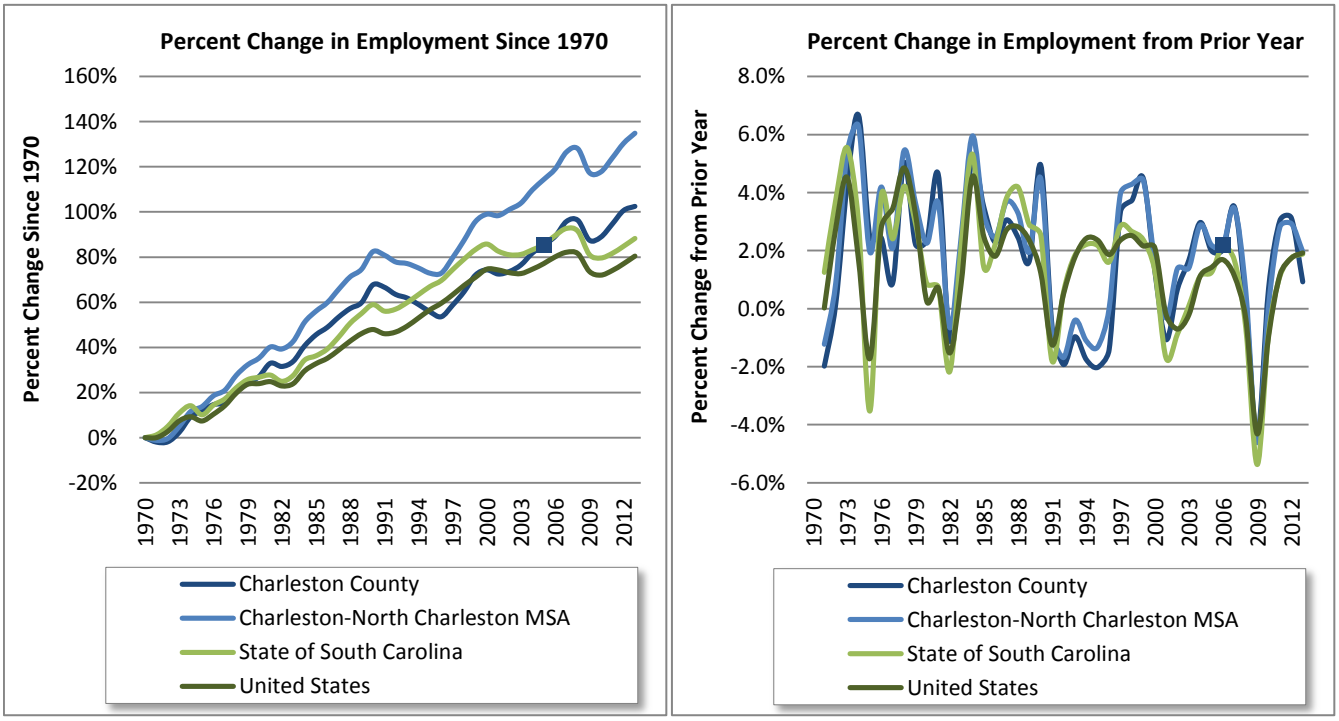
Source: Bureau of Economic Analysis and Author's Calculation

The impacts of the Charleston Naval Base closure are also apparent in employment trends. Between 1970 and 1990, wage and salary employment in Charleston County and the Charleston-North Charleston metro area grew faster than both South Carolina and the United States. However, the closure of the naval base caused Charleston County to lose over 12,000 jobs between 1992 and 1996. Charleston County and the metro area's economy largely recovered between 1997 and 2005, with wage and salary employment growing by 16.8 percent and 19.3 percent respectively. In comparison, employment in South Carolina increased by 6.3 percent over this period, while U.S. employment grew by 8.5 percent.

Since completion of the Arthur Ravenel Jr. Bridge in 2005, both Charleston County and the Charleston MSA have continued to grow. Between 2005 and 2013, wage and salary employment increased by 9.2 percent in Charleston County and 9.6 percent in the metro area. While these rates are slower than the period before construction, the declines are not surprising given the influence of the Great Recession. More

importantly, wage and salary employment increased by just 1.5 percent in South Carolina and 1.9 percent in the United States over the same period. The higher growth rates in Charleston County and the metro area, relative to the state and national averages, suggest the strength of the regional economy and may hide any specific impacts stemming from the Arthur Ravenel Jr. Bridge.

Figure 1.11 – Charleston County, SC Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

The Blennerhassett Island Bridge – Washington County, Ohio and Wood County, West Virginia

The Blennerhassett Island Bridge spans the Ohio River between Belpre, Ohio and Parkersburg, West Virginia. Parkersburg is the fourth largest city in West Virginia with a 2010 Decennial Census population of 31,492 people. The community is part of the Parkersburg-Marietta-Vienna Metropolitan Statistical Area which had a 2010 population of 154,451 residents. Construction on the Blennerhassett Island Bridge was completed in 2008 at a cost of $135 million.

The bridge provided a four lane upgrade of U.S. Route 50 over the Ohio River. While Ohio and West Virginia split the development costs, the bridge project was the single largest construction project by the West Virginia Division of Highways.[17] The project was partially designed to facilitate the flow of people and goods between West Virginia and Ohio and ultimately spur economic development. The bridge project also re-

[17] West Virginia Department of Transportation - www.transportation.wv.gov/highways/bridge_facts/Modern-Bridges/Pages/Blennerhassatt.aspx

routed traffic around Parkersburg, which could ease traffic congestion downtown, and potentially provided more direct routes for manufacturing shipments in the area. Moreover, the bridge was part of a larger project known as Corridor D, which had a goal of connecting the region to the larger East Coast economy.

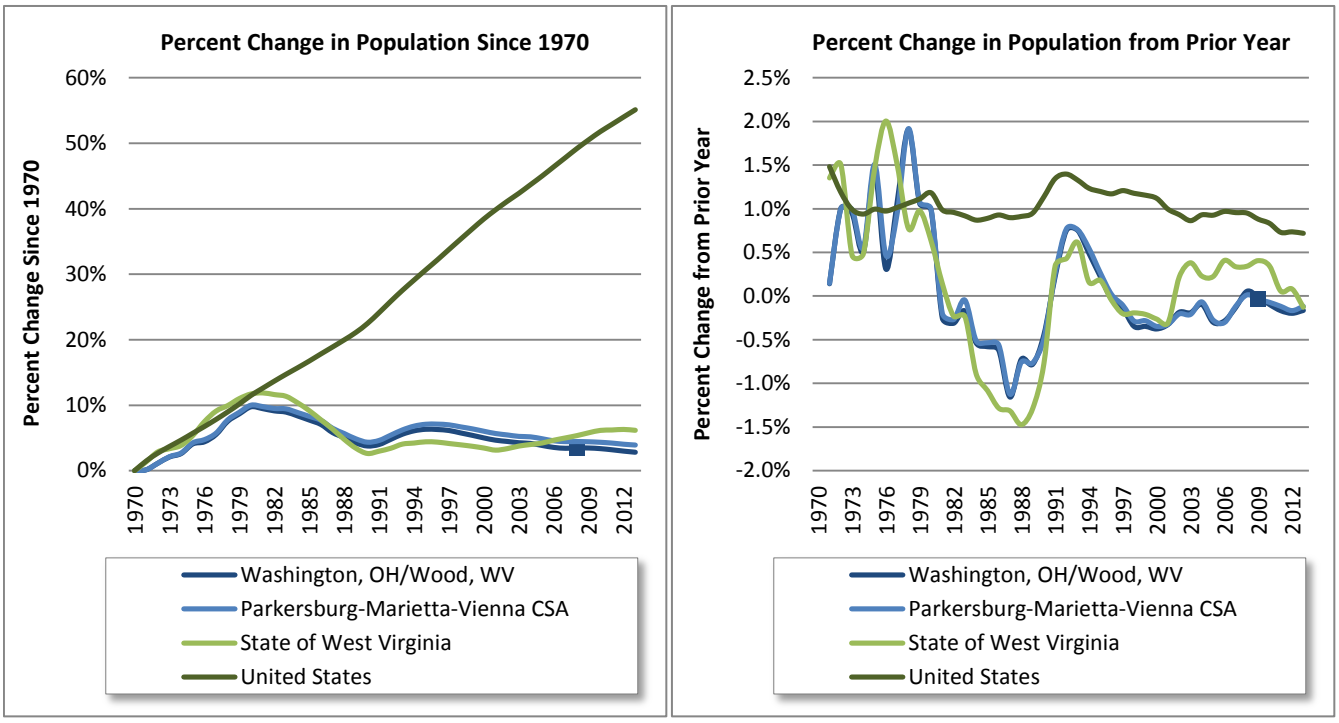
The Blennerhassett Island Bridge and the St. Croix River Crossing both update or replace existing structures, adding additional lanes with the aims of reducing city traffic congestion and improving safety. However, the regions that encompass these two structures are dramatically different. The Parkersburg-Marietta-Vienna Metro area has a population of 154,000 while the Minneapolis-St. Paul-Bloomington metro area has 3.3 million residents. Furthermore, St. Croix County has seen expansive growth over the past several decades whereas the population of the Parkersburg-Marietta-Vienna MSA has declined somewhat.

Both local and state officials believed that the bridge would bring new growth to the region. However, very little development has occurred since the completion of the project. Some officials have blamed the onset of the Great Recession, which commenced just as the bridge neared completion in 2008 (Dunlap, 2013). While an ethane cracking facility and several polyethylene production plants were proposed in late 2013, these plans are currently on hold and being re-evaluated due to changes in the ethane market (Kusic, 2015).

A lack of development associated with the Blennerhassett Bridge could be partially attributed to the recent recessionary period. However, the region has grown very little over the prior decades. The combined area of Washington County, Ohio and Wood County, West Virginia has steadily lost population since the mid-1990s (Figure 1.12). In fact, the region had 10,000 fewer residents in 2013 than in 1980. While employment levels in Washington County, OH and Wood County, WV increased throughout the 1980s and 1990s, the growth rate was well below the national average (Figure 1.13). Furthermore, the region has lost more than 5,000 jobs since the year 2000.

While the Blennerhassett Bridge may in fact have future economic impacts, its effects are likely limited by other regional economic conditions. Any additional market connections created by the bridge (and Corridor D) are likely to be overshadowed by other factors. That is, constructing an improved bridge/new corridor in an economically depressed area is unlikely to create economic growth on its own. As noted earlier, transportation infrastructure is necessary, but not sufficient to create growth (Chi, Voss and Deller, 2006). The Blennerhassett Bridge project likely serves as an example of this observation.

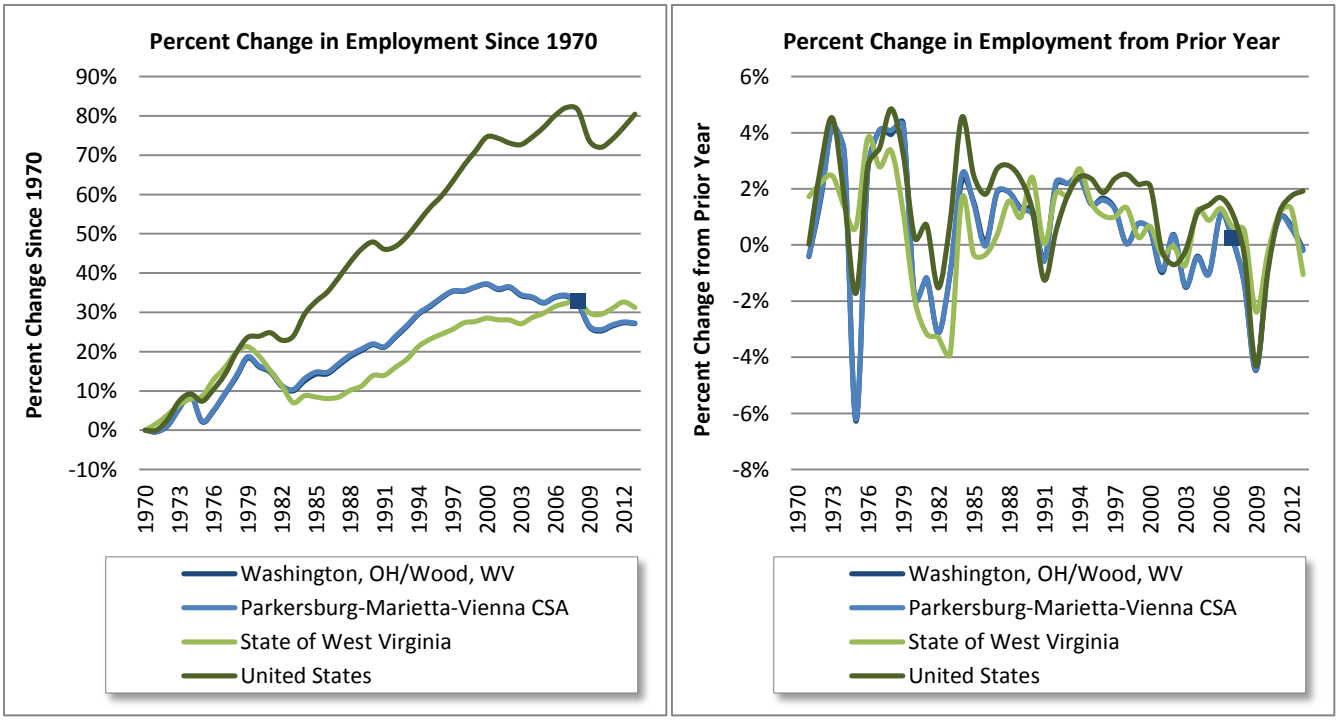
Figure 1.12 – Wood County, WV/Washington County, OH Population Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

Figure 1.13 – Wood County, WV/Washington County, OH Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

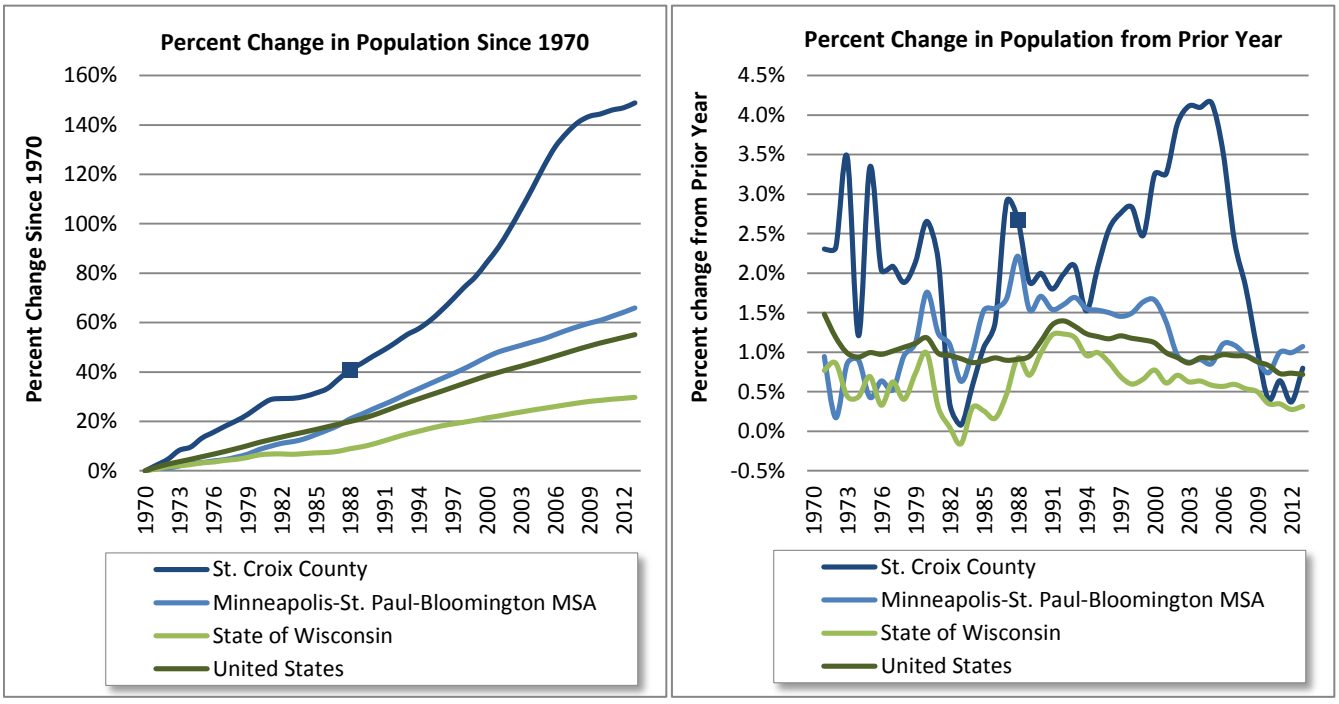
The Interstate 94 Bridge – St. Croix County, Wisconsin

Importantly, St. Croix County also experienced a prior bridge improvement project with an upgrade to the Interstate 94 crossing at Hudson. The final ten miles of I-94 in Minnesota, extending from Woodbury, MN to the Wisconsin state line, were finished in 1985. Bridge improvements to the Hudson crossing were also completed circa 1989 and again in 1995.[18] Considering St. Croix County growth trends before and after this local infrastructure improvement provides an additional historical perspective for the county.

In the decade before the initial bridge improvements at Hudson, St. Croix County's population increased by 17.1 percent. In comparison, population increased by 14.7 percent in the Minneapolis-St. Paul-Bloomington metro area and by 10 percent in the United States. However, the state of Wisconsin's population grew by just 4.1 percent over this period. *In fact, the 1980s were among the slowest growth years in the history of the state.*

In the decade after the bridge improvements (and completion of the interstate highway), St. Croix County's growth rate increased to 23.7 percent. Population growth also increased in the metro area by 16.8 percent. The additional growth rate in St. Croix County relative to that of the metro area could suggest that the bridge improvements had a positive influence on St. Croix County. However, other factors must be considered as well. For instance, this period also marked a time of more rapid growth in the state of Wisconsin (9.9 percent) and the United States (12.8 percent). These faster state and national growth rates may reflect larger demographic shifts that could have driven increased rates in St. Croix County as well.

Figure 1.14 – St. Croix County Population Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

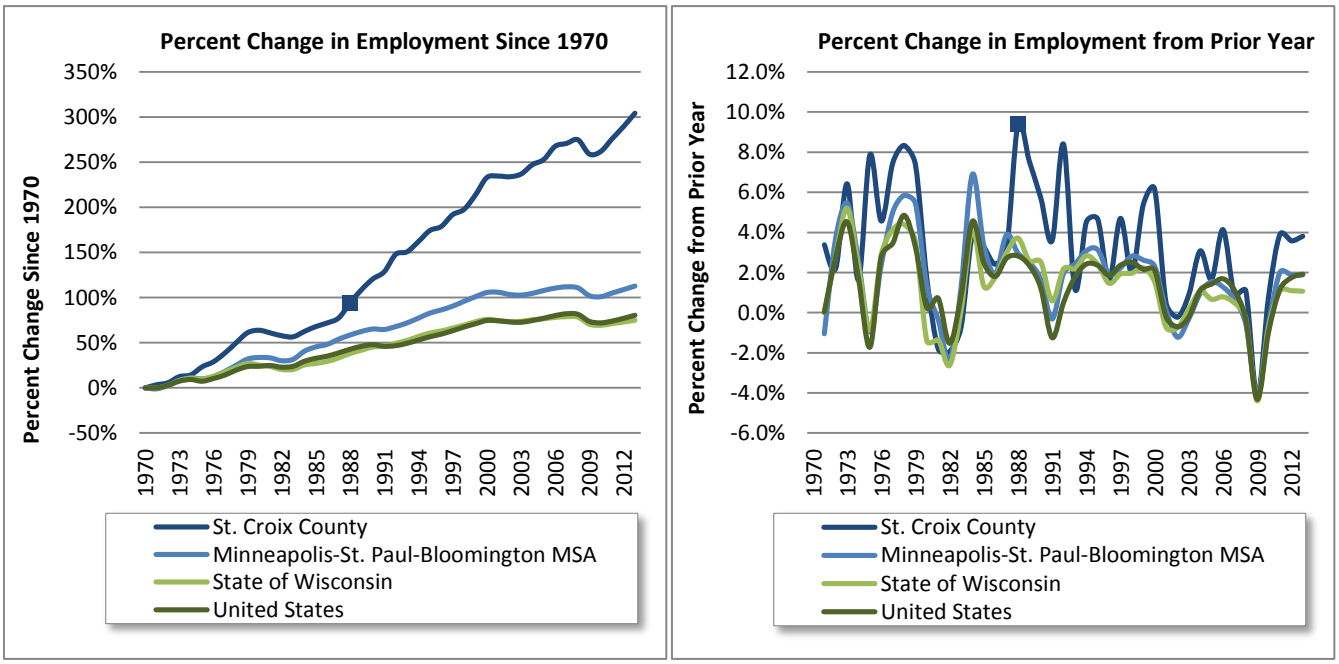
Source: Bureau of Economic Analysis and Author's Calculation

[18] A description of these improvements is available at: www.johnweeks.com/bridges/pages/sc02.html

St. Croix County employment trends before and after the I-94 bridge improvements also show a potential influence of the expanded crossing. Using 1978 to 1988 as a baseline, wage and salary employment in St. Croix County increased by 29.4 percent. Employment in the Minneapolis-St. Paul-Bloomington metro area increased by a similar rate of 26.7 percent. Both of these rates outpaced employment growth rates in Wisconsin (12.6 percent) and the United States (19.2 percent).

The decade after the bridge improvements occurred was a time of significant economic expansion throughout Wisconsin. Employment in the state of Wisconsin grew by 22 percent over this decade, outperforming the national rate of 17.3 percent. This impressive growth in the broader Wisconsin economy likely augmented employment increases in St. Croix County. *However*, *St. Croix County's employment growth rate increased by 53.3 percent during the same period*. In contrast, the metro area's rate actually slowed slightly to 23.5 percent. The differing growth rates in St. Croix County and the metro area could reflect the re-distributive effect of the transportation improvements at Hudson. That is, the interstate highway completion and bridge construction allowed for metro growth to be further allocated to St. Croix County.

Figure 1.15 - St. Croix County Wage and Salary Employment Trends 1970 to 2013



■ - Denotes Year of Bridge Completion

Source: Bureau of Economic Analysis and Author's Calculation

While improvements to the Interstate 94 Crossing at Hudson provide important perspectives, it is important not to assume that similar paths will occur with the completion of the St. Croix River Crossing. Improvements to the I-94 bridge at Hudson are part of a large interstate highway crossing that is the county's primary point of access into the Minneapolis-St. Paul-Bloomington metro area. In comparison, the St. Croix River Crossing is a secondary bridge with lesser accessibility to the metro area. Furthermore, both population and economic growth patterns have changed dramatically since the late 1980s and early 1990s. Structural economic and demographic shifts will likely influence future growth in the county. The implications of these changes will be considered in Section 2 and Section 3.

1.4 - Conclusions

The preceding discussion of transportation infrastructure improvements emphasizes the challenge in isolating the impacts of any project on regional growth. Clearly, transportation infrastructure is but one of many factors that influence population and economic change. Both academic research and comparable projects show that the influence of these factors may also vary over geographic space, time, and within individual communities. Nonetheless, the preceding discussion suggests several broad, but important findings for Corridor Communities and greater St. Croix County:

- Population and economic changes are influenced by a wide variety of regional, national, and international factors. Consequently, the impacts of the River Crossing cannot be assessed without considering the potential broader influences of other regional and national conditions;

- Highway improvements, including bridge expansions, are likely best viewed as a facilitator of suburban growth. Highway improvements enable flows of populations that are partially dependent on larger trends in a metropolitan area. Similarly, highway improvements help to facilitate change or re-allocate economic activity in metro areas rather than create net new growth. While St. Croix County communities may be positioned to benefit from these re-allocation mechanisms, growth likely will be tied to the health of the broader metro-area economy;

- Population growth is spatially dependent. Population growth or decline in one community often is tied to growth or decline in surrounding communities. Consequently, Corridor Communities may want to collaborate in some manner to understand how any future planning or fiscal decisions may impact each other or the broader area;

- Growth in St. Croix County may follow several paths. Communities should likely over-plan for a number of potential population and economic outcomes that could arise from the River Crossing. In fact, the analysis of comparable projects shows examples where growth rates accelerated, remained similar, or declined after the construction of a bridge. Developing a range of future growth scenarios will allow communities to be more fully prepared for change. A range of future growth scenarios will also allow residents to envision and shape how their respective communities could look in the coming decades.

In summary, transportation infrastructure improvements can be seen as a catalyst for change, but are neither necessary nor sufficient to *guarantee* economic and population growth rates in surrounding areas. This statement should not suggest that transportation infrastructure, such as the St. Croix River Crossing, is unnecessary for population growth or economic development. Instead, the improvement of any given project cannot assure some assumed future rate of growth.

Section 2 – Forecasting Population Change in St. Croix County and Corridor Communities

The overview of transportation infrastructure and population growth in Section 1 suggests that the River Crossing may serve to reinforce rates of suburbanization in St. Croix County. That is, the new bridge will help facilitate future growth in the county, but the River Crossing is just one of many factors that will influence population change in the coming decades. Broader population trends in the region likely will affect local growth rates. St. Croix County and Corridor Communities also face uncertainly associated with a slow economic recovery and an unknown future housing market. While it is impossible to precisely predict how population in the region will grow, it is important to understand how past trends and anticipated future changes (including the River Crossing) could influence the future population of St. Croix County and Corridor Communities.

Importantly, this analysis does not attempt to forecast future population change for individual municipalities. Population projection techniques often do not perform well for small geographic areas, such as an individual community or town. As noted by Chi and Voss (2011), most forecasting techniques have been developed for larger areas, such as counties. Furthermore, non-demographic factors often ignored in other forecasting methods, such as land use restrictions, may have more importance in smaller areas. Most forecasting methodologies also ignore spatial influences such as population spillovers and growth rates in neighboring areas. While researchers have attempted to account for these deficiencies in small area forecasting, the results have been mixed (Chi and Voss, 2011). In recognizing these limitations, St. Croix County is used as the geographic foundation for generating population projections. These county-based projections are then used to produce population forecasts for the combined Corridor Community study area.

2.1 - Population Change in St. Croix County and Corridor Communities – Historical Perspectives

As noted in the Introduction, St. Croix County has been one of the fastest growing counties in the State of Wisconsin over the past four decades. Between 1970 and 2013, the county added over 50,000 residents; more than doubling its population (Table 2.1). The recent period between the 2000 Census and the 2010 Census accounted for the county's greatest population growth rate (33.6 percent). However, significant growth also occurred between 1990 and 2000 (25.7 percent).

The eight municipalities that comprise the Corridor Community study area also experienced steady population growth over the past 40 years. The combined Corridor Communities increased from 11,417 residents in 1970 to just over 30,000 residents in 2013. While population growth rates varied within individual municipalities, the combined study area communities often grew at an almost identical rate as the balance of St. Croix County. These similar rates occurred between 1990 and 2000 and again between 2000 and 2010. Importantly, nearly equal growth rates transpired despite the travel challenges posed by the Stillwater Lift Bridge.

Table 2.1 – Population Change in Corridor Communities and St. Croix County 1970 to 2013

Municipality	1970 Census	1980 Census	1990 Census	2000 Census	2010 Census	2013 Estimate
Town of Richmond	1,091	1,338	1,400	1,556	3,272	3,339
Town of St. Joseph	1,357	2,180	2,657	3,436	3,842	3,851
Town of Somerset	1,185	1,833	1,968	2,644	4,036	4,077
Town of Star Prairie	1,390	1,900	2,098	2,944	3,504	3,518
Village of North Hudson	1,547	2,218	3,101	3,463	3,768	3,770
Village of Somerset	778	860	1,072	1,556	2,635	2,642
Village of Star Prairie	362	420	507	574	561	556
City of New Richmond	3,707	4,306	5,106	6,310	8,375	8,533
Combined Corridor Communities	11,417	15,055	17,909	22,483	29,993	30,286
St. Croix County	34,354	43,262	50,251	63,155	84,345	85,249

Sources: U.S. Census Bureau and Wisconsin Department of Administration Demographic Services Center

Population change can be further segmented into two components: 1) *natural increase;* and 2) *net migration*. Natural increase is the change in population due to births and deaths in an area. A positive natural increase occurs when a region experiences more births than deaths over a given time period. Conversely, a negative natural increase arises from more deaths occurring than births.

Net migration measures population change due to people moving into and away from an area. Residents moving into a region are in-migrants while individuals moving from an area are out-migrants. If in-migrants exceed out-migrants, then the region has a positive net migration of residents. In contrast, more out-migrants than in-migrants produce a negative net migration.

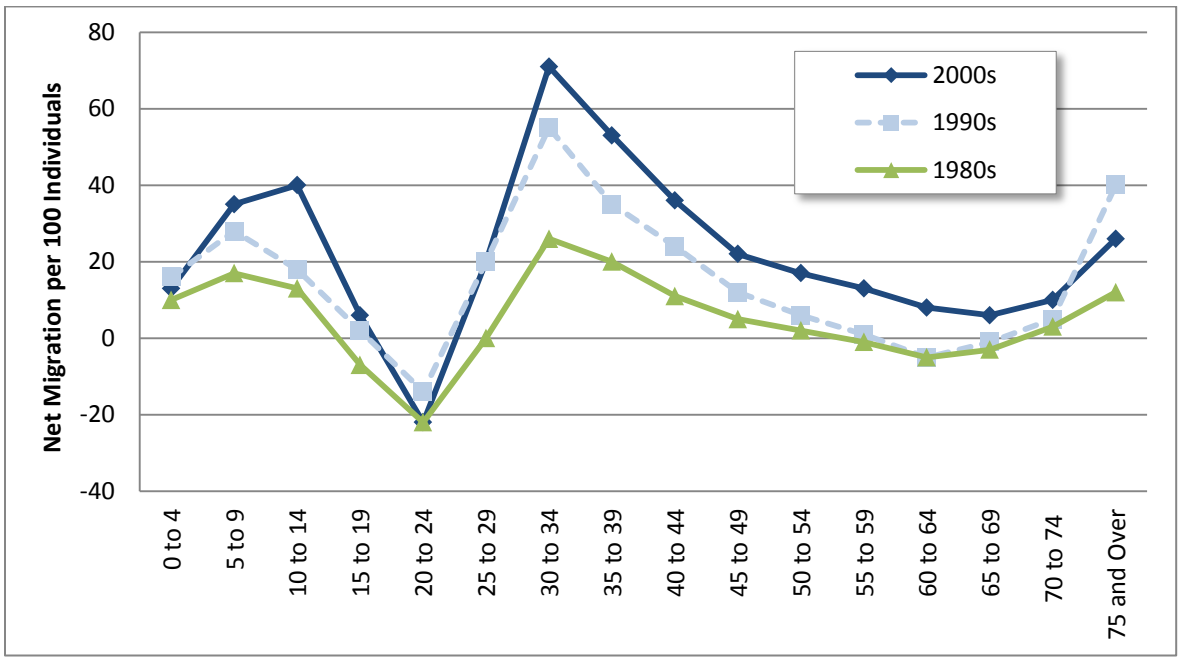
Over the past several decades, St. Croix County's population growth has been driven largely by positive net migration. As an example, consider the period between 2000 and 2010. Over this decade, St. Croix County added almost 21,200 residents. *Almost 70 percent of this growth can be attributed to positive net migration into St. Croix County.*[19] Not surprisingly, a large share of net migration is driven by residents moving to St. Croix County from counties in the Minneapolis-St. Paul-Bloomington MSA.[20] These migration patterns reinforce the current dependencies and connections between population growth in St. Croix County and the overall metro area.

Net migration rates are also available for specific age groups. As implied, a positive net migration rate indicates that more individuals in an age group are moving into an area than those moving away from it. A negative net migration rate denotes a greater number of out-migrants than in-migrants. St. Croix County's net migration rates by age group show somewhat similar trends over the past three decades (Figure 2.1). Depending on the specific decade, positive net migration rates are found among most age groups. The exception is individuals in the 20 to 24 age range. Net migration rates also tend to be the highest among individuals between the ages 30 to 34 and ages 35 to 39.

[19] Based on figures provided by the Wisconsin Department of Administration Demographic Services Center

[20] County-to-County migration data is available from the Internal Revenue Service.

Figure 2.1 - Net Migration Rates by Age Group for St. Croix County

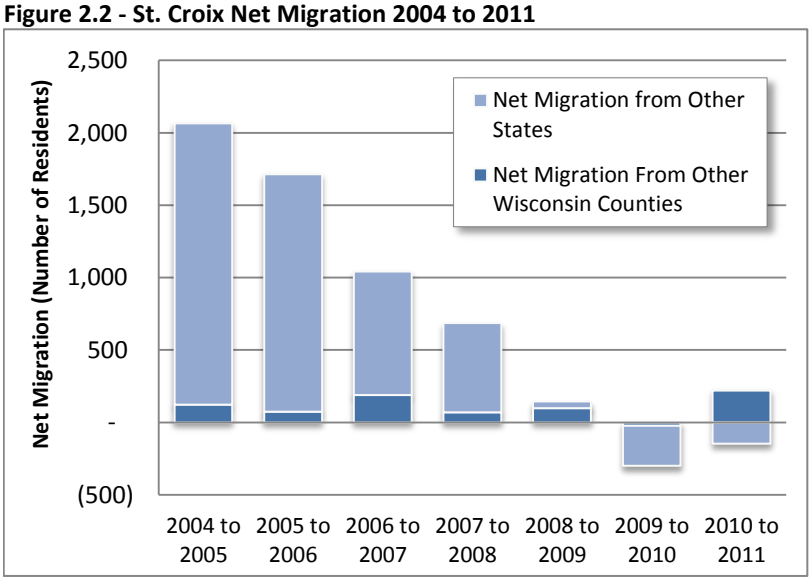


Source: Winkler, Richelle, Ken Johnson, Cheng Cheng, Jim Beaudoin, Paul Voss, and Katherine Curtis. Age-Specific Net Migration Estimates for US Counties, 1950-2010. Applied Population Laboratory, University of Wisconsin- Madison, 2013.

The high net migration rates among individuals ages 30 to 39 suggest that this age cohort is an important driver of population growth in St. Croix County. Not only do these individuals directly contribute to population growth in the county, this age group is also in a life-stage of prime family formation and home buying. Consequently, the net migration of this age group is likely responsible for a share of the county's positive net migration found among children as well (e.g. ages 0 to 14). The net migration rates among these age groups in St. Croix County largely reflect the suburbanization pattern found in other large metro areas (Johnson, Winkler and Rogers, 2013). The 30 to 39 age group's importance to future population growth is considered later in this discussion.

Despite the positive net migration rates into St. Croix County, net migration greatly declined in the period between 2005 and 2010 (Figure 2.2). In fact, a negative net migration rate occurred between 2009 and 2010. While net migration rebounded slightly between 2010 and 2011, the positive net migration was attributed to residents moving from other Wisconsin counties, rather than from out-migration from the Twin Cities.

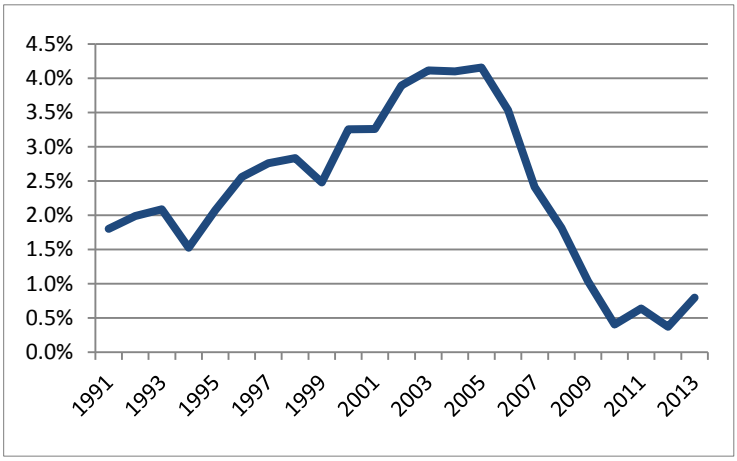
Figure 2.2 - St. Croix Net Migration 2004 to 2011



Source: Internal Revenue Service and Author's Calculations

Not surprisingly, lower net migration since 2005 also contributed to slower population growth rates in St. Croix County. The county experienced a period of rapid growth between the late 1990s and 2005. *In fact, the interval between 1995 and 2005 marked the county's longest period of substantial, sustained growth since 1970.* More recently, year-over-year growth rates rapidly declined to just a 0.4 percent increase between 2009 and 2010. Population growth rebounded slightly between 2012 and 2013, but rates still remain well below peak values.

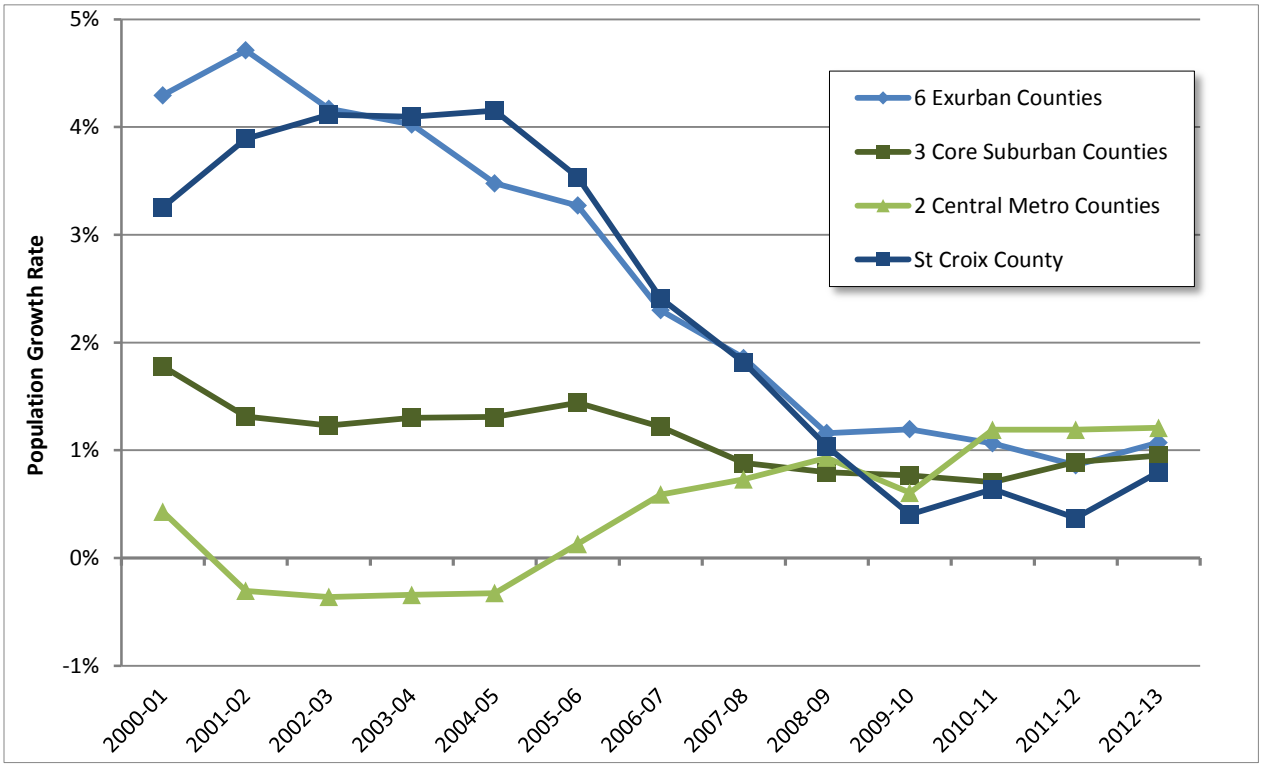
Figure 2.3 – St Croix County Percent Population Change from the Previous Year (1990 to 2013)



Source: U.S. Census Bureau and Gillaspy Demographics

The slowing population growth rates in St. Croix County were also found across the Minneapolis-St. Paul-Bloomington metro area. In particular, growth patterns within central, suburban and exurban portions of the metro area converged. Growth rates in exurban counties experienced notable declines since the early 2000s (Figure 2.4). Core suburban county population growth also slowed since 2000, albeit at a somewhat more gradual rate. In contrast, core counties (Hennepin and Ramsey) in the metro area are now growing at either faster or similar rates as exurban and suburban counties.

Figure 2.4 - Population Growth Rates for Counties in the Minneapolis-St. Paul-Bloomington MSA



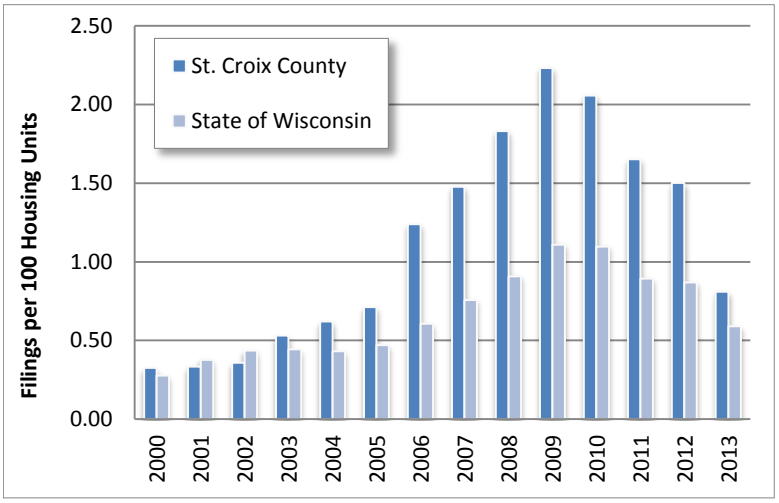
Source: U.S. Census Bureau and Gillaspy Demographics

The recessionary period officially extending from December 2007 to June 2009 undoubtedly contributed to recent population growth patterns in the metro area. As noted in Section 1, the Great Recession is an example of a period effect that can dampen population growth. Almost eight million jobs were lost in the United States between 2007 and 2010 (a decline of 5.5 percent). National unemployment rates increased from 4.6 percent to 9.6 percent over this same period. Similarly, wage and salary employment in the sixteen-county metro area declined by 5.3 percent (-94,000 jobs) between 2007 and 2010. In fact, employment in the metro area is just now reaching pre-recession levels.

A portion of the lower growth rates can be attributed to reduced geographic mobility arising from this economic uncertainty. Nationally, the percent of moves related to individuals wanting to own homes or find better homes was lower in 2013 than in 1999. The share of moves spurred by individuals seeking new jobs or job transfers also fell during this period (Ihrke, 2014). While similar statistics are unavailable for the metro area, the Great Recession likely had a large local impact on similar motivations for moving. *However, it is important to note that overall mobility rates have been gradually decreasing for an extended period, well before the recession's onset (Stoll, 2013). Importantly, these lower mobility rates have been particularly apparent among young adults (Alexander et al, 2014). Consequently, not all of the change in mobility is necessarily attributed to the economic downturn.*

The effects of the Great Recession were particularly apparent in home foreclosure filings across St. Croix County. Foreclosure filing rates in the county increased from 0.71 filings per 100 housing units in 2005 to 2.23 filings per 100 units in 2009 (Figure 2.5).[21] In most years between 2006 and 2012, St. Croix County had among the highest foreclosure rates for all Wisconsin counties. In fact, the high rates in 2008 and 2009 were double those of the overall State of Wisconsin rate and were widespread across the county (Map 2.1). Importantly, the county's foreclosure rates are less associated with the subprime loan issues found in some parts of the state and nation. Instead, local foreclosure rates were largely driven by other economic factors. Changes to the local housing market have also resulted in more than 1,500 unimproved lots now found in Corridor Communities.[22]

Figure 2.5 – Foreclosure Filing Rates 2000 to 2013 (Filings per 100 Housing Units)



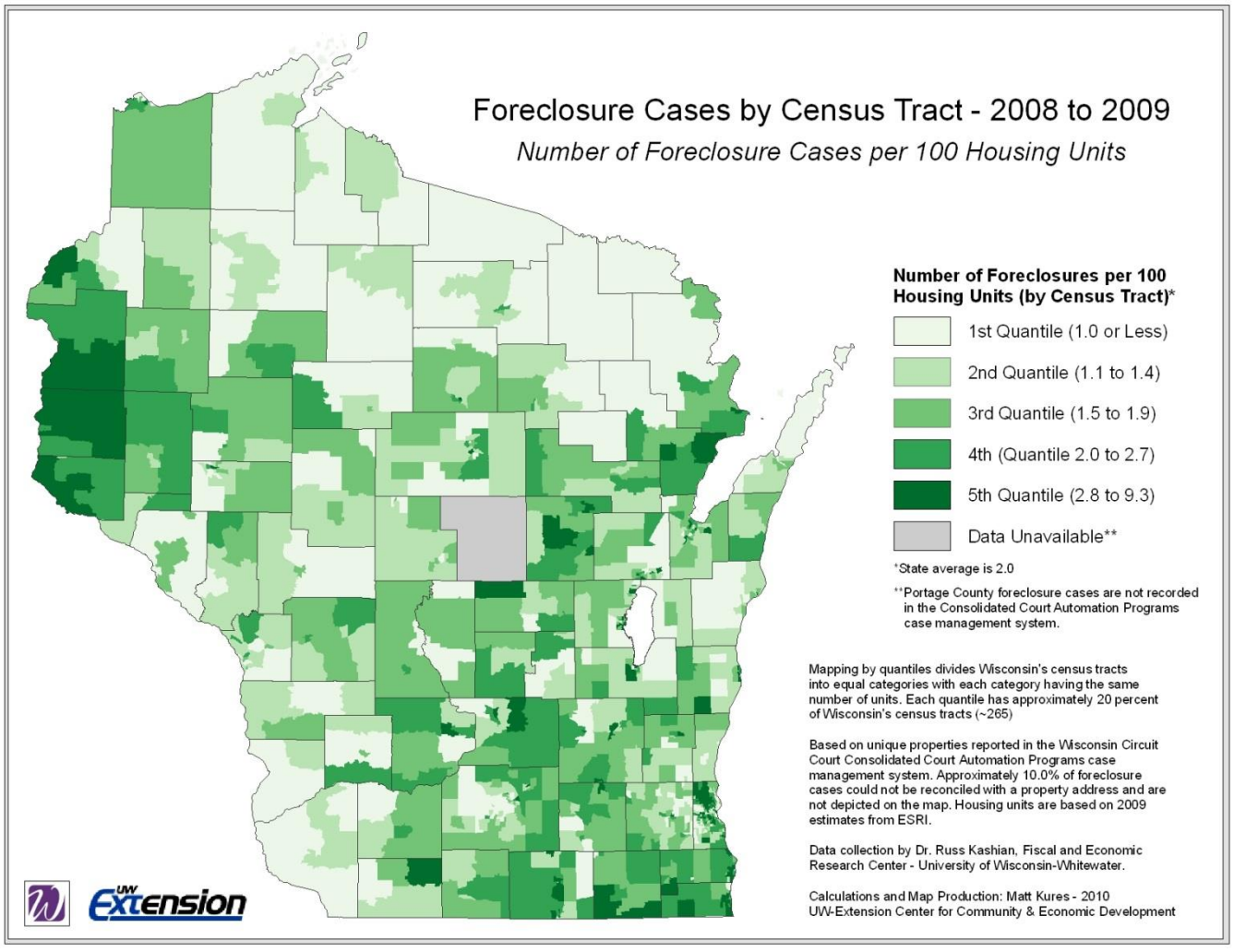
Source: UW-Whitewater Fiscal and Economic Research Center and UW-Extension Center for Community and Economic Development

[21] The definition of a foreclosure can vary. Accordingly, it is important to note that the foreclosure rates in Figure 2.5 and Map 2.1 defines a foreclosure as a *lis pendens,* or the formal filing of a lawsuit that starts the foreclosure process against a property owner. Not all of these foreclosure filings will proceed to an auction or sheriff sale. The foreclosure cases reported in this analysis also have been adjusted to remove numerous actions against the same property due to multiple mortgages or property tax delinquencies. Subsequently, the figures reported here will likely differ from other foreclosure estimates.

[22] Based on figures provided by St. Croix County Planning and Zoning, Land Information

A final period effect from the recent recession may also be found in local birth rates. The Minnesota State Demographic Center reports that birth rates in Minnesota peaked in 2007 and have yet to return to pre-recession levels. A similar trend in Wisconsin is noted by Wisconsin Department of Health Services. Economic uncertainty among potential parents may be a reason for these trends both regionally and in other states across the nation (Dayton, 2014; Pew Research Center 2014). However, it is unknown when and if these rates will increase. Specifically, Dayton (2014, pg. 5) notes that "it remains to be seen whether total fertility rates and thus the total number of babies will climb over 70,000 annually again as we move further away from the most recent recession. If Minnesota's overall population growth continues to outpace the growth in births, our state will continue to become older on balance as the size of older age cohorts will predominate over younger ones."

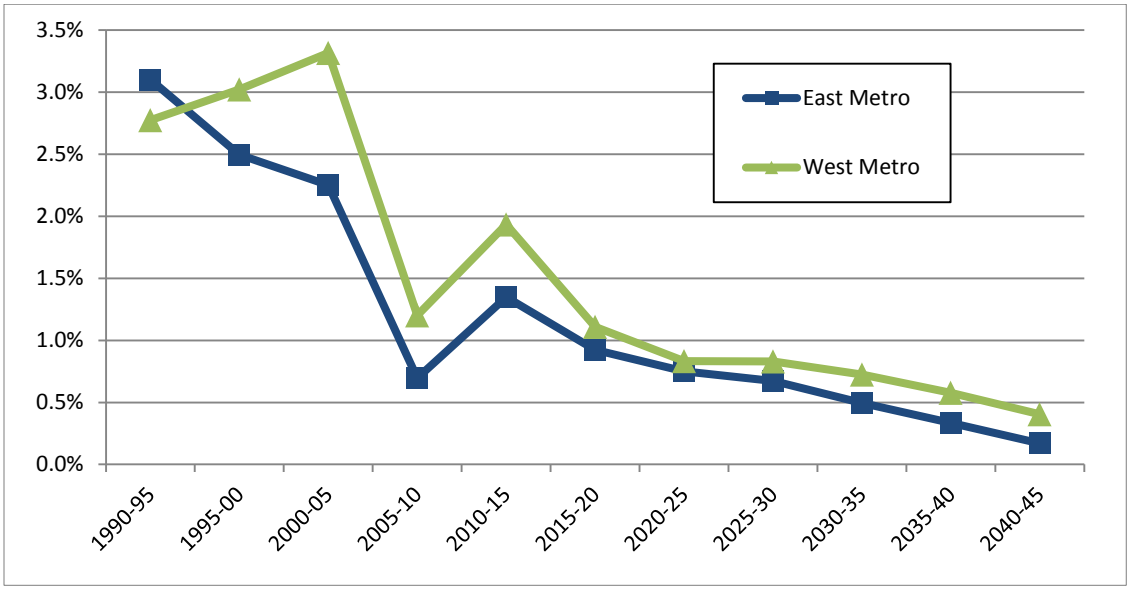
Map 2.1 – Foreclosure Cases by Census Tract – 2008 to 2009



2.2 - Forecasting Future Population in St. Croix County and Corridor Communities

Some portion of recent population trends are attributed to the Great Recession. Some of these trends are likely temporary and could change as the economy continues to improve. However, some of the population changes in the metro area started prior to the recession and may be partially attributed to other structural conditions. Indeed, the Minnesota State Demographic Center projects that growth rates in both the western and eastern portions of the Minneapolis-St. Paul-Bloomington metro area will continue to slow over the next 30 years (Figure 2.6). These projections do not mean that population levels will plateau or decline, but rather that the region will see a *slower growth rate*. The historical population and economic connections between St. Croix County and the broader metro area suggest that these projections should be considered when evaluating future growth scenarios in the county and in Corridor Communities.

Figure 2.6 – Projected Annual Average Population Growth of the Twin Cities Metro Area (Excluding Hennepin and Ramsey Counties)



Source: Minnesota State Demographic Center and Gillaspy Demographics

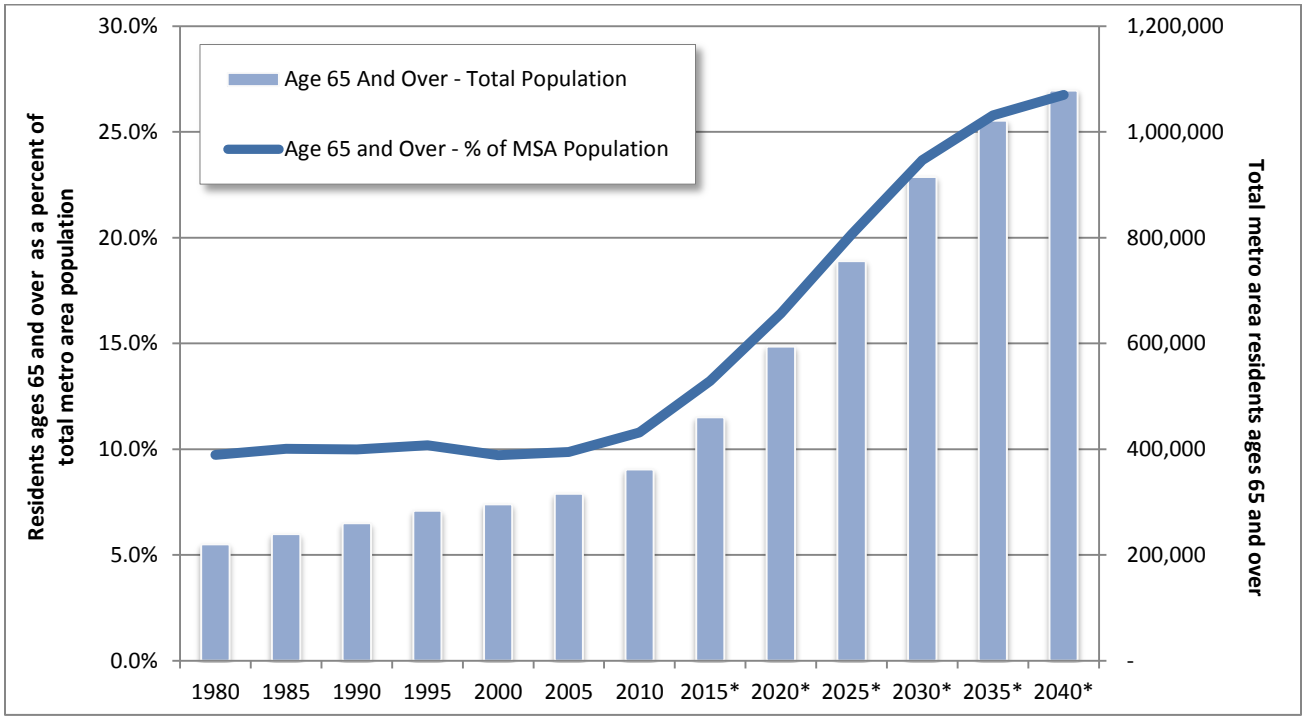
Age Structure

The age structure of St. Croix County and the metro region is projected to change dramatically over the next several decades. Two age groups are of particular interest to this study: 1) the Baby Boomers, or individuals born between 1946 and 1964; and 2) the Millennials, who are loosely defined as the population born after 1981.[23] The size, mobility and preferences of these age cohorts have the potential to greatly influence future population change in the region. These individuals will also impact the region's housing market over the coming decades.

[23] The exact year of birth for Millennials varies somewhat. Moreover, a definitive end date has not yet been set.

Baby Boomers, currently between the ages of 50 and 68, are approaching typical retirement ages in large numbers. As Boomers continue to age, the metro area's population age 65 and over is projected to swell from 362,000 individuals in 2010 to over 1 million residents by 2035 (an increase of 182 percent). The metro area's total share of residents age 65 and over is also expected to increase from approximately 11 percent in 2010 to over 25 percent by 2035 (Figure 2.7)

Figure 2.7 – Trends in the Metro Area Population Ages 65 and Over



*Denotes population projection. Sources: U.S. Census Bureau, Minnesota State Demographic Center, Wisconsin Department of Administration Demographic Services Center and Author's Calculations. Note that the Minnesota State Demographic Center and the Wisconsin Department of Administration may use different methodologies in developing their projections.

The growing number and share of residents age 65 and over likely will alter many aspects of the regional economy including labor force availability; revenue collections and outlays; health care provision; and transportation services. The housing market likely will face many changes as well. *In particular, mobility rates will be reduced as older individuals tend to move less frequently.* Lower mobility rates likely will continue as a number of studies suggest that people have a preference for "aging in place" (Baker et al, 2014). The Center for Disease Control and Prevention (CDC) defines aging in place as "The ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level." Consequently, Boomers may want to remain in homes and communities as long as possible.

An aging population also will require communities to offer goods and services needed by older residents. The Baby Boomer generation is large and diverse, and communities should be cautious about generalizing the needs and wants of this age cohort. Furthermore, the needs of someone who is age 65 may be quite different from those of someone age 85. Nonetheless, communities across the metro area may not be positioned to accommodate older residents. Specifically, Baker et al (2014) note that:

- A large share of the nation's housing inventory lacks basic accessibility features. These features are needed by older adults with disabilities to live safely and comfortably;
- Transportation and pedestrian infrastructure is often ill-suited to those without automobile access;
- Housing and health care system disconnects may place many older adults with disabilities or long-term care needs at risk of premature institutionalization.

The broad deficiencies of the nation's housing stock should not imply that St. Croix County is ill-prepared or cannot meet the needs of an aging population. Nonetheless, both the county and Corridor Communities should understand the desires of older residents, both now and over the next 20 years. The aging of the Boomers could actually create an opportunity for communities. Specifically, those areas that can develop the goods and services needed by an aging population could attract new residents seeking a retirement destination. A growing number of resources are available to those communities wanting to better understand the needs of an aging population (Figure 2.8).

Figure 2.8 - Resources for Understanding the Community and Housing Needs of Older Adults

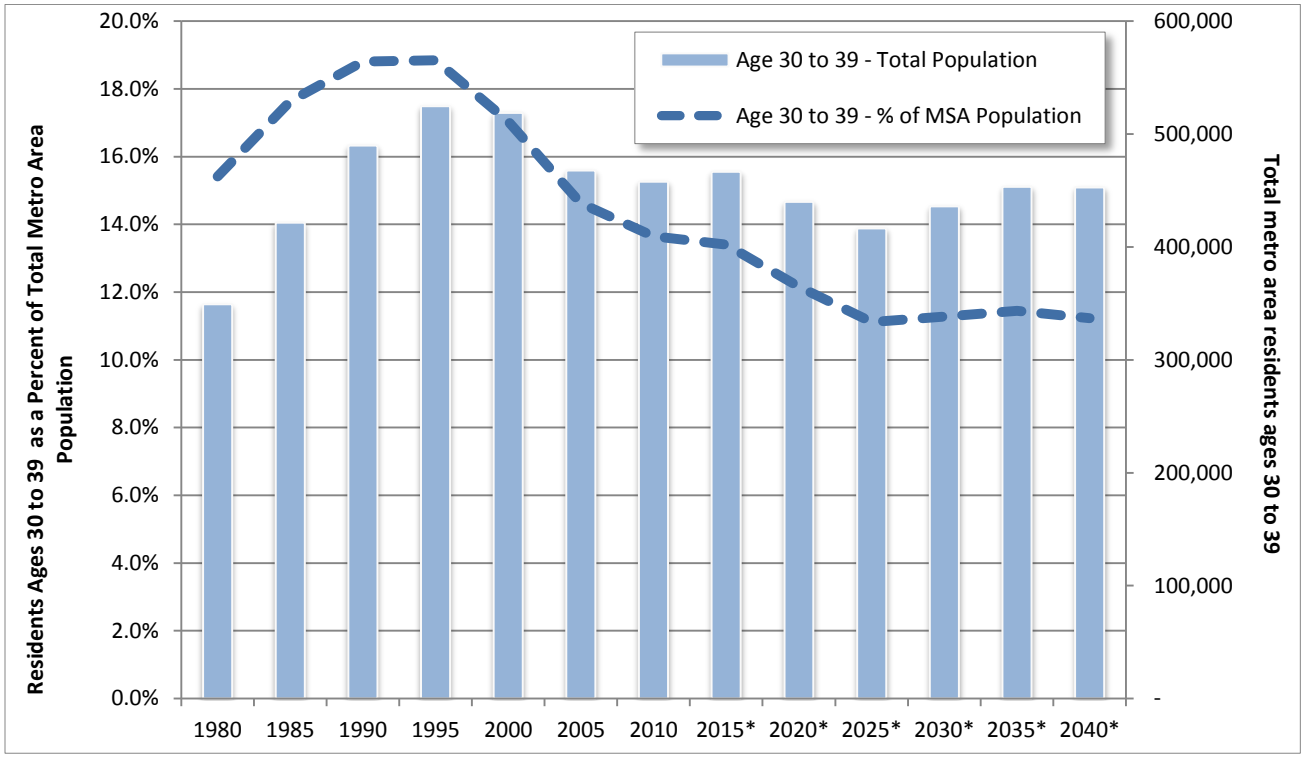
- University of Wisconsin-Extension Creating Aging Friendly Communities – Community Level Planning for the Age Wave: fyi.uwex.edu/agingfriendlycommunities/
- CDC Healthy Aging Research Network & Creating Aging-Friendly Communities: www.agingfriendly.org
- AARP Public Policy Institute Livable Community Resources: www.aarp.org/research/ppi/liv-com/
- The Joint Center for Housing Studies of Harvard University - *Housing America's Older Adults—Meeting the Needs of An Aging Population*: www.jchs.harvard.edu

Although Baby Boomers are approaching retirement age over the next 20 years, they were not always of this age. As previously mentioned, the 30 to 39 age group has been responsible for high net in-migration rates to St. Croix County. In the past, Boomers drove these migration rates. Starting in 1980, a wave of Boomers began to turn 30 years old. As Boomers aged through this age range, the number of metro area residents between the ages of 30 and 39 grew dramatically between 1980 and 2000 (Figure 2.9). By 2004, the last of the Boomers turned age 40.

As Boomers have progressively grown out of this age cohort, the number of metro area residents in the 30 to 39 age group is currently 50,000 less than the peak found circa 1995. The size of this age cohort is expected to drop by an *additional* 50,000 residents by the year 2025; a 40-year low. As a result of this trend, the size of this key demographic will be notably smaller (~100,000 less) over the coming decade than during 1995 to 2005 period when St. Croix experienced rapid growth rates. Accordingly, overall housing demand from these individuals likely will be reduced as well.[24] After 2025, the number of metro area residents in the 30 to 39 age group is projected to grow again. Nonetheless, the size of this age group is not projected to reach the high values found between 1990 and 2000.

[24] As suggested by Pitkin and Myers (1994), it can be problematic to forecast future home ownership rates for demographic cohorts based on current preferences. However, homeownership preferences and rates among future 30 to 39 year olds would need to increase dramatically for this age group to create the same demand as found in the 1990s. It is also likely that future 30 to 39 year olds will be more diverse than those of prior decades and could have different housing preferences.

Figure 2.9 – Trends in the Metro Area Population Ages 30 to 39



*Denotes population projection. Sources: U.S. Census Bureau, Minnesota State Demographic Center, Wisconsin Department of Administration Demographic Services Center and Author's Calculations. Note that the Minnesota State Demographic Center and the Wisconsin Department of Administration may use different methodologies in developing their projections.

Moving through the next two decades, the 30 to 39 age group will be largely comprised of the Millennial generation. In fact, the oldest of the Millennials are just now entering their early 30s. While this age group is forecast to grow somewhat after 2025, there are uncertainties about the future community and housing preferences of these individuals. Current demographic data from the American Community Survey and the Current Population Survey show a number of changes among Millennials compared to prior generations. For instance, Millennials are less likely to be married compared to individuals in prior generations who were of a similar age. The Pew Research Foundation reports that just 26 percent of Millennials between the ages of 18 and 32 are married. In comparison 36 percent of Generation X was married at the same age, while 48 percent of Baby Boomers were married when they were in the 18 to 32 age range.

Some of the decline in marriage likely reflects the Millennials changing views on marriage as a traditional institution (Pew Research Foundation, 2014). However, falling marriage rates are noted here as they may be partly tied to a difficult labor market and other economic challenges faced by Millennials relative to prior generations. That is, individuals may lack an appropriate economic foundation often viewed as a prerequisite for marriage (Pew Research Foundation, 2014). A weak economy is not only affecting marriage rates, but also broader household formation across the United States. Specifically, the share of adults in their 20s, who are also the heads of households, remains 2.6 percent below the rate found a decade earlier. Consequently, this lower formation rate also affects propensity of individuals to move and purchase housing. The ongoing economic recovery may encourage marriage and household formation

rates to increase, but Millennials currently are on a lower trajectory of housing independence than prior generations. In all, it is difficult to predict how these trends will change (Alexander et al, 2014).[25]

Some research has suggested that rising student debt levels also affects the homeownership prospects of Millennials. Between 2004 and 2012, national student debt levels increased from $364 billion in 2004 to $966 billion in 2012. Approximately one-third of current student debt is held by individuals under the age of 30. An additional third is owed by those between the ages of 30 and 39 (Brown et al, 2014). One possible consequence of this rising student debt is a sharp decline in mortgage originations among potential borrowers with large student loans. The decline in originations may partially reflect a tightening of mortgage eligibility attributed to maximum debt-to-income ratio requirements (Brown et al, 2014).

However, the exact impact of student loans on homeownership is debatable. For instance, Akers (2014) notes that high overall student debt levels are rare. Akers and Chingos (2014) also suggest that the monthly payment burden among student loan borrowers has remained steady, or even declined, over the past two decades. Specifically, the median student loan borrower consistently has spent three-to-four percent of his or her monthly income on loan repayments since 1992. Furthermore, the mean payment-to-income ratio has fallen from 15 percent to 7 percent (Akers and Chingos, 2014).

Finally, a number of studies and commentaries have suggested that Millennials may have housing tenure and locational preferences that differ from previous generations. In particular, various articles and reports suggest that Millennials may want to reside in a more urban setting, or within denser inner-ring suburbs. The rationales for choosing these locations are that they provide better access to public transportation, amenities and jobs; thereby reducing their dependence on automobiles. There also may be a growing preference for renting rather than homeownership (Nelson, 2009; Doherty and Leinberger, 2010; Florida, 2011; Gallagher, 2013; Nielsen, 2014). If true, these trends could have a particular impact on St. Croix County.

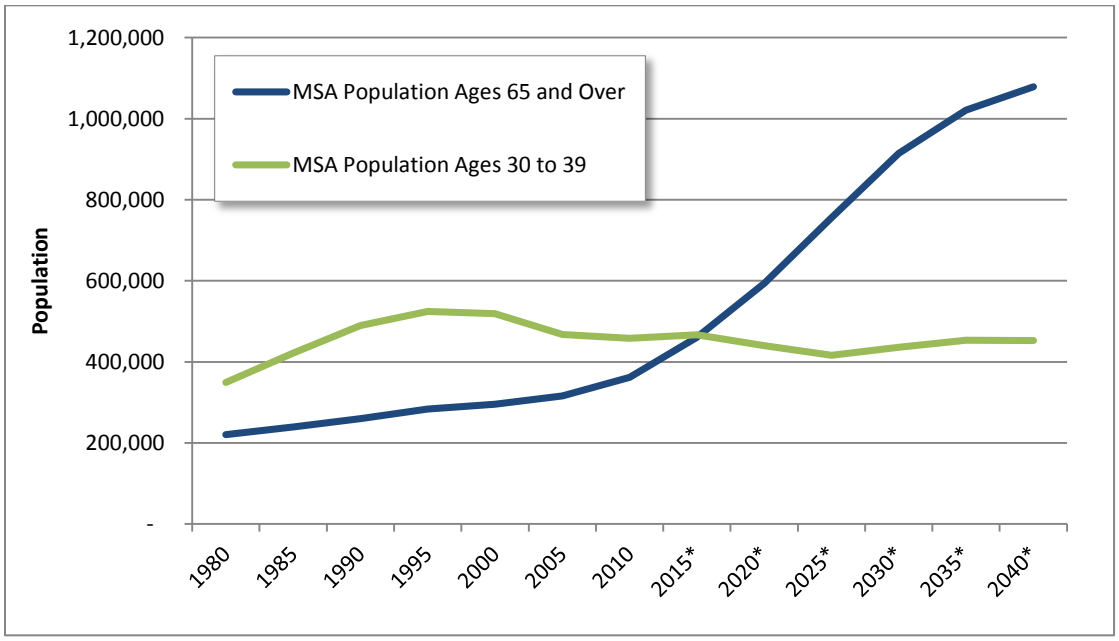
Despite these assertions, other research suggests that these statements may be inaccurate or are yet to be determined. A number of surveys suggest that Millennials' homeownership desires largely mirror those of previous generations (Lachman and Brett, 2011; Drew, 2014). Others are skeptical that large-scale returns to urban living will occur (Kotkin, 2013). In reality, the Millennial generation is large; its preferences are evolving and may change in the future. Accordingly, some caution should be placed on forecasting future homeownership rates based on current preferences (Pitkin and Myers, 1994). Nonetheless, the current and future preferences of Millennials should be at least be considered and monitored by St. Croix County and Corridor Communities.

In summary, Baby Boomers and Millennials have the potential to greatly shape communities and housing markets both in the metro area and within St. Croix County. The Boomers in particular could drive many of these changes. By 2015, the number of residents in the metro area age 65 and over will exceed those

[25] The State of the Nation's Housing report published annually by the Joint Center for Housing Studies at Harvard University provides in-depth perspectives on housing and demographic trends.

between the ages of 30 and 39 (Figure 2.10). Furthermore, the size difference between these two age groups is forecast to grow dramatically over the next 25 years. The implications for St. Croix County and Corridor Communities are many. *Importantly, these shifts in age structure likely will occur, regardless of the completion of the River Crossing.*

Figure 2.10 – Trends in the Metro Area Population Ages 65 and Over and Ages 30 to 39



*Denotes population projection. Sources: U.S. Census Bureau, Minnesota State Demographic Center, Wisconsin Department of Administration Demographic Services Center and Author's Calculations. Note that the Minnesota State Demographic Center and the Wisconsin Department of Administration may use different methodologies in developing their projections.

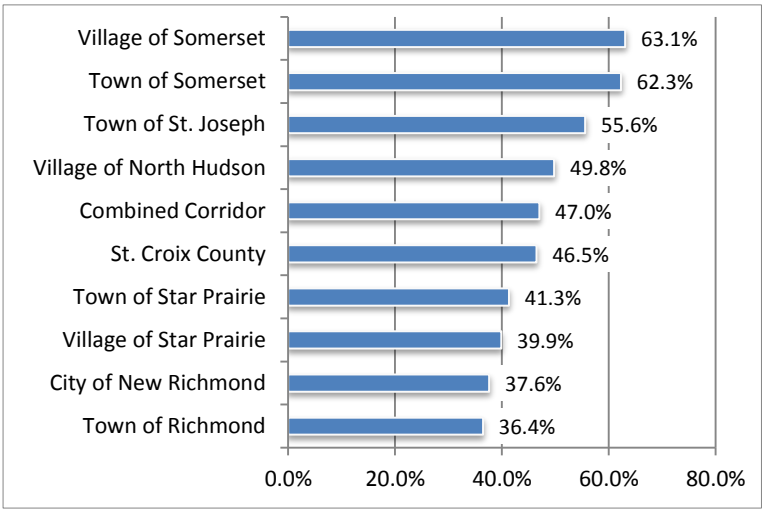
Job Accessibility

The Minnesota portion of the Minneapolis-St. Paul-Bloomington metro area has long been an important employment center for St. Croix County residents. In 2011, 46.5 percent of the jobs held by all of St. Croix County residents were found across the state line. Similarly, 47 percent of the jobs held by Corridor Community residents were located in the State of Minnesota (Figure 2.11).[26] Not surprisingly, the greatest shares of workers commuting to Minnesota are found in Corridor Communities closest to the River Crossing. Communities at a greater distance, such as the City of New Richmond and Town of Richmond, have the lowest share of workers commuting to Minnesota. The City of New Richmond also has a sizeable number of local employment opportunities within the community, which also may account for some of these differences.

[26] Place of work characteristics are derived from the Census Bureau's LEHD Origin-Destination Employment Statistics (LODES). The LODES figures report the origins and destinations for employees at a variety of geographic levels. The figures rely on synthetic data manipulation methods to protect confidential information about workplaces and the residential locations of workers. The reliance on synthetic data manipulation is important as no actual data for a given employer are used. Furthermore, the data is produced in a manner that ensures the published data, while not exact, become increasingly accurate as the number of businesses in an area increases. Consequently, figures for smaller or less populous areas may be subject to greater levels of estimation.

As mentioned in Section 1, individuals are assumed to select their residential locations and workplaces in a manner that maximizes the positive benefits to his or her household (Renkow and Hoover, 2000; Cho, Rodriguez and Song, 2008; So, Orazem and Otto, 2001; Partridge, Ali and Olfert, 2010). When making these decisions, an individual may weigh many factors associated with living in one place and working in another. Certainly, commuting time has been identified as one significant variable that influences residential decisions (Abraham and Hunt, 1997, Levine, 1998). In general, lower commuting times are viewed as an amenity.

Figure 2.11 –Jobs held by Corridor Community Residents – Percent Located in Minnesota (2011)



Source: U.S. Census Bureau LODES

Not all Corridor Community commuters currently use the Stillwater Lift Bridge. However, previous studies and anecdotal information suggest current crossing conditions at the Lift Bridge can increase travel time by 15 to 20 minutes during peak periods.[27] Every commuter does not necessarily face this delay on a daily basis, but these longer or unreliable trip times (e.g. worst trips), may have a larger impact on commuters' psyches than their average travel times (Schrank, Eisele and Lomax, 2012). Consequently, reducing travel time by 20 minutes during these bottleneck periods could reduce peak-period commuting times; improve accessibility to jobs; and potentially create an additional amenity for workers who want to reside in Corridor Communities. The question is: how large of an incentive is created by the removal of this additional travel time? Unfortunately, this is not necessarily an easy question to answer.

While overall commuting time or cost is an important consideration, the exact impact of reduced travel times created by the River Crossing will vary by worker and location. Moreover, a review of past research by Cho, Rodriquez and Song (2008) suggests that the exact influence of commuting length/time on locational decisions is neither definitive nor consistent. A number of studies suggest that workplace accessibility is either significant or a critical determinant for individuals who are deciding where to live (Abraham and Hunt, 1997; Levinson, 1998; Bhat and Guo, 2004). Other research places a higher importance on a location's demographic composition, its housing characteristics and its neighborhood attributes (Molin and Timmermans, 2003; Zondag and Pieters, 2005).

Despite the challenges in trying to isolate the impacts of commuting time, some research has estimated the elasticities between commuting time and locational choices. For instance So, Orazem and Otto (2001) found that a 10 percent increase in commuting time between metro and non-metro job markets reduces

[27] An analysis of traffic delay noted in the Economic Impact Analysis: St. Croix River Crossing (Economic Development Research Group, Inc., 2004) suggests that typical midweek travel times through downtown Stillwater to the Wisconsin side of the St. Croix River varied from 7 to 22 minutes eastbound and 6 to 22 minutes westbound. Advisory committee members noted similar travel times as did the author.

the proportion of commuters moving across these areas by 17 to 19 percent. However, this work is conducted at a regional level, rather than for a smaller geographic area such as St. Croix County or the Corridor Communities. In fact, measuring similar elasticities for smaller areas may be subject to many of the challenges associated with small area population forecasting previously noted by Chi and Voss (2011) and is beyond the scope of this study. Nonetheless, it is still important to consider how the new River Crossing could influence job accessibility for St. Croix County residents.

One means for exploring job accessibility is to calculate the *cumulative* number of jobs within a given drive time from a location. Some research suggests that the number of potential *future* employment opportunities may matter more to an individual's locational decision than access to his or her *current* work location (Crane, 1996). Factors such as the propensity of an individual to switch jobs, the presence of two-worker households, and urban decentralization may increase the importance of overall accessibility to potential employment centers rather than the significance of a simple commuting time (Cho, Rodriguez and Song, 2008).

Based on data from the U.S. Census Bureau LODES dataset, the following charts and tables summarize the number of available jobs within 15, 30 and 45 minute travel times of Houlton and New Richmond.[28] These two communities were selected for analysis based on their locations at each end of the Corridor Community study area. The estimates compare employment accessibility both before and after the completion of the River Crossing.[29] Estimates for the "before" period are based on a 20-minute travel penalty for crossing the Stillwater Lift Bridge. Again, not all commuters will face this delay on a daily basis, but 20 minutes provides a starting point for discussion.

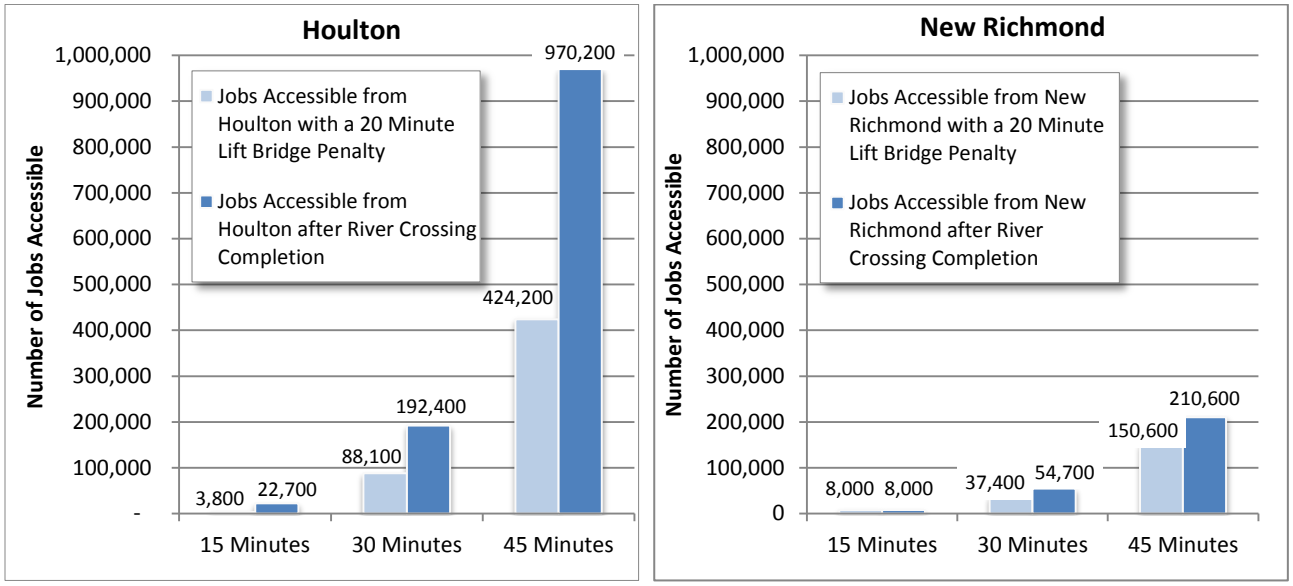
When removing a 20-minute travel penalty, the number of jobs available within a 15-minute drive of Houlton increases from almost 3,800 to 22,700 during a typical morning commute. Within a 30-minute drive time, the number of accessible jobs rises from 88,100 to 192,400. Furthermore, the number of jobs accessible within a 45-minute drive of Houlton increases from 424,200 to 970,200 (Figure 2.12). Importantly, some of the highest net increases in job accessibility are found among jobs having higher earnings; or those jobs with earnings of more than $3,333 per month (Table 2.2).

The increase in potential job accessibility for a Houlton resident results from the Crossing facilitating greater access to dense employment centers in the interior of the metro area. However, this accessibility will decline for those communities located further from the River Crossing. For instance, it will take a commuter residing in New Richmond approximately 15 minutes just to reach the River Crossing. Consequently, the number of jobs accessible from New Richmond increases after the completion of the Crossing, but not nearly at the same rate as found in Houlton (Figure 2.13). The increase in job accessibility for New Richmond is also somewhat more equally distributed among jobs with different monthly earnings.

[28] Note that travel times are calculated within every direction from Houlton and New Richmond. Consequently, accessibility to jobs in St. Croix County and other Wisconsin counties are included. Furthermore, commuters are given the option of crossing the St. Croix River at Hudson if possible in a given drive time.

[29] A typical morning commute is based on travel times for an individual who: 1) leaves for work at 7:30 A.M. and 2) faces usual traffic conditions. The calculations incorporate travel and congestion data from INRIX for the road network likely to be used by commuters. Note that the Crossing will likely reduce some local congestion in the region. These reductions are not factored here.

Figure 2.12 – Job Accessibility Comparisons – 15, 30 and 45-Minute Drive Times



Source: U.S. Census Bureau LEHD and Author's Calculations

Table 2.2 – Cumulative Number of Jobs Available within 15, 30 and 45 Minute Drive Times of Houlton

From Houlton	**15 Minute Drive Time**			**30 Minute Drive Time**			**45 Minute Drive Time**		
Job Monthly Earnings	*Jobs Before*	*Jobs After*	*Net Change*	*Jobs Before*	*Jobs After*	*Net Change*	*Jobs Before*	*Jobs After*	*Net Change*
$1,250 per month or less	1,200	6,700	5,400	23,700	54,400	30,700	107,800	225,900	118,100
$1,251 to $3,333 per month	1,200	6,800	5,600	23,800	57,500	33,600	128,900	284,800	156,000
More than $3,333 per month	1,300	9,300	8,000	40,600	80,600	40,000	187,500	459,500	272,000
Total Jobs	**3,800**	**22,700**	**18,900**	**88,100**	**192,400**	**104,300**	**424,200**	**970,200**	**546,000**

Source: U.S. Census Bureau LEHD and Author's Calculations

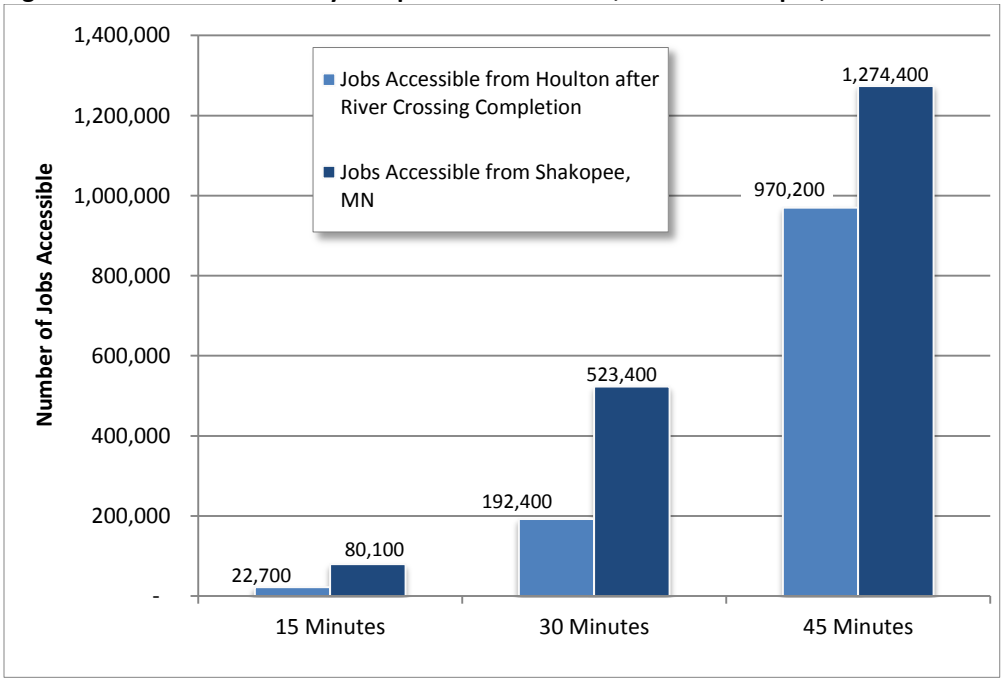
Table 2.3 – Cumulative Number of Jobs Available within 15, 30 and 45 Minute Drive Times of New Richmond

From New Richmond	**15 Minute Drive Time**			**30 Minute Drive Time**			**45 Minute Drive Time**		
Job Monthly Earnings	*Jobs Before*	*Jobs After*	*Net Change*	*Jobs Before*	*Jobs After*	*Net Change*	*Jobs Before*	*Jobs After*	*Net Change*
$1,250 per month or less	2,500	2,500	-	12,800	17,400	4,600	40,700	59,200	18,500
$1,251 to $3,333 per month	2,900	2,900	-	13,200	18,300	5,100	44,700	64,600	19,900
More than $3,333 per month	2,700	2,700	-	11,400	19,000	7,600	65,200	86,900	21,600
Total Jobs	**8,000**	**8,000**	**-**	**37,400**	**54,700**	**17,400**	**150,600**	**210,600**	**60,000**

Source: U.S. Census Bureau LEHD and Author's Calculations

Increased job accessibility arising from the River Crossing should also be considered relative to other communities in the region. As one example, consider the number of jobs available within 15, 30 and 45-minute drive times from Houlton, WI and Shakopee, MN during a typical morning commute. Shakopee is compared here as it sits at the base of the Bloomington Ferry Bridge in Scott County, MN and is regularly offered as a potential comparable community that has experienced bride-related impacts. Even after the completion of the River Crossing, the number of jobs accessible from Shakopee during a typical morning commute remains greater than the number of jobs accessible from Houlton (Figure 2.13). Accordingly, increased accessibility stemming from the River Crossing will be beneficial, but will not necessarily create a unique competitive advantage in the region. Instead, Corridor Communities will need to compete for jobs and residents based on other housing, economic and quality of life factors as well.

Figure 2.13 – Jobs Accessibility Comparison for Houlton, WI and Shakopee, MN



Source: U.S. Census Bureau LEHD and Author's Calculations

Projection Methodology and Scenario Development

St. Croix County and Corridor Communities have undoubtedly experienced high rates of population growth over the past few decades. Given the preceding discussion on transportation infrastructure; current population trends; anticipated changes to the region's age structure; and job accessibility; the question is how will St. Croix County's population increase in the future? While this analysis cannot precisely predict population growth 5, 10, 20 or 30 years from now, a number of potential projections are developed for both St. Croix County and the Corridor Community study area. One projection is from the Wisconsin Department of Administration's Population Services Center and is considered here as the "official" state projection. Other projections are developed by Gillaspy Demographics.

Both the official State of Wisconsin projection and the projection models developed by Gillaspy Demographics use a cohort-component method. As noted by Egan-Robertson (2014, pg. 1), the cohort-component method "takes the initial population of a geographic area by age and sex and progresses it forward in equal intervals (usually five years), with modifications to fertility, mortality and migration rates, to produce predictions of the future population." The full methodology used in developing the State of Wisconsin's projections is available at: www.doa.state.wi.us/divisions/intergovernmental-relations/demographic-services-center/projections

The projections by Gillaspy Demographics rely on fertility and mortality characteristics similar to those of Minnesota and Wisconsin. Furthermore, the projections are based on a migration profile for age and gender across the past six decades. The migration profile is used to develop alternative assumptions about migration after 2015. Four specific models for St. Croix County are produced (depicted in Figure 2.14) and are based on several scenarios:

- **Model 1 (Slow Start)—**Continuation of current out-migration from 2015 to 2020, then rapid in-migration of about 1,200 per year from 2020-2025, slowing to 200-400 per year after;

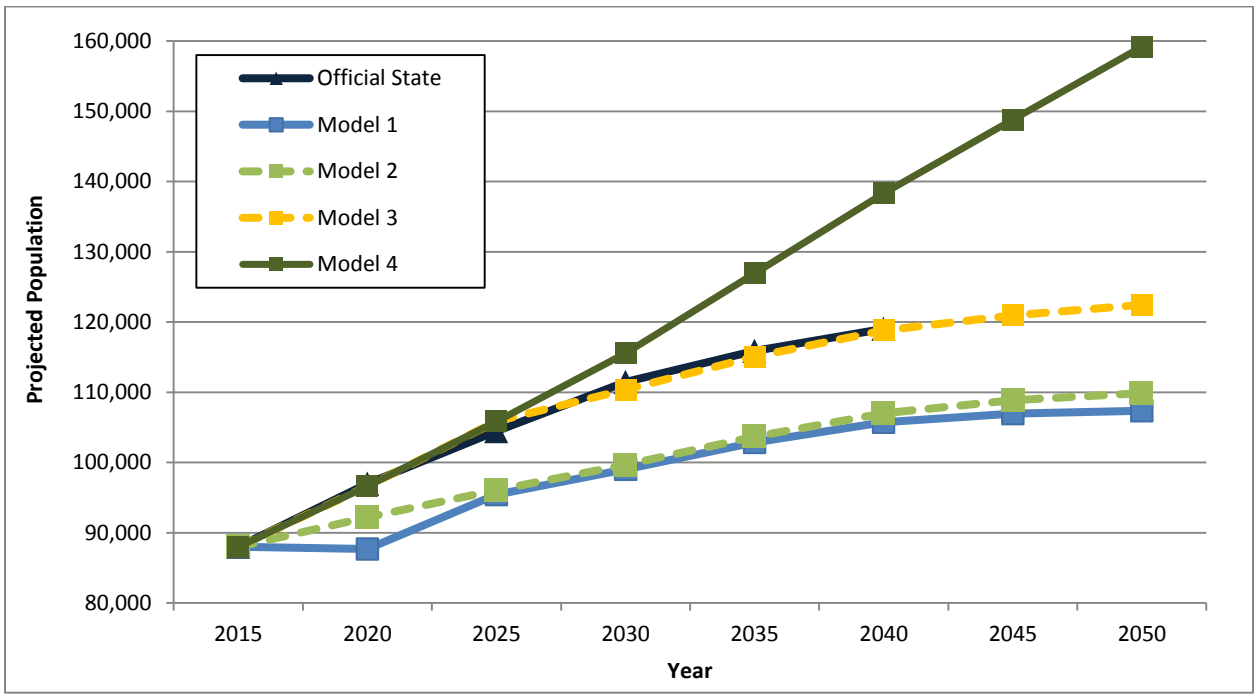
- **Model 2 (Steady In Migration)—**Steady in-migration of 200-500 per year;

- **Model 3 (Rapid Growth Moderating after 2025)—**1,100 to 1,500 in migration per year through 2025, moderating to 300-500 after. *Note that Model 3 is nearly identical to the official State of Wisconsin projection;*

- **Model 4 (Maximum Growth)—**1,100 to 1,800 net in-migration per year through 2050;

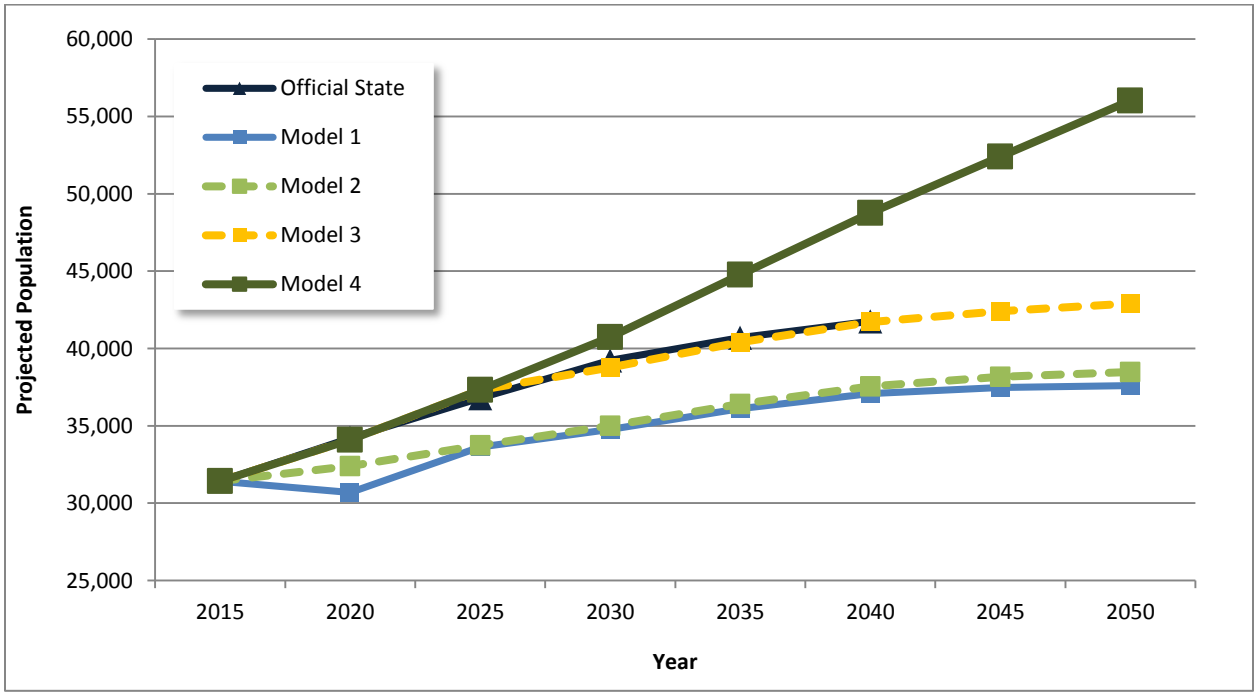
Official State of Wisconsin projections are also available for the Corridor Communities and are considered in this analysis. Using the results of the St. Croix County projections from Gillaspy Demographics, four additional estimates also are produced for the Corridor Community study area (Figure 2.15). These figures assume that the combined study area receives 38 percent of the County's future population growth; a percentage that has remained somewhat consistent over time. However, individual communities along the Corridor could grow at faster or slower rates. More discussion on potential growth patterns among neighboring communities is considered below.

Figure 2.14 – St. Croix County Population Projection Model Results



Sources: Wisconsin Department of Administration Demographic Services Center and Gillaspy Demographics

Figure 2.15 – Corridor Community Study Area Population Projection Model Results



Sources: Wisconsin Department of Administration Demographic Services Center and Gillaspy Demographics

Suggested Projections

Based on the preceding discussion in Section 1 and Section 2 of this study, as well as input from the River Crossing Advisory Committee, two sets of projections are suggested. Specifically, the suggested population projections are the official State of Wisconsin figures (which mirror Model 3) and figures from the aforementioned Model 2. The inclusion of these two projections is based on:

1. Existing research on population growth and infrastructure improvements;
2. Past experiences and trends found in other counties who have undergone bridge improvements;
3. Anticipated changes to the region's growth, age structure and mobility rates;

Based on these projections, St. Croix County is estimated to add approximately 19,000 to 31,000 residents between 2015 and 2040 (Table 2.4). Corridor Communities are projected to add between 6,100 and 10,300 residents (Table 2.5). *Importantly, these figures are only projections based on current trends and anticipated changes to the region's population structure. They are subject to future change and revision*.

Table 2.4 – Projected St. Croix County Populations

	Official State of Wisconsin		Alternative Growth Model 2	
Year	Total County Population	Change from Prior Period	Total County Population	Change from Prior Period
2010	84,345	N/A	84,394	N/A
2015	87,990	3,645	87,990	3,596
2020	96,985	8,995	92,217	4,227
2025	104,450	7,465	96,090	3,873
2030	111,470	7,020	99,672	3,583
2035	115,900	4,430	103,701	4,028
2040	119,010	3,110	106,996	3,295
2045*	N/A	N/A	108,867	1,871
2050*	N/A	N/A	109,867	1,000

Sources: Wisconsin DOA Demographic Services Center and Gillaspy Demographics *Wisconsin projections only extend to 2040.

Table 2.5 – Projected Corridor Community Populations

	Official State of Wisconsin		Alternative Growth Model 2	
Year	Total Corridor Population	Change from Prior Period	Total Corridor Population	Change from Prior Period
2010	29,993	N/A	29,993	N/A
2015	31,412	1,419	31,412	1,419
2020	34,215	2,802	32,403	990
2025	36,781	2,567	33,748	1,345
2030	39,225	2,444	34,993	1,245
2035	40,698	1,473	36,416	1,423
2040	41,747	1,049	37,547	1,131
2045*	N/A	N/A	38,160	612
2050*	N/A	N/A	38,483	324

Sources: Wisconsin DOA Demographic Services Center and Gillaspy Demographics *Wisconsin projections only extend to 2040.

A series of household projections are also developed for St. Croix County (Table 2.6) and Corridor Communities (Table 2.7). These figures assume that the local number of persons per household mimic those used by the official State of Wisconsin projection. The state figure is also consistent with historical trends and assumed persons per household in the Twin Cities area. Note that households do not include individuals living in group quarters (such as those living in nursing homes, prisons, college dorms, or other similar facilities). Consequently, not all residents are encompassed in the figures below.

Table 2.6 – Projected St. Croix County Households

	Official State of Wisconsin		Alternative Growth Model 2	
Year	Total Corridor Households	Change from Prior Period	Total Corridor Households	Change from Prior Period
2010	31,799	N/A	31,799	N/A
2015	33,975	2,176	34,088	2,289
2020	37,935	3,960	36,156	2,069
2025	41,416	3,481	38,246	2,089
2030	44,853	3,437	40,250	2,004
2035	47,314	2,461	42,490	2,240
2040	49,073	1,759	44,119	1,629
2045*	N/A	N/A	44,833	714
2050*	N/A	N/A	45,234	401

Sources: Wisconsin DOA Demographic Services Center and Gillaspy Demographics *Wisconsin projections only extend to 2040.

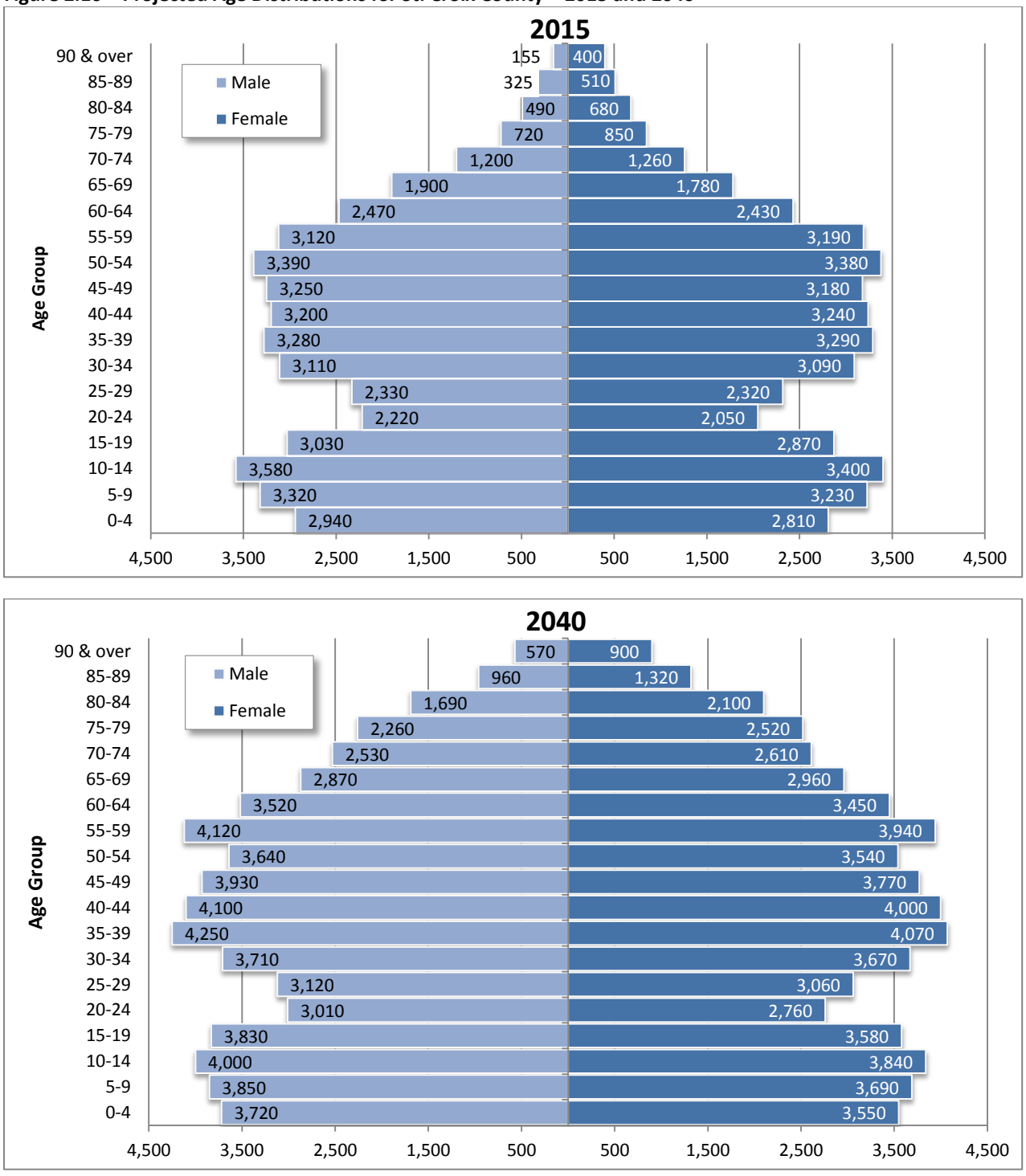
Table 2.7 – Projected Corridor Community Households

	Official State of Wisconsin		Alternative Growth Model 2	
Year	Total Corridor Households	Change from Prior Period	Total Corridor Households	Change from Prior Period
2010	11,292	N/A	11,292	N/A
2015	12,038	746	12,169	877
2020	13,409	1,371	12,705	536
2025	14,614	1,205	13,432	727
2030	15,794	1,180	14,131	699
2035	16,630	836	14,921	790
2040	17,227	597	15,482	561
2045*	N/A	N/A	15,715	233
2050*	N/A	N/A	15,844	129

Sources: Wisconsin Department of Administration Demographic Services Center and Gillaspy Demographics *Wisconsin projections only extend to 2040.

Projections are also provided by age group for St. Croix County. Age group distributions for 2015 and 2040 are depicted in the population pyramids below (Figure 2.16). The full distributions by five-year intervals are included in Appendix A. The number of residents in every age group is projected to grow over the next 25 years. However, the largest net gains and percentage increases are expected among residents ages 60 to 84. The growth within this age range is not surprising given the previous discussion concerning the region's age structure.

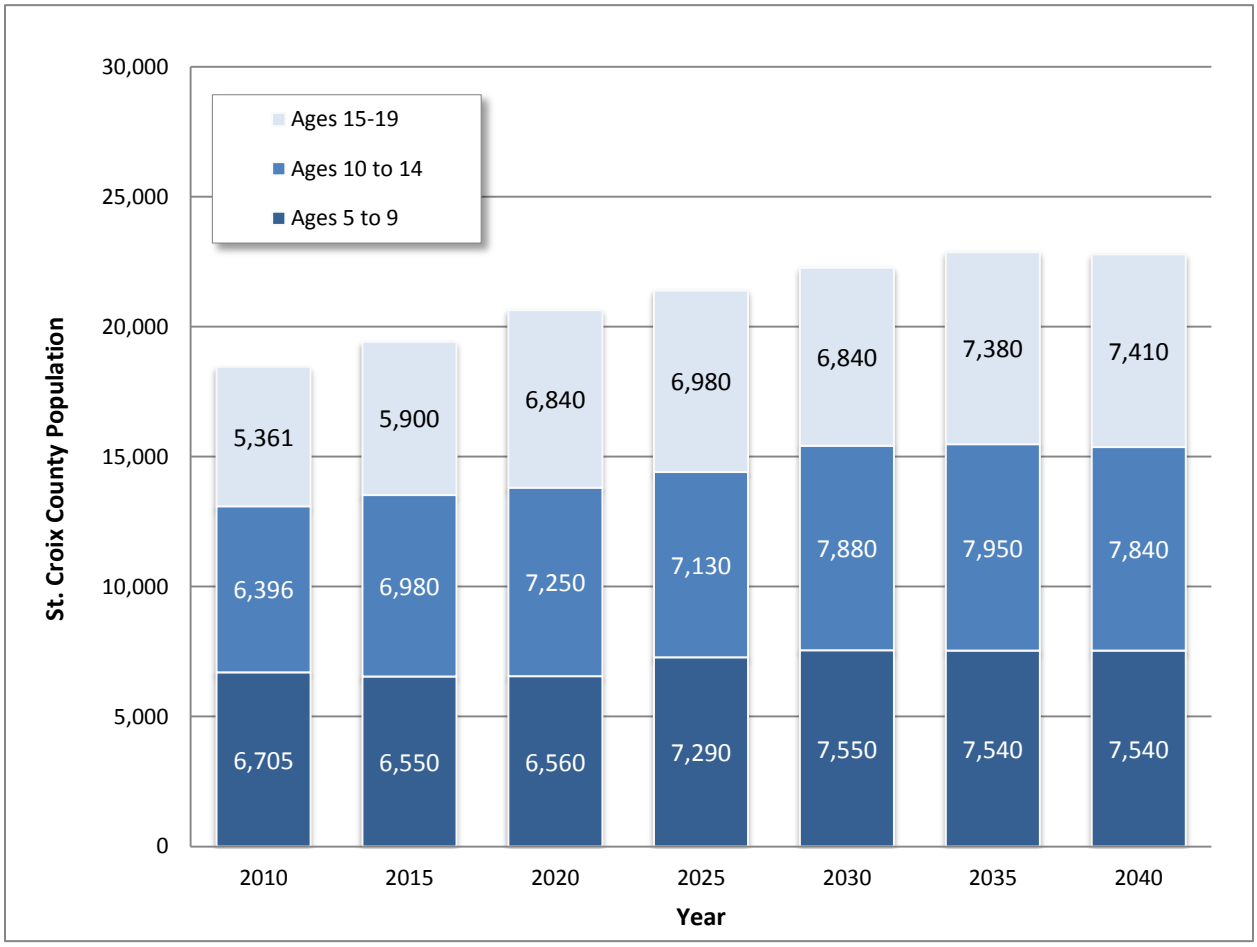
Figure 2.16 – Projected Age Distributions for St. Croix County – 2015 and 2040



Sources: Wisconsin Department of Administration Demographic Services Center

A final set of projections are summarized for the school age population in St. Croix County (Figure 2.17). While these numbers are not specific to school district boundaries found in Corridor Communities, the figures do provide some perspectives on the projected size of key age groups in the county. Furthermore, the Corridor Community study area has accounted for 35 to 36 percent of the county's total population in each of these age groups over the past several decades.

Figure 2.17 – Projected Change in St. Croix County Population Ages 5 to 19



Sources: Wisconsin Department of Administration Demographic Services Center

2.3 - Conclusions

St. Croix County and the broader Minneapolis-St. Paul-Bloomington metro area are facing several population trends that likely will affect local growth rates. In general, the region's overall growth rate has slowed over the past decade. While some of this change is temporary and undoubtedly attributed to a period effect stemming from the Great Recession, the overall metro area is still projected to slow in the coming decades. These slower growth rates partially stem from an aging population that will shape communities over the next 20 years.

Consequently, the St. Croix River Crossing will help facilitate steady growth into the coming decades, but it is unlikely that the County's population growth rate will return to the peak rates found between 1995 and 2005. That said, the projected growth rates do not mean that St. Croix County or Corridor Communities will stop growing. Growth will continue to be strong on a relative basis. *In fact, the official State of Wisconsin population projections continue to show St. Croix County as the state's fastest growing county over most of the next 25 years.*

When considering the region's future population, both St. Croix County and Corridor Communities should realize that the projections and trends discussed here are not absolute. Indeed, demographic projections are not destinies to be accepted. *Instead, population projections should provide an opportunity for discussion and guidance for policy development.* While St. Croix County and the Highway 64 corridor are likely to add residents, individual communities need to decide *how* they want to grow, but also *if* they want to grow. Communities have an opportunity to shape growth within their boundaries using tools to promote or discourage development. The individual tools used will need to be prioritized within each community, but can include: zoning ordinances; transfers of development rights; purchases of development rights; marketing initiatives; financial incentives; lot size restrictions; and changes to statutory language.

As previously discussed, the locational decisions and community preferences of Baby Boomers and Millennials will be drivers of future population growth. Both the county and Corridor Communities can capitalize on changes within these two age cohorts by catering to their needs, housing preferences, and other important quality of life factors. Developers and builders are likely already anticipating some of these changes, but community leaders and administrators should remain up-to-date on the preferences of Boomers and Millennials over the next 20 years.

While individual municipalities have an opportunity to shape growth within their boundaries, local governments also should carefully consider the "effects from neighboring places…in their decision making and planning process" (Chi, 2010). More specifically, Corridor Communities will be influenced by the actions and decisions of their neighbors. Restricting growth in one community may simply encourage development in an adjacent area. School districts may be especially impacted by these decisions as their boundaries do not coincide with municipal borders. Consequently, communities in the Corridor should remain in communication and collaborate to some degree.

Finally, population projections are subject to change. There are many regional and national economic conditions that could dramatically alter future population growth trajectories. Furthermore, the continued effects of the Great Recession could linger for years to come, or could change more quickly. The next five years should provide valuable insights into whether the population projections used in this analysis properly reflect change in the county and Corridor Communities. *Consequently, municipalities should strongly consider benchmarking key local indicators.* Tracking building permits, traffic counts, school enrollments, demand for government services, real estate transactions, emergency calls and other socio-economic data can help communities understand local change in a timely manner. Annual population estimates from the Census Bureau and the Wisconsin Department of Administration will also be important. Changes to one or many of these measures may indicate a need to revise projections or alter local policies.

Section 3 – St. Croix River Crossing and Economic Development Opportunities

Economic competitiveness is traditionally rooted in firm-level behavior, with efficient or innovative firms being more likely to increase their market share, lower their operating costs, and reduce prices for customers. Over the past few decades, the notion of competitiveness has also been extended to geographic areas. Specifically, economic success can be partially attributed to factors external to individual firms such as the availability of superior technology, an endowment of ample infrastructure, the presence of large levels of human capital, or institutional arrangements that support economic development (Camagni 2002). For instance, Porter (2003) suggests that successful regions specialize in the production of goods and services for which local firms are efficient producers, but firm productivity is also affected by the quality of the regional business environment. Consequently, community competitiveness is partially embedded in local assets that enable firms to grow.

The St. Croix River Crossing certainly adds to the asset base that supports the region's economy. As noted in Section 1, transportation infrastructure broadly supports economic growth through its ability to reduce transportation costs; create better connections among labor and employers; and facilitate suburban population change. However, the precise impacts of infrastructure on regional economic growth are debatable and likely vary by industry and location. Given the uncertainty offered by existing research, what does the River Crossing mean for economic development opportunities in St. Croix County? In particular, what are some of the potential economic impacts facing Corridor Communities and are there specific strategies that could build upon any comparative advantages offered by the River Crossing? The following discussion considers these questions by: 1) assessing the potential economic impacts of new residents; 2) analyzing how the River Crossing could influence locational advantages within St. Croix County; and 3) evaluating recreation development opportunities.

3.1 - Potential Economic Impacts of New Residents

The household projections developed in Section 2 suggest that Corridor Communities could add between 1,300 and 2,600 new households between 2015 and 2025. Over the same period, St. Croix County is projected to grow by 2,300 to 5,400 households. While the exact number of new households will vary, these new residents will create economic impacts in a variety of manners. Undoubtedly, new income from these households will create additional demand for a variety of goods and services. Future households also will require housing units that will impact the region's residential construction market. New residents could also be a source of entrepreneurial growth if these individuals start a new business or relocate an existing business to the county.

Ultimately, new households will generate economic impacts through additional revenues, income and jobs. While the precise economic impacts of new households cannot be predicted, several broad estimates can be generated using input-output (I-O) modeling. Also known as inter-industry analysis, I-O models assess

how an economic event, or shock, ripples throughout the regional economy. Some examples of economic events could include the opening of a new business; employment reductions at an existing firm; the closing of a military base; or the construction of a new housing development. For purposes of this analysis, the economic shock is the additional demand for goods and services contributed by new residents. [30]

Simply stated, input-output models estimate how economic sectors interact with each other. More specifically, I-O models estimate how industries purchase and sell goods or services among each other (i.e. business-to-business transactions). Some I-O models are also able to estimate how consumers or governmental units purchase products from different business categories (consumer-to-business transactions or government-to-business). When a change occurs to the regional economy, input-output analysis is able to estimate how supply and demand conditions also change and eventually ripple throughout the broader economy. [31]

Economic impacts are often categorized into direct, indirect and induced impacts:

- *Direct effect* – Direct effects are attributed to the industry or sector that initially causes a change in the economy. Accordingly, direct effects do not consider how expenditures or incomes ripple throughout the region. As an example, consider the impacts of a new dairy products manufacturing facility in a community. The direct effects of this new facility include the firm's revenues, employment and payroll;

- *Indirect effects* – Businesses purchase a variety of goods and services from other businesses; often across many industrial sectors. Consequently, these business-to-business (B2B) transactions generate economic activity and may create additional impacts throughout the regional economy. Continuing with the aforementioned example of a new dairy product manufacturing facility, the new firm will certainly purchase milk from dairy producers. However, the facility will also purchase packaging materials, food manufacturing equipment, cleaning supplies, wholesale and transportation services, waste disposal, and many other goods and services. As the dairy product manufacturer makes these purchases, its suppliers receive new revenues and also may need to adjust their own economic output;

- *Induced effects* – Employees of a firm are paid wages and salaries. Induced effects estimate the impact of employees using these earnings to purchase goods and services in various sectors of the economy (i.e. food, furniture, gas, housing, medical, utilities, etc.).

[30] While an in-depth discussion of input-output modeling is beyond the scope of this analysis, an overview of I-O models is found in the *Regional Input-Output Modeling System (RIMS II) User Guide* from the Bureau of Economic Analysis (www.bea.gov/regional/pdf/rims/RIMSII_User_Guide.pdf). A technical description is also available in Chapter 15 of: Shaffer R., Deller, S. and Marcouiller, D. (2004). *Community Economics: Linking Theory and Practices* (2nd ed). Ames, IA: Blackwell Publishing.

[31] Importantly, input-output models also consider how industries rely on factors of production (such as labor and capital).

Potential Impacts of New Residential Construction

Using an input-output model constructed for St. Croix County, we can estimate several potential impacts arising from new households. One area of particular interest is the impact that new households could have on the residential construction industry. The population projections suggested in Section 2 estimate that St. Croix County could add an average of 230 to 540 households per year between 2015 and 2025. Furthermore, projections for Corridor Communities place average growth rates at approximately 125 to 250 households per year over the same period. While some of these new households will be absorbed into existing inventory, many households will require an additional supply of housing units.

While the projections provide an average range of new annual households, it is difficult to value the new residential construction needed by future residents. Certainly, the two population projection models vary in their growth rates which could affect annual revenue projections considerably (See Figures 2.14 and 2.15). Furthermore, the exact type and size of future housing units will be dictated somewhat by the preferences of new residents. Specifically, current and future trends in housing preferences could affect housing stocks in terms square footage, the sorts of amenities offered, tenure type (owner vs. renter) and other factors that influence housing value.

Given the challenges in estimating the future value of new residential construction, the impact of $10 million in new residential construction is considered here for benchmarking purposes. This amount of residential construction could correspond to relatively few high-end housing units or a larger number of lower-valued homes for first-time homebuyers. The total amount of new residential construction needed will significantly surpass this amount, but $10 million provides a starting point for analysis.

According to the input-output model, $10 million in new residential construction revenues supports approximately 120 jobs, with 76 of these jobs occurring directly in the residential construction sector and an additional 43 jobs attributed to indirect and induced effects (Table 3.1). In terms of total sales (e.g. output), $10 million of new residential construction supports $14.1 million in total impacts ($10 million directly in residential construction and $4.1 million in indirect and direct effects). This amount of residential construction also supports almost $4.2 million in labor income, which includes wages, benefits and proprietor's income. Many of the largest indirect and induced effects occur in retail categories, financial services and professional services.

Table 3.1 – Estimated Impact of $10 Million in New Residential Construction

Impact Type	Employment	Labor Income	Output
Direct Effect	76	$2,800,000	$10,000,000
Indirect Effect	26	$870,000	$2,410,000
Induced Effect	17	$520,000	$1,730,000
Total Effect	*119*	*$4,190,000*	*$14,140,000*

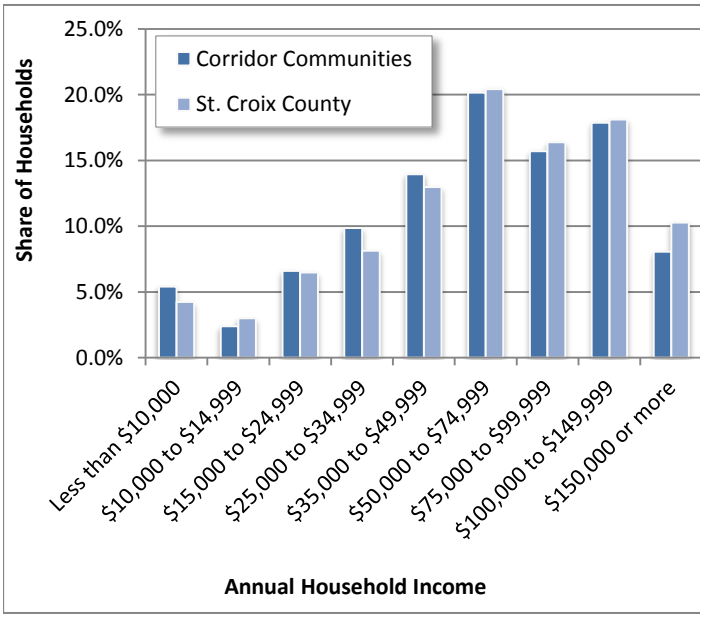
Sources: IMPLAN and Author's Calculations

Potential Impacts of Household Spending

In addition to potential impacts on residential development, future households will also create demand for a variety of other goods and services. The input-output model constructed for this analysis can estimate the impacts arising from this new demand using a number of assumptions. First, the I-O model is based on typical expenditures for goods and services made by households of different income levels. That is, purchases by higher income households likely will differ from those of lower income households. *Accordingly, this analysis assumes that the future household income distribution will mimic the current distribution found in St. Croix County (Figure 3.1).* Second, the impacts of future household spending are based on current expenditure patterns. As in the past, the relative demand distribution for goods and services will likely change moving forward.

The projected employment impacts of new household spending are summarized in Table 3.2. These figures represent the number of employees *supported* by the projected income increases attributed to new Corridor Community households and new St. Croix County households. The figures include estimates for the ten industry categories receiving the largest employment impacts, as well as the total employment impacts generated across all industries.[32] Impact estimates are included for each of the two suggested projection models noted in Section 2 (i.e. the official State of Wisconsin projections and alternative growth model 2). Note that the figures in Table 3.2 only represent the new households added between 2015 and 2025.

Figure 3.1 – Current Household Income Distribution



Source: U.S. Census Bureau 2009-2013 American Community Survey and Author's Calculations

Not surprisingly, the ten greatest employment impacts are found in industries that offer goods and services frequently used by consumers including restaurants, retail and health care.[33] Overall, the employment impacts vary according to the number of new households estimated by each projection model:

[32] The employment impact figures generated in this analysis only include induced impacts. Without knowing how household spending translates into industry-specific estimates of increased output (i.e. sales), the input-output model cannot generate direct or indirect impacts.

[33] The input-output model treats retail sectors somewhat differently. Only the retail markup, or margin, is assumed to impact the local economy. The total value of retail sale includes a product's retail markup as well as its production costs, wholesale markup and transportation costs. As local retailers frequently purchase products manufactured outside the region, the retail markup is the portion of a product's price that remains in the regional economy. The model also makes adjustments if a retailer is headquartered in the local economy (i.e. not a chain location headquartered elsewhere).

- Within the Corridor Communities, impacts range from 443 to 903 total employees supported by new household income. Given uncertainty in the modeling process, a range of employment impacts is also included here. Specifically, an estimated 425 to 475 employees are supported by the new households estimated by alternative growth model 2. Moreover, 850 to 950 estimated employees are supported by the new households suggested by the State of Wisconsin official projections;

- Impacts in St. Croix County vary from 868 to 2,204 employees supported by new household income. Again, employment impact ranges are also included. Based on the households projected by alternative growth model 2, new household income is estimated to support 825 to 915 employees. Similarly, new household income based on official State of Wisconsin projections is estimated to support 1,900 to 2,100 employees.

Table 3.2 – Estimated Jobs Supported by Projected Household Income Increases (From 2015 to 2025)

	Corridor Communities		St. Croix County	
Industry Category	**Alternative Growth Model 2**	**Official State of Wisconsin Projection**	**Alternative Growth Model 2**	**Official State of Wisconsin Projection**
Food Services and Drinking Places	70	142	137	315
Hospitals (Private Sector)	25	50	48	110
Nursing and Residential Care Facilities	22	45	43	99
Retail Stores - General Merchandise	22	44	42	98
Retail Stores - Food and Beverage	21	42	40	93
Ambulatory Health Care	19	38	37	84
Home Health Care Services	19	38	37	85
Individual and Family Services	15	32	31	70
Retail Stores - Motor Vehicle and Parts	13	27	26	61
Civic, Social, Professional and Similar Organizations	13	27	26	59
All Other Industry Categories	205	419	403	930
Total	**443**	**903**	**868**	**2,004**

Sources: IMPLAN and Author's Calculations

The impacts generated by additional household income could provide new or expanded business opportunities within local communities. However, any use of the figures in Table 3.2 should be approached with caution. As previously noted, these estimates are based on assumptions tied to future household income distributions and consumer expenditure patterns. Furthermore, these figures are also subject to several other caveats:

- Importantly, these figures are not derived from specific estimates of St. Croix County household expenditures. The figures are based on typical expenditures for households within different income ranges. Accordingly, local spending patterns may differ somewhat

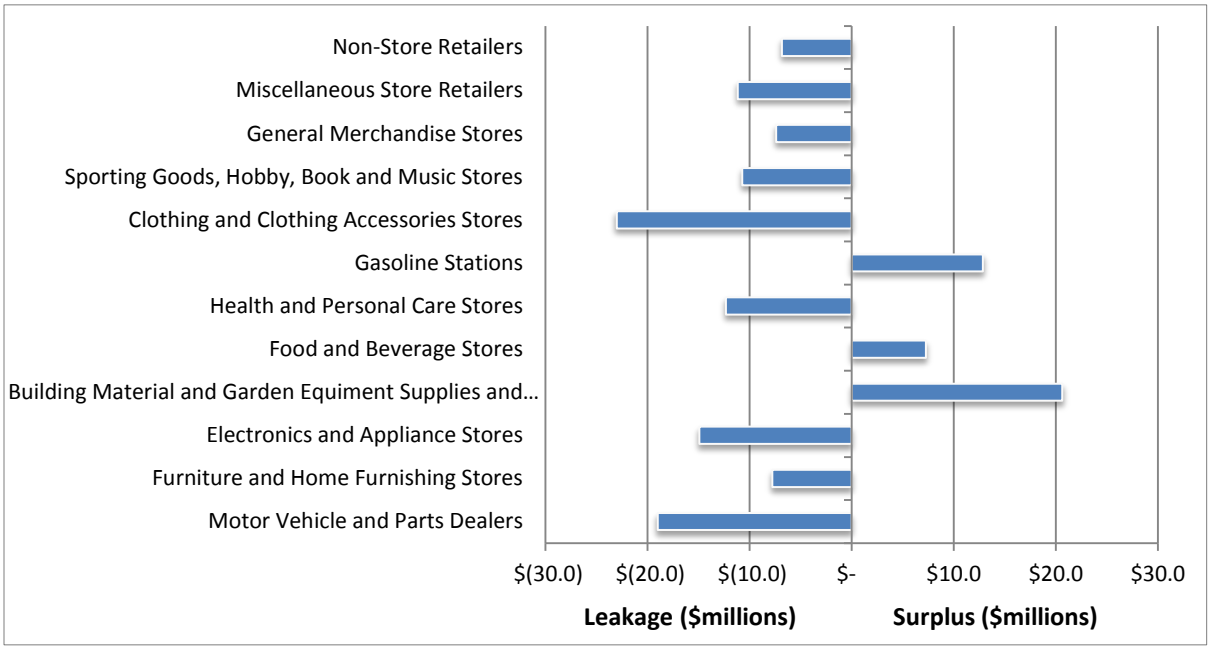
- *The estimates do not predict when an economic impact will occur in a community.* Instead, the impacts arising from household income changes will occur at some non-specific time in the future. This

characteristic of I-O modeling is particularly important for this analysis as the estimates are based on projected income changes to the year 2025. The actual income generated by new households will be added to the region in an incremental manner over the coming decade;

- The figures do not distinguish between full-time and part-time employment (all jobs are counted equally). These differences may be particularly important for evaluating impacts in industries more reliant on part-time employment;

- The impacts are subject to local characteristics that may not be captured in the input-output model used in this analysis. For instance, the employment impacts attributed to new Corridor Community household income may not actually occur in Corridor Communities. Commuting and shopping patterns throughout St. Croix County suggest that impacts could be scattered in other communities. Furthermore, the model may not account for local retail conditions. While input-output models can estimate the shares of retail purchases made within the local economy, these models may not always reflect local conditions. For instance, a number of retail categories in St. Croix County suggest high levels of leakage, or potential retail expenditures leaving the county and made elsewhere (Figure 3.2).

Figure 3.2 – Retail Surplus and Leakage Estimates for St. Croix County (2011)



Source: Deller, 2012

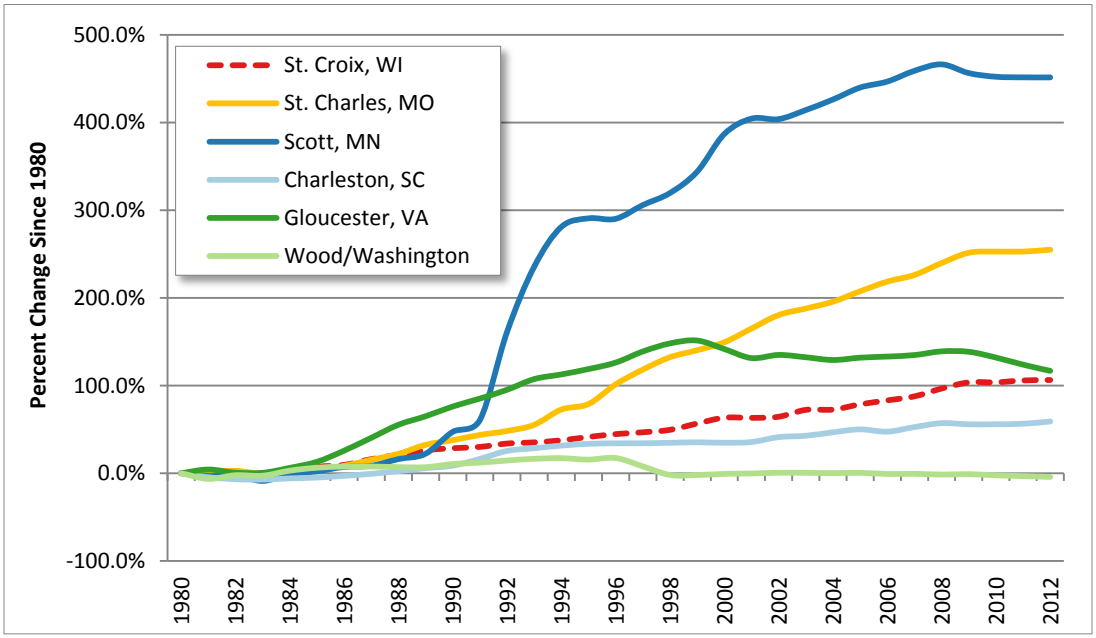
The retail surplus-leakage conditions in St. Croix County raise a broader issue about new access created by the River Crossing. While the completed bridge will create improved access to the metro area for commuters and businesses, it will also increase access to competition. That is, it will allow St. Croix County residents and businesses additional access to commercial centers across the river. Consequently, these transportation improvements could help to eliminate a travel barrier that might partially protect local businesses from competition (Boarnet and Haughwout, 2000).

A Note on Fiscal Impacts

Population and economic growth certainly will create employment and income impacts for St. Croix County. However, these economic impacts will also generate fiscal impacts, or changes to government revenues and expenditures. New residents or businesses can expand the local tax base, but will also create additional demand for protective services, school districts, or physical infrastructure. The challenge for local communities is to balance the new revenues and costs created by future growth.

As an example of how population growth affects demand for public services, consider the changes to local government employment levels found in the comparison counties examined in Section 1 (Figure 3.3). Local government employment includes employees of school districts, protective service units, public works departments, general public administration and other local institutions. In lieu of government expenditure figures for each comparison area, local government employment provides a proxy for changes in public service demand. Not surprisingly, growth in local government employment between 1980 and 2012 largely mirrors the population growth trends found each of these areas.

Figure 3.3 – Percent Change in Local Government Employment 1980 to 2012 for Selected Counties

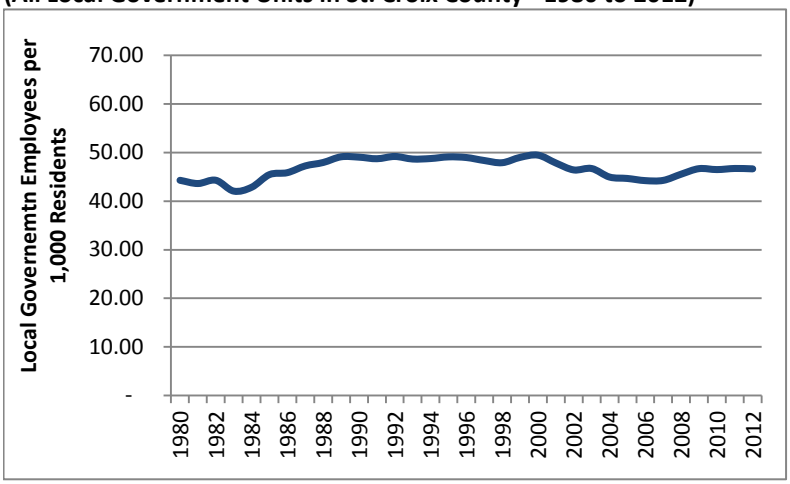


Sources: Bureau of Economic Analysis and Author's Calculations

Both population and local government employment growth rates are particularly prevalent in Scott County, Minnesota. For example, the Shakopee School District within Scott County has added 50 to 60 new teachers a year over the past 15 years (Whylly, 2014). While Scott County's growth in local government employment has been sizeable, future demand for public services in St. Croix County is yet to be determined. That said, the number of local government employees per capita in St. Croix County has remained remarkably consistent. Over the past few decades, the county has maintained 45 to 50 local government employees for every 1,000 residents (Figure 3.4). *Again, these figures include local government employees across all municipalities in St. Croix County, not just county government itself.*

Again, local government employment is only a proxy for local government expenditures. Specific needs will likely vary by community according to future levels of development and the current capacities of local government services. *Subsequently, communities should consider comparing the anticipated costs attached to a new development in conjunction with any new revenues it generates.*

Figure 3.4 - Number of Local Government Employees per 1,000 Residents (All Local Government Units in St. Croix County - 1980 to 2012)



Sources: Bureau of Economic Analysis and Author's Calculations

New Residents and Entrepreneurial Development

Economic development initiatives are traditionally segmented into attraction, retention, expansion and start-up activities. Attraction involves economic development organizations or other entities trying to entice new businesses (or other forms of capital) to move to their community from elsewhere. Retention activities intend to help existing firms remain in the community or maintain current employment levels. Initiatives surrounding expansion attempt to help firms grow revenues or jobs. Finally, start-up strategies support the formation of new firms or enterprises.

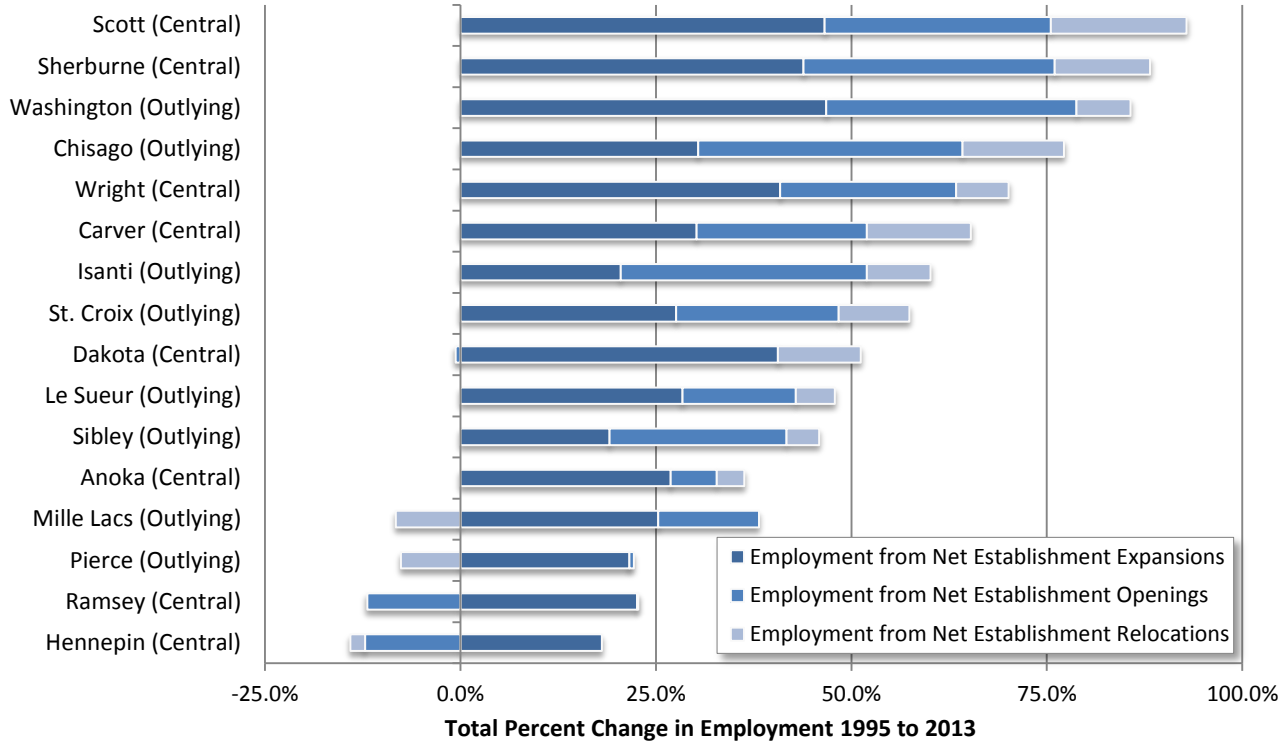
Communities often engage in one or all these activities. Some communities devote significant resources to industry attraction in an appeal to firms looking to relocate or build new facilities in their jurisdiction. Other communities may emphasize business retention activities that attempt to maintain economic activity at existing businesses. However, few communities prioritize business expansion and start-up activities through the development and support of entrepreneurs. Marginal efforts to support entrepreneurial development are particularly important given the role of industry expansion and start-ups in employment growth. As an example, consider employment change within counties located in the Minneapolis-St. Paul-Bloomington metro area (Figure 3.5). Job growth in these counties can be segmented into three components of change:

1. *Net establishment openings* - Jobs in establishment openings minus jobs in establishment closings;

2. *Net establishment expansions* - Jobs in establishment expansions minus jobs in establishment contractions;

3. *Net establishment relocations* - Jobs in establishments moving into a region minus jobs in establishments moving out of a region;

Figure 3.5 – Components of Employment Growth for Minneapolis-St. Paul-Bloomington MSA counties (1995 to 2013)



Sources: National Establishment Time Series Database and Author's Calculations

The data in Figure 3.5 show that establishment expansions and net openings *by far* contribute the greatest shares of new jobs in most metro area counties.[34] These trends are also found nationally in the 15 states with the fastest employment growth rates. Employment from net openings does involve some level of industry attraction, but a large share is also from endogenous new start-ups. In contrast, employment attributed to net relocations provides only minor influences on new employment in some counties, with no contributions in others. While these figures offer just one perspective, additional research shows similar links between economic growth and business start-up and expansion activity across the rural-urban continuum[35]

If business expansions and openings are in fact the drivers of job growth, why do many communities have a reluctance to emphasize entrepreneurial support? In short, developing initiatives and policies to further entrepreneurship often entail significant local challenges. Specific concerns include those outlined by Markely et al (2005): [36]

[34] While 2012 provides the most recent data available, the period between 1995 and 2012 provides a relevant timeframe for exploring job growth dynamics as it includes periods of rapid job growth, tepid employment changes and steep job declines.

[35] Some examples include Acs and Armington (2003); Walzer, Athiyaman and Hamm (2007); and Glaeser, Kerr and Kerr (2012);

[36] Some of the information in this discussion of entrepreneurship is based on previous research conducted by the author and published elsewhere.

- Communities frequently face a shortage of institutional support for economic development strategies rooted in entrepreneurship;
- Policies that effectively encourage the development of entrepreneurs are well not understood, particularly at the local level;
- Similarly, there are limited examples of comprehensive state and local strategies that can serve as models for communities seeking to support entrepreneurs;
- The outcomes of entrepreneurship tend to be incremental and may not be immediately visible to funders, taxpayers or elected officials;

Given that business expansions and start-ups are important sources of economic growth, how does the St. Croix River Crossing create new opportunities for development entrepreneurs in the region? As noted earlier, the St. Croix River Crossing will help facilitate future population growth into the county. Many of these new residents could be potential or nascent entrepreneurs who are looking for support in starting a new business venture. *Providing the appropriate assistance to these individuals could create new business opportunities for local communities rather than having these individuals look elsewhere to locate their business.* As discussed below, the St. Croix River Crossing will also improve access to the metro area's labor force and commercial markets while also creating additional access to the region's labor force. These improvements, along with the additional household income generated by new households, could also encourage establishment start-ups as well as create expansion opportunities for some existing businesses in the region.

Certainly, communities and economic development organizations can support entrepreneurial development by providing technical assistance, access to capital, workforce development, and built infrastructure (roads, water, energy and broadband access). However, the need for these types of assistance will likely vary by entrepreneur and communities should not follow a uniform approach to providing support. Furthermore, these features are necessary and important, but are not necessarily the most critical components in developing local entrepreneurs (Yenerall 2008).

Instead, communities and economic development organizations can broadly support entrepreneurship by creating an ecosystem where latent, new and existing entrepreneurs can succeed. In other words, the region needs to continually enhance its *entrepreneurial culture*. An entrepreneurial culture can be broadly described as one in which a community is aware of the importance of entrepreneurs to the local economy. It is open to new and different ideas. It accepts failure. It is willing to experiment. Ultimately, it encourages and supports a breadth of entrepreneurs.

Importantly, the creation of an entrepreneurial culture and support environment does not explicitly depend on infrastructure and financing. More specifically, Hustedde (2007) and Macke et al (2014) maintain that an entrepreneurial culture and support system are fostered by:

- *Welcoming fresh ideas and embracing the potential diversity of entrepreneurs* – Communities often have preconceptions about entrepreneurs. In reality, not all entrepreneurs have the same vision or goals for starting a firm. They may have untested ideas. Some entrepreneurs are interested in

generating high-growth companies. Other individuals may desire a limited enterprise that supports a specific lifestyle. A nascent entrepreneur may have never started a business before, while another may be a serial entrepreneur who has started many companies. Fostering an entrepreneurial culture and support system requires understanding the needs and motivations of many entrepreneurial types Welcoming new ideas is particularly important given that many potential entrepreneurs could be new residents in a community that are unfamiliar with local culture;

- *Creating opportunities to learn, question and think differently about entrepreneurship* - Too often in communities, entrepreneurship outreach and learning are delivered in a reactionary manner. For instance, individuals may be introduced to entrepreneurship in response to an economic shock such as a plant closing or mass layoff. Learning opportunities should occur proactively throughout the community and can start with young residents rather than waiting until they become adults. Importantly, learning opportunities are not just about developing existing and prospective entrepreneurs. Not everyone should be an entrepreneur and outreach also should stress how entrepreneurship is not a good fit for many people; [37]

- *Mobilizing resources for entrepreneurs* – As previously mentioned, resources can include technical assistance, access to capital, workforce development, broadband, business spaces, business support services, places to network and other forms of support. Some of these resources can be provided locally, but communities can also provide connections to regional or statewide assistance when appropriate;

- *Cultivating networks for entrepreneurs to thrive* – Entrepreneurs learn from each other, whether or not they are engaged in the same industry or produce a similar product. Connections can be fostered through entrepreneur networks, peer groups, mentors and advisory boards. These networks can occur in physical and virtual spaces;

- *Focusing on assets instead of deficits* – Too often communities focus on what is missing rather than what is present. Potential entrepreneurs in Corridor Communities and St. Croix County have access to many competitive assets including high levels of human capital (discussed below), a growing consumer market, local university resources, a robust highway transportation system, access to a large hub airport and other comparative advantages;

- *Fostering entrepreneurial leaders and advocates* – Communities need individuals and organizations who understand entrepreneurs and who can advocate for their needs. These leaders also tolerate failure and celebrate success;

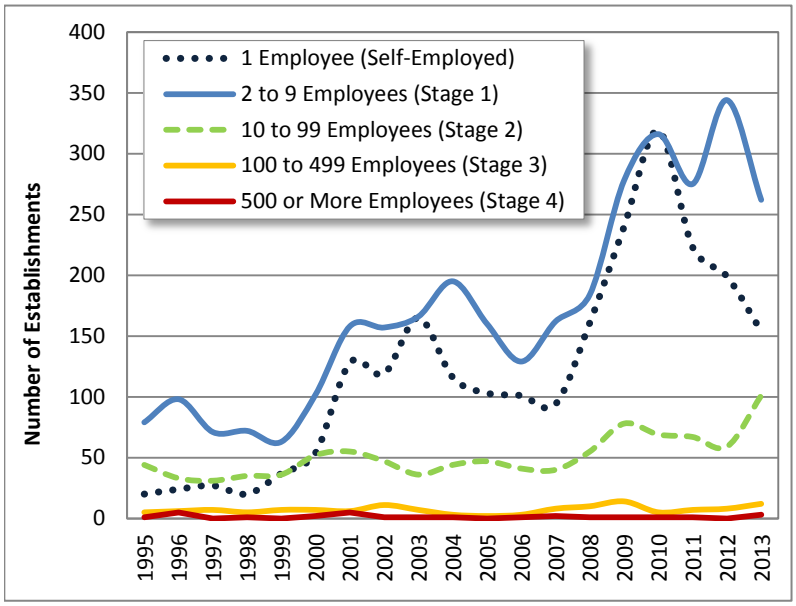
- *Building a shared vision about entrepreneurship* – Placing an emphasis on entrepreneurs does not mean that industry attraction or other economic development strategies should be abandoned. Instead, communities in the region need a shared understanding about the importance of creating new firms and helping existing firms grow;

[37] Economic environments, family backgrounds, employment histories, organizational experiences, social networks, and personality traits all affect the probability of someone acting entrepreneurially (Rauch and Frese, 2000). Some of these factors are deeply engrained in individuals and in societies and may vary within the region. However, some of these factors can be influenced in manners that grow a community's pipeline of entrepreneurs.

As mentioned, providing support for business expansions and start-ups does not mean that communities should discard industry attraction and retention strategies. Attraction and retention initiatives are part of a well-rounded economic development strategy. In fact, initiatives offered to support local entrepreneurs may also serve to assist new firms re-locating to the region. This observation is especially true when considering movements among firms of various sizes or stages.

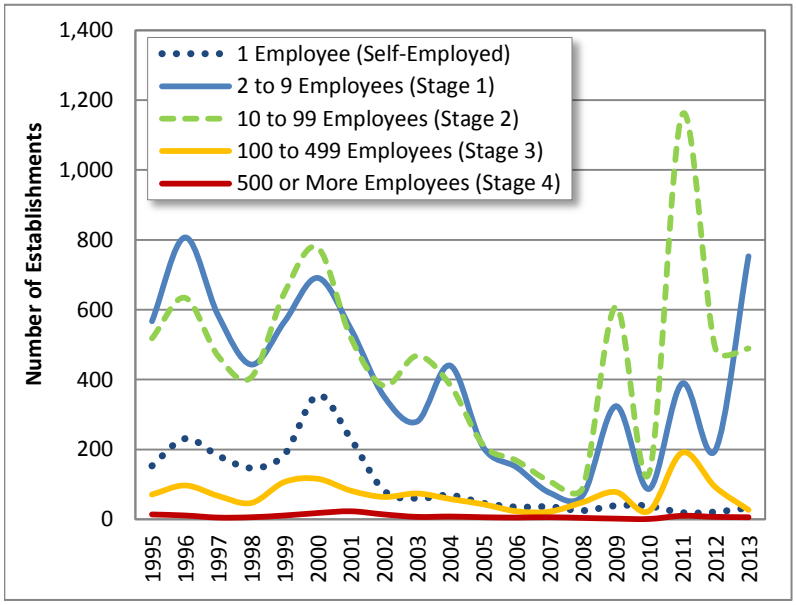
The Edward Lowe Foundation broadly classifies establishments according to five different stages. Firms in each of these stages are characterized by their employment size, but also according to their needs (Figure 3.8).[38] Most firms that relocate to the Minneapolis-St. Paul-Bloomington MSA from another location are small in terms of total employment (Figure 3.6). Between 1995 and 2013 the vast majority of establishments that relocated to the metro area had fewer than 100 employees. Indeed, most of these establishments accounted for fewer than 10 employees. The relocation of large firms is a somewhat rare occurrence.

Figure 3.6 - Establishments Relocating to the Minneapolis-St. Paul-Bloomington MSA by Employment Size (1995 to 2013)



A somewhat similar pattern is apparent among so-called "expansion start-ups" in the metro area (Figure 3.7). Expansion start-ups are establishments that were spun off by existing businesses. These firms are new locations, but are tied to some other parent firm or company. Again, the vast majority of expansion start-ups occurring in most years are categorized as Stage 1 or Stage 2 firms (i.e. 1 to 9 employees and 10 to 99 employees). Expansion start-ups for establishments of larger sizes do occur, but are somewhat more limited.

Figure 3.7 - Expansion Start-ups in the Minneapolis-St. Paul-Bloomington MSA by Employment Size (1995 to 2013)



Source: National Establishment Time Series Dataset Extracted from YourEconomy.org

[38] Not every establishment in a given stage will have the same requirements. These broad characterizations are used to help communities understand some of the distinct challenges and differences often facing firms of various sizes or at different points in their growth trajectory.

Figure 3.8 – Business Stages

1. **Self-Employed (1 employee) -** Includes small-scale business activity that can be conducted in homes as well as sole proprietorships;

2. **Stage 1 (2-9 employees) –** Includes partnerships, lifestyle businesses and startups. This stage is focused on defining a market, developing a product or service, obtaining capital and finding customers;

3. **Stage 2 (10-99 employees) -** At this phase, a company typically has a proven product, and survival is no longer a daily concern. Companies begin to develop infrastructure and standardize operational systems. Leaders delegate more and wear fewer hats;

4. **Stage 3 (100-499 employees) -** Expansion is a hallmark at this stage as a company broadens its geographic reach, adds new products and pursues new markets. Stage 3 companies introduce formal processes and procedures, and the founder is less involved in daily operations and more concerned with managing culture and change;

5. **Stage 4 (500 or more employees) –** By Stage 4, an organization dominates its industry and is focused on maintaining and defending its market position. Key objectives are controlling expenses, productivity, global penetration and managing market niches.

Source: Edward Lowe Foundation/YourEconomy.org

The metro area's establishment relocation trends and expansion start-up figures suggest several important conclusions for St. Croix County and the Corridor Communities. First, the relocation and spinoffs of large firms are relatively uncommon. This observation is true both for the metro area and the State of Wisconsin (Deller and Conroy, 2014). Moreover, the relatively few large relocations and expansion start-ups that do occur are likely sought after by hundreds communities throughout the metro area. *While the River Crossing might help create access for additional sites for these firms, competition is still fierce.*

Second, the relocation and expansion start-up trends among smaller firms should be part of a larger discussion that focuses on the contributions of Stage 1 and Stage 2 firms. In reality, businesses in these categories are drivers of employment growth in St. Croix County and the national economy. While aggregate employment within these stages has varied over time, they have been a long-term source of employment increases (See Appendix B). In fact, employment in Stage 4 establishments (i.e. 500 or employees) has declined gradually since 2001. Furthermore, the number of employees found in Stage 3 establishments has remained largely flat.

The employment contributions of Stage 1 and Stage 2 establishments suggest that growth in the region is likely to occur among smaller firms. While the River Crossing could spur the relocation or expansion of larger businesses, in reality establishment relocations; new business start-ups; and business expansions tend to occur more frequently in establishments employing 1 to 9 employees or 10 to 99 employees. Consequently, both St. Croix County and Corridor Communities should be prepared to offer sites and buildings that can accommodate a variety of business types.

3.2 - Other Locational Advantages

As noted in Section 1, the connections between economic growth and transportation infrastructure can also be viewed through the lens of location theory. From a transportation infrastructure perspective, location theory suggests that firms will choose a geographic location along transportation corridors that can lower costs. These costs are often thought of as the expenditures made by firms that are shipping goods to final markets. However, costs could also include how transportation infrastructure can increase access for customers traveling to an establishment (such as a retailer). Furthermore, location theory may consider how transportation infrastructure influences a firm's access to the region's labor force.

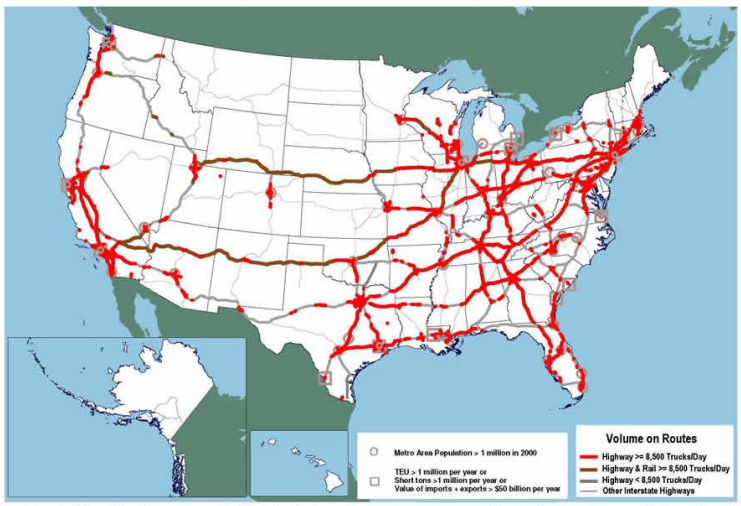
In truth, transportation infrastructure is but one of many factors that influence business location decisions. Consequently, the importance of transportation infrastructure as a location factor likely varies across time, space and industry sector. The challenge is determining how St. Croix County and Corridor Communities can best leverage the improved access offered by the River Crossing. This is especially true given that a major transportation corridor in the form of Interstate 94 is approximately 10 miles to the south.

River Crossing, Freight Transportation and Industrial Cluster Connections

Freight transportation can be considered from the perspectives of inter- and intra-regional access. In other words, freight can be transported within the region or can leave the region for more distant markets. In fact, the same highway investments that reduce long-distance transportation costs are also used for transporting goods within a metro area (Boarnet and Haughwout, 2000). Consequently, evaluating the freight transportation implications of the River Crossing requires understanding both long and short distance freight movements.

In reality, the major freight corridor from the Minneapolis-St. Paul-Bloomington metro area travels southeast rather than west (Map 3.1). For those firms who primarily ship to western markets, locations on the western portion on the metro area do not require traversing the urbanized area and likely provide greater transportation advantages. Consequently, the River Crossing itself does not necessarily provide a direct comparative advantage for St. Croix County from an inter-regional freight transportation perspective. Current or future Wisconsin-based firms that are located near the River Crossing and are

Map 3.1 – Major Freight Corridors



Note: Highway & Rail is additional highway mileage with daily truck payload equivalents based on annual average daily truck traffic (2011) plus average daily intermodal service on parallel railroads. Average daily intermodal service is the annual tonnage moved by container-on-flatcar and trailer-on-flatcar service divided by 365 days per year and 16 tons per average truck payload.
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2013

shipping to eastern markets will not need to move goods across the River Crossing. Instead, Minnesota firms shipping to markets in the east are more likely to benefit from the improved access.

While the River Crossing may not create a direct comparative advantage for inter-regional freight transportation in Wisconsin, its impact on inter-regional shipping could create other benefits for St. Croix County. The Crossing will alleviate local traffic congestion somewhat which could help commuters and commercial shippers alike. Furthermore, any new jobs created in Minnesota as a result of the River Crossing could create employment opportunities for St. Croix County residents. This is particularly true given the commuting patterns noted in Section 2. Instead, greater freight transportation benefits may arise for those Wisconsin firms who rely on intra-regional access.

Intra-regional freight shipments across the St. Croix River Crossing will be made primarily by truck. Certain types of industries tend to be more reliant on truck transportation than others. Table 3.3 depicts those industry categories that on average make the largest share of shipments by truck only.[39] As measured by total value, all of the industries depicted in Table 3.3 move at least 83 percent of their shipment values completely by truck. Some of these categories could include manufacturing firms who provide just-in-time delivery to regional customers, such as food manufacturers and metal and plastic goods fabricators. Others categories include wholesalers who serve regional markets. Consequently, these categories of businesses may benefit from improved access offered by the River Crossing.

Table 3.3 – Industries with the Highest Share of Shipments made by Truck (Based on Value of Shipments)

NAICS	Industry	Value of All Shipments (Millions $)	Percent of Total Shipment Values
4248	Beer, wine, and distilled alcoholic beverage merchant wholesalers	$99,035	98.9%
45431	Fuel dealers	$37,712	98.7%
4244	Grocery and related product merchant wholesalers	$554,608	97.7%
312	Beverage and tobacco product manufacturing	$121,817	93.8%
4233	Lumber and other construction materials merchant wholesalers	$143,970	93.8%
337	Furniture and related product manufacturing	$78,099	93.5%
4247	Petroleum and petroleum products merchant wholesalers	$561,488	91.9%
4235	Metal and mineral (except petroleum) merchant wholesalers	$176,011	91.8%
326	Plastics and rubber products manufacturing	$191,748	91.6%
311	Food manufacturing	$533,628	91.1%
327	Nonmetallic mineral product manufacturing	$113,567	91.1%
313	Textile mills	$32,646	90.8%
4931	Warehousing and storage	$815,197	90.2%
321	Wood product manufacturing	$89,646	88.8%
4246	Chemical and allied products merchant wholesalers	$104,847	87.4%
4249	Miscellaneous nondurable goods merchant wholesalers	$186,678	86.3%
322	Paper manufacturing	$147,657	84.5%
314	Textile product mills	$23,887	84.0%
424	Merchant wholesalers, nondurable goods	$1,988,373	83.3%
332	Fabricated metal product manufacturing	$280,823	83.0%

Source: 2007 Commodity Flow Survey (CFS)

[39] Shipments can also be measured by tonnage.

Industries that rely on truck shipments can also be examined by the average shipping distance for their products (Table 3.4). Many shipments by wholesale industry categories travel relatively short distances. Shorter shipment distances are also found in some manufacturing categories including food manufacturing, beverage manufacturing, and non-metallic mineral product manufacturing (such as gravel or concrete). Again, these types of industries are those that might benefit from the River Crossing.

Table 3.4 - Industries with the Shortest Average Shipping Distances made by Truck

NAICS	Industry	Value of All Shipments (Millions $)	Average Shipment Distance
45431	Fuel dealers	$37,712	22
5111	Newspaper, periodical, book, and directory publishers	$26,672	35
4248	Beer, wine, and distilled alcoholic beverage merchant wholesalers	$99,035	39
212	Mining (except oil and gas)	$43,325	42
4247	Petroleum and petroleum products merchant wholesalers	$561,488	48
4244	Grocery and related product merchant wholesalers	$554,608	83
4245	Farm product raw material merchant wholesalers	$79,392	96
4233	Lumber and other construction materials merchant wholesalers	$143,970	99
327	Non-metallic mineral product manufacturing	$113,567	102
4237	Hardware and plumbing merchant wholesalers	$91,046	103
324	Petroleum and coal products manufacturing	$133,904	121
4238	Machinery, equipment, and supplies merchant wholesalers	$233,192	122
312	Beverage and tobacco product manufacturing	$121,817	125
424	Merchant wholesalers, nondurable goods	$1,988,373	128
4235	Metal and mineral (except petroleum) merchant wholesalers	$176,011	130
4246	Chemical and allied products merchant wholesalers	$104,847	136
4249	Miscellaneous nondurable goods merchant wholesalers	$186,678	148
4236	Electrical and electronic goods merchant wholesalers	$179,186	157
42	Other Wholesale trade	$3,567,654	165
311	Food manufacturing	$533,628	170

Source: 2007 Commodity Flow Survey (CFS)

Corridor Communities and St. Croix County may also consider how the River Crossing creates transportation access, improved connections, or additional sites for businesses found in some of the region's key *industry clusters* .Over the past two decades, industry cluster initiatives have become a popular means for leveraging competitive assets in communities and regions. While a more in-depth discussion is provided below, industry clusters are geographically-concentrated businesses that are connected through 1) the products they produce; 2) the supplies, services, infrastructure and technologies they require; and 3) a common labor force. In other words, industry clusters are "groups of industries closely related by skill, technology, supply, demand, and/or other linkages" (Delgado, Porter and Stern, 2014, p. 2).

As an example of an industry cluster, consider agriculture, food and beverages. The food manufacturing portion of this cluster exhibits geographic concentrations of establishments throughout the United States, including a relative concentration the region Minneapolis-St. Paul-Bloomington metro area (Map 3.2). Furthermore, the agriculture, food and beverage cluster is tied by connections to many suppliers in terms of agricultural products, packaging, equipment, technical assistance, utilities and transportation (Figure 3.9). The cluster also depends on a specialized labor force and support organizations.

Map 3.2 – Food Manufacturing Establishment Concentrations (2013)

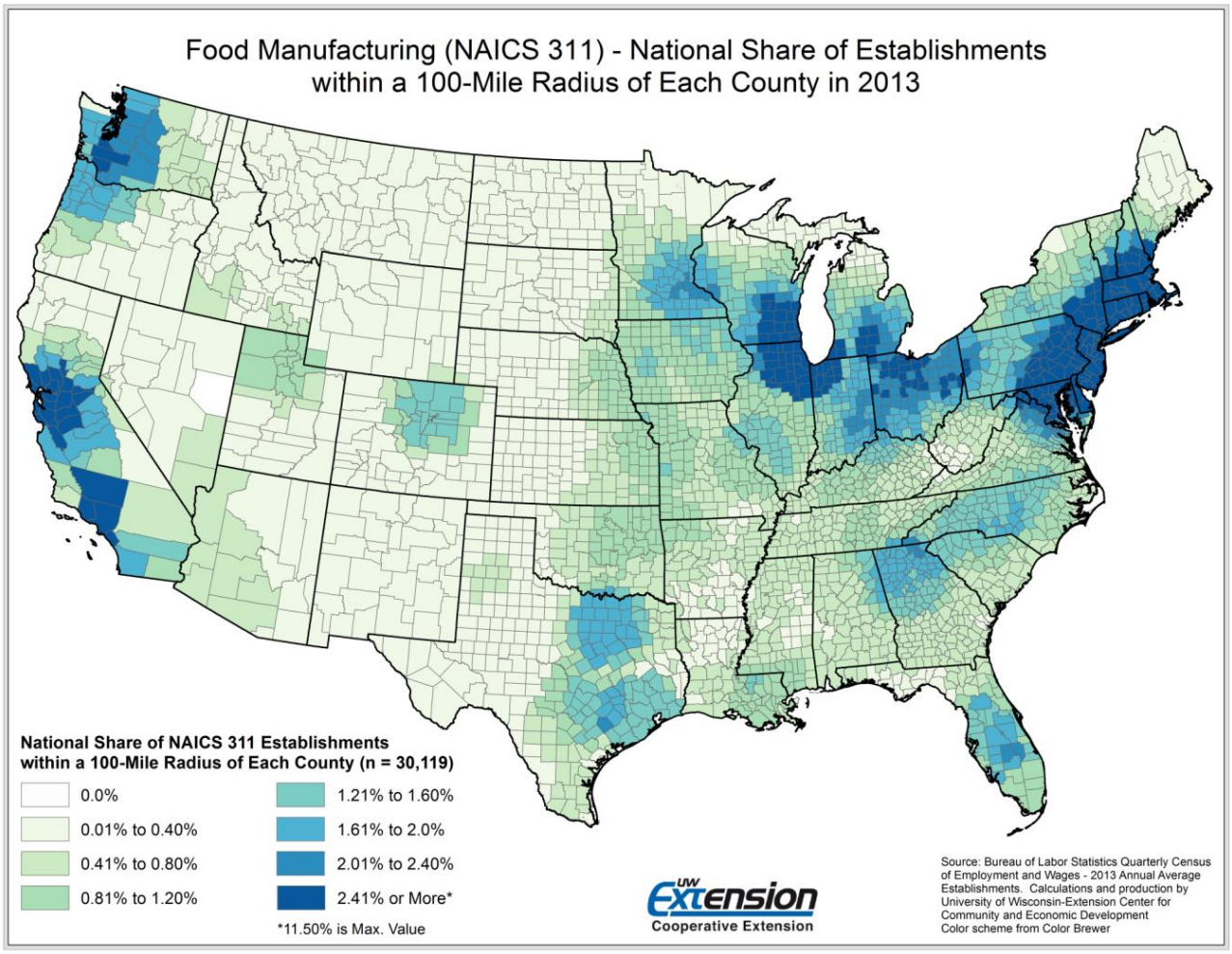


Figure 3.9 – Examples of Industries in the Agriculture, Food and Beverage Cluster

Agricultural Production

Oilseeds and Grains

Examples:

- Canola
- Soybeans
- Safflower
- Cottonseed
- Corn
- Oats
- Barley
- Wheat

Vegetable and Melons

Examples:

- Squash
- Melons
- Greens
- Cabbage
- Carrots
- Potatoes
- Beans
- Peppers

Fruits and Tree Nuts

Examples:

- Apples
- Cherries
- Pears
- Bananas
- Berries
- Citrus
- Almonds
- Walnuts

Other Crops

Examples:

- Sugar cane
- Sugar beets
- Maple syrup
- Herbs
- Spices
- Hops
- Spices

Beef, Poultry, Eggs and Pork

Examples:

- Beef cattle
- Veal calves
- Chickens
- Turkeys
- Ducks
- Pheasant
- Eggs
- Pigs

Dairy Producers

Examples:

- Dairy cattle and milk production

Seafood and Other Animal Products

Examples:

- Fish
- Shellfish
- Goats and goat milk
- Wild game
- Apiculture
- Bison
- Sheep milk

Food and Beverage Manufacturing

Grain and Oilseed Milling

Examples:

- Flour
- Malt
- Rice
- Corn Syrup
- Starches
- Oils
- Breakfast cereals

Sugar & Confectionery Products

Examples:

- Cane sugars and syrups
- Molasses
- Chocolate bars
- Cocoa products
- Candies and gum
- Granola Bars

Dairy Products

Examples:

- Fluid Milk
- Cheese
- Butter
- Whey & Casein
- Yogurt
- Ice Cream
- Infant Formula

Animal Processing

Examples:

- Fresh Beef, Pork, Lamb, or Poultry
- Sausages
- Bacon and Ham
- Animal fat and oil rendering
- Cured meats

Fruit and Vegetable Preserving & Specialty Foods

Examples:

- Fruit Juices
- Frozen/canned vegetables
- Frozen Dinners
- Pizzas
- Tomato and Pasta Sauces
- Jams and Jellies
- Soups

Seafood and Other Animal Products

Examples:

- Fresh fish
- Frozen seafood
- Pre-prepared seafood dinners
- Canned seafood
- Seafood soups

Bakery and Tortilla Products

Examples:

- Fresh and Frozen Breads
- Tortillas
- Pies and cakes
- Pastries
- Fresh or dried pasta
- Cookies and crackers

Other Food

Examples:

- Chips
- Coffee roasting
- Spices and extracts
- Sauces and dips
- Mayonnaise
- Fresh prepared vegetables

Soft Drinks and Ice

Examples:

- Soft drinks
- Flavored drinks
- Iced tea
- Bottled water
- Ice

Breweries, Wineries and Distilleries

Examples:

- Beer
- Wine
- Cider (alcoholic)
- Distilled liquor
- Packaged mixed drinks (alcoholic)

Support Services and Distribution

Packaging Materials

Examples:

- Plastic, metal and glass containers
- Paperboard boxes
- Plastic films and bags
- Printing services

Machinery and Equipment

Examples:

- Food product machinery
- Packaging machinery
- Conveyors and handling equipment
- Farm equipment
- Equipment repair

Professional and Technical Services

Examples:

- Soil sciences
- Accounting
- Marketing
- Food testing
- Engineering and design
- Veterinary

Utilities

Examples:

- Electrical power generation
- Natural gas distribution
- Water and wastewater

Distribution

Examples:

- Farm, grocery and related wholesale
- Truck and rail transportation
- Logistics services
- Warehousing

Regional transportation infrastructure is often viewed as a key component to the competitiveness to many industry clusters. Specifically, efficient and cost-effective transportation can help increase productivity by fostering regional supply chains; providing access to labor; and moving goods to markets. While many of these benefits are also offered to individual firms, clusters have the added benefit of regional concentration, or agglomeration, which may extend additional benefits tied to transportation infrastructure.[40]

A number of key industry clusters have already been identified for the region. The *Minneapolis-St. Paul Regional Cluster Competitiveness Study* (2013) authored by the University of Minnesota identifies 11 potential clusters for the region, as well as several of emerging clusters (Figure 3.10). Each cluster includes a set of core industry categories; the identification of related and supporting industries; and a brief cluster competitive analysis. The descriptions serve as a starting point for understanding some of the potential opportunities and challenges facing these clusters.

Figure 3.10 – Regional Industry Clusters

- Medical Devices;
- Lighting and Electrical Equipment;
- Analytical Instruments;
- Processed Food;
- Metal Manufacturing;
- Distribution Services, Transportation and Logistics;
- Financial Services;
- Publishing and Printing;
- Production Technology;
- Information Technology;
- Management of Companies

Source: Munnich, Dworin, Tilahun and Schmit (2013)

Communities and local economic development organizations will need to decide which metro area clusters to pursue (if any). If clusters are pursued, more specific details should be learned about the locational requirements of cluster firms. *Indeed, the prior discussion of intra-regional access suggests processed food, metal manufacturing, production technology, and distribution services may benefit from sites created by the River Crossing as well as the improved intra-regional access it creates*. However, deeper analyses of clusters may uncover other opportunities to leverage advantages of the Crossing. More specific questions to consider include:

- *Human capital* – What are the human capital needs of the cluster? Does the River Crossing create improved access to labor? Are there opportunities to develop specialized training programs for the cluster's major occupations? Are there opportunities to better partner with workforce development intermediaries? Do nascent entrepreneurs need mentoring or other support?

- *Supply chain issues* – Are primary inputs and primary support industries available locally or do they require importation from outside the region? Are there notable gaps in industry supply chains? Do logistics or transportation-related opportunities or challenges exist? Could these challenges improved by the Crossing?

[40] Empirical evidence on the ability of clusters to increase competitiveness, generate job growth, and produce new economic activity is being actively debated among researchers (for examples see: Palazuelos 2005; McDonald et al 2007; Motoyama 2008; Woodward 2012; and Delgado et al 2014). *Nonetheless, clusters remain beneficial as a framework for analysis as they can identify the potential connections and synergies among firms in the region.*

- *Capital availability* – How well does the region's lenders understand the capital needs of the industry? Do local lenders meet the needs for various forms of capital required at different business stages?

- *Intensity of relationships and competition* – Do firms in the cluster already collaborate to some degree or does existing competition preclude cooperation? Are there opportunities to connect with other organizations or individuals not traditionally associated with the cluster?

- *Innovation* – How does the innovation process within the cluster operate? Are there greater opportunities to partner with other firms or educational institutions on technology transfer or research?

- *Shared vision and leadership* – If they choose to do so, how can firms develop a collective identity, create a plan, or determine shared goals for the cluster? Are there individual leaders or institutions that can maintain a cluster's collective competitiveness and keep it organized?

These are detailed inquiries that will require more detailed analysis than can be provided here. However, the University of Wisconsin-Extension can help answer some of these questions.

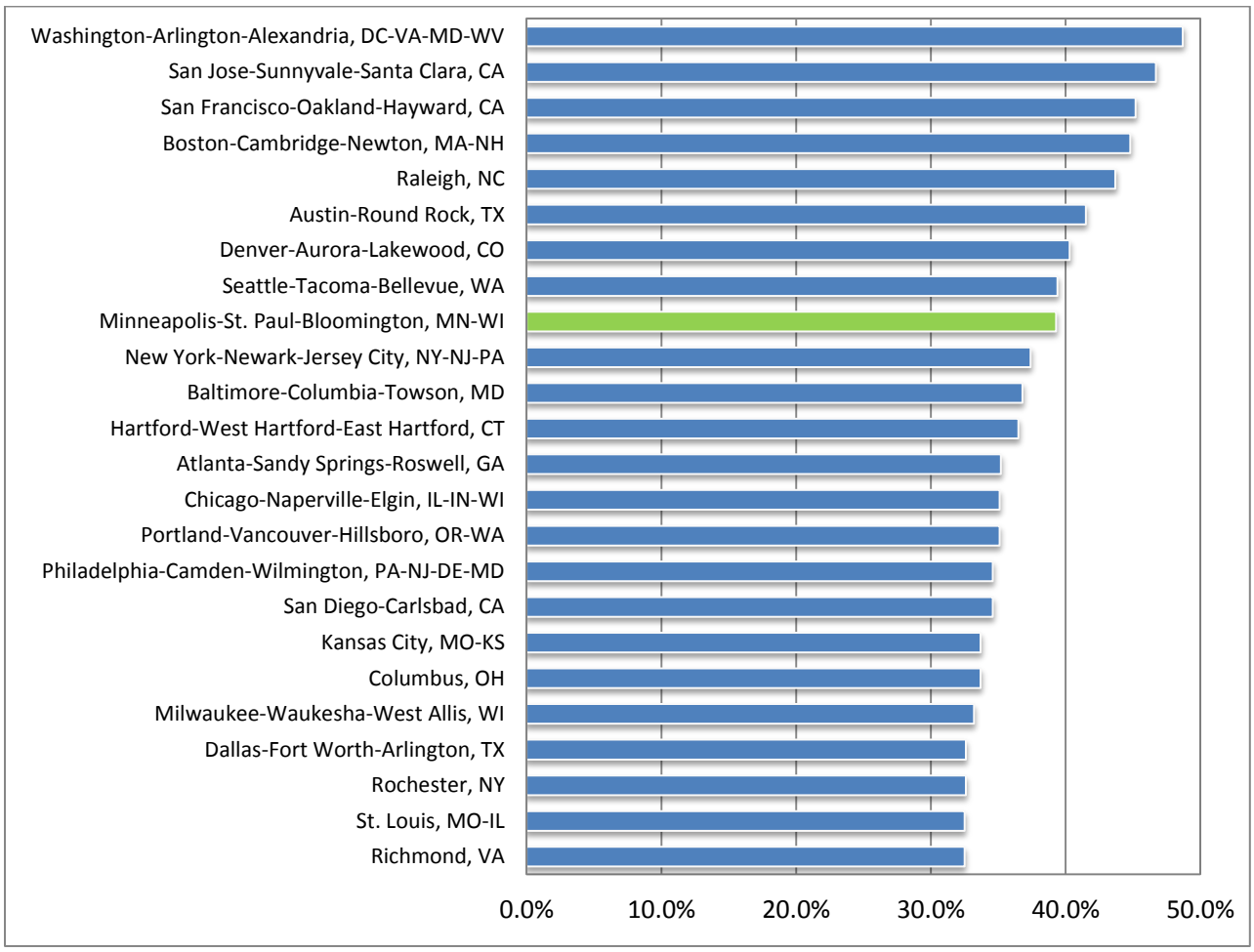
The River Crossing and Access to Human Capital

Human capital can be defined as the knowledge, skills and capabilities of the labor force. A significant amount of research finds that higher levels of human capital and labor quality are connected to outcomes such as greater employment growth rates and increased per capita incomes (Whitener and Parker 2007). In fact, it is likely that human capital is a more important factor in economic growth than access to transportation infrastructure. In particular, human capital is a local asset that can promote development through its impacts on productivity, providing opportunities to diversify the industrial base, and fostering innovation (Olfert and Partridge 2010; Gibbs 2005; Goetz and Rupasingha 2004)

Improved access for commuters also could provide better access to human capital and talent concentrations in the Twin Cities. It is important to remember that the River Crossing travels in both directions. As previously mentioned in Section 2, approximately 47 percent of the jobs held by Corridor community residents are located in Minnesota. However, only 10 percent of jobs located in the Corridor are filled by Minnesota residents.

One of the key assets of the metro area is its high level of educational attainment. As an example, consider the metro area's concentration of college graduates. The Minneapolis-St. Paul-Bloomington MSA has one of the highest shares of residents with a college degree among all large metro areas in the United States (Figure 3.11). The metro area also has concentrations and specializations in occupational clusters related to information technology; mathematics, statistics, data and accounting; managerial, sales, marketing and HR; engineering and related sciences; and other technology-based professions.

Figure 3.11 - Share of Residents with a College Degree – Top 25 Large Metro Areas



Source: U.S. Census Bureau American Community Survey and Author's Calculations

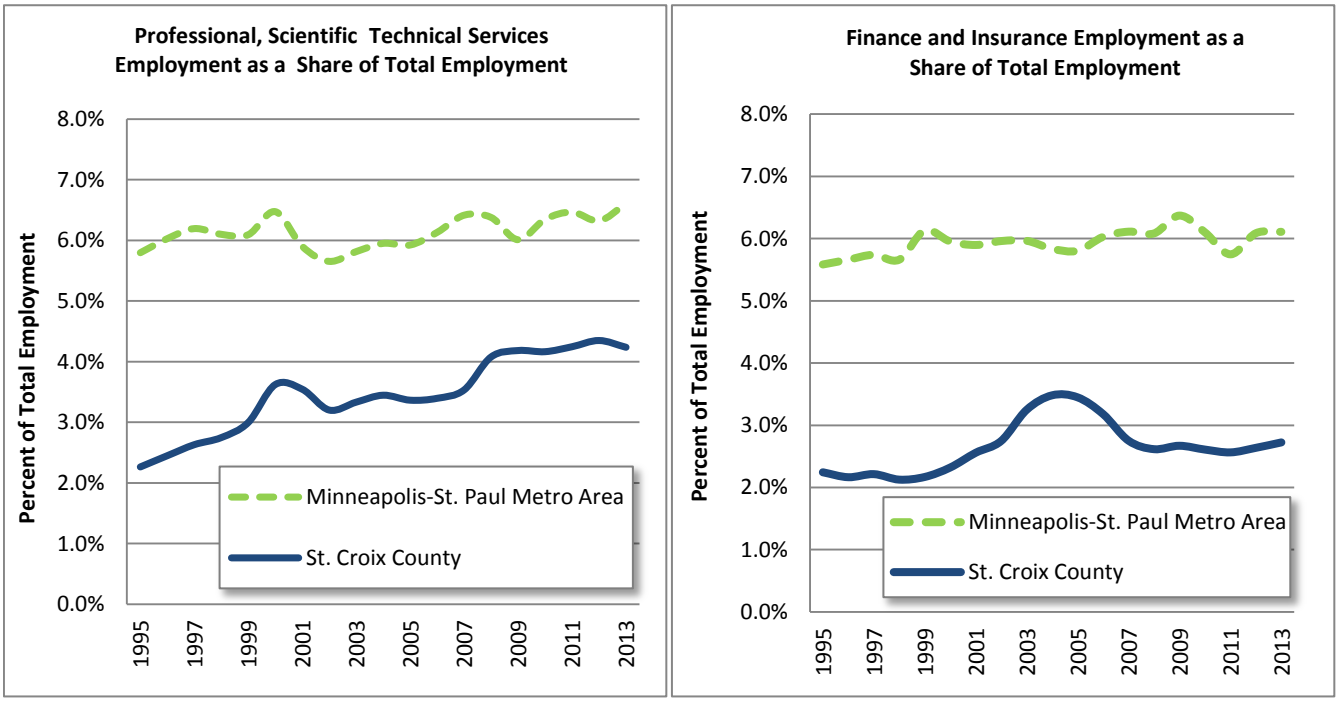
Some the region's college graduates are concentrated in the aforementioned industry clusters. Others are more broadly found in sectors related to professional, technical scientific services, and finance and insurance. While these two sectors now constitute a larger share of St. Croix County employment than twenty years ago (Table 3.5), their concentrations continue to remain below that of the metro area average (Figure 3.12). There are good reasons for these employment differences, but there may be an opportunity to build these industries locally through improved access to talent, available land, and lower costs of doing business created by the River Crossing.

Table 3.5 – Change in St. Croix County Annual Average Employment by Industry Sector (1994 to 2014)

NAICS	Industry	Total St. Croix County Employment		Employment Change	Total Share of St. Croix County Employment	
		1994	*2014*	*1994 to 2004*	*1994*	*2014*
11-21	Natural Resources	140	276	136	0.7%	0.9%
22	Utilities	52	84	32	0.3%	0.3%
23	Construction	769	1299	530	3.8%	4.1%
31-33	Manufacturing	6,118	6,377	259	30.1%	19.9%
42	Wholesale Trade	437	1,103	666	2.1%	3.4%
44-45	Retail Trade	2,478	3,948	1,470	12.2%	12.3%
48-49	Transportation and Warehousing	858	1,123	265	4.2%	3.5%
51	Information	198	262	64	1.0%	0.8%
52	Finance and Insurance	450	824	374	2.2%	2.6%
53	Real Estate and Rental and Leasing	132	147	15	0.6%	0.5%
54	Professional, Scientific and Technical Svcs.	487	1,268	781	2.4%	4.0%
55	Management Of Companies & Enterprises	114	195	81	0.6%	0.6%
56	Administrative Support & Waste Services	506	1,171	665	2.5%	3.7%
61	Educational Services	1,391	2,472	1,081	6.8%	7.7%
62	Health Care & Social Assistance	2,104	5,192	3,088	10.4%	16.2%
71	Arts, Entertainment & Recreation	350	505	155	1.7%	1.6%
72	Accommodation & Food Services	2,158	3,555	1,397	10.6%	11.1%
81	Other Services (Except Public Admin.)	489	865	376	2.4%	2.7%
92	Public Administration	1,088	1,377	289	5.4%	4.3%
99	Unclassified	8	0	(8)	0.0%	0.0%

Sources: Quarterly Census of Employment and Wages and Author's Calculations

Figure 3.12 - Employment Comparisons for Professional, Scientific and Technical Services and Finance and Insurance



Sources: Quarterly Census of Employment and Wages and Author's Calculations

3.3 - Recreational Development Opportunities

Communities across the rural-urban continuum have successfully leveraged outdoor recreation as an economic development strategy. This is also true in St. Croix County, as local recreational assets attract visitors, generate spending in local businesses and contribute to the area's quality of life. As with other sectors of the regional economy, the St. Croix River Crossing has an opportunity to influence recreational activity in Corridor Communities and the broader county. Accordingly, the following overview considers how the River Crossing could impact recreational development opportunities. A particular focus is placed on recreational uses related to multi-use trails and bicycling.

The River Crossing and Recreational Trail Use

As the popularity of walking, jogging, and bicycling has increased, the development of multi-use trails has arguably become the most popular means of supporting these recreational activities (Asabere and Huffman, 2009). The 4.7 mile bike and pedestrian trail loop constructed as part of the River Crossing builds on this trend and has an opportunity to create benefits for local residents. Certainly the development of recreational trails has potential implications for citizens' health and personal well-being. However, the development of multi-use trails can also generate an economic stimulus for local communities. More specifically, carefully-planned trails can utilize local land resources in a manner that provides additional income for current residents without jeopardizing the possibility of future income streams from other land uses (Kazmierski et al, 2008).

Recreational, multi-use trails can generate economic benefits in several manners. From a short-term perspective, the construction of bicycling and walking-related infrastructure creates economic impacts attributed to the labor income of construction workers and the purchases of materials used in these projects. For instance, Garrett-Peltier (2011) estimated the economic impacts of 58 different pedestrian and bicycle infrastructure construction projects across the United States. The analysis found that these projects supported an average of nine jobs per million dollars of construction costs. While the exact construction impact of the St. Croix River Crossing trail loop is unknown, it is likely to generate temporary benefits tied to local employment and income generation.

Other research considers how trail infrastructure can create economic benefits tied to property values. Some studies apply hedonic analysis to measure how proximity to a multi-use path impacts property values or sales prices.[41] Other analyses use a stated preference approach that asks home owners how the presence of a trail might influence their decision to buy a home. The results of these studies vary somewhat:

- In San Antonio, Texas home sales adjacent to trails were associated with a two percent price premium. Moreover, home sales adjacent to trails also having greenbelts had a five percent price premium (Asabere and Huffman, 2009);

[41] In the context of property valuations, hedonic analysis is a revealed preference approach to quantifying the relationship between a property's values and its characteristics. Certain physical characteristics and geographic locations may be valued by home owners more so than others. For instance, a greater square footage and a higher number of bathrooms may have a positive impact on home values, while the age of a home or its proximity to undesirable land uses may decrease a home's value.

- An analysis of the Little Miami Scenic Trail in southwest Ohio suggests that the sales prices of single family residential properties decreases by $7.05 for each foot further in distance from the trail. In other words, proximity to the Little Miami Scenic Trail adds value to nearby properties (Karadeniz, 2008);

- In the Minneapolis-St. Paul metro area a study examining the impact of bicycle facilities on home values found mixed results (Krizek, 2006). Within the urban core (i.e. in Minneapolis and St. Paul), moving a home 400 meters closer to an off-street, multi-use path increased its value by $510. However, the opposite effect was found in suburban areas. Specifically, proximity to a non-roadside trail reduced suburban home values by $240. Several reasons for this difference could be that suburbanites in this study had lower rates of bicycle use; or that suburban residents are more concerned with the greater access that trails afford to their property or neighborhood;

- An analysis of residential properties in Delaware suggested that a location within 50 meters of a bike path had a positive sales price impact of at least $8,800 (Racca and Dhanju, 2006);

- In a study of properties located near trails in Bloomington, Indiana, some property owners thought that proximity to a trail might increase their property values. However, others thought that the trails had no impact on their home's valuation (Corning, Mowatt, and Chancellor, 2012). The sentiment of these property owners is partially reflected in other analyses where residents believe that proximity to a trail has little impact on property values (Crompton, 2001);

- An analysis of property owners near multi-use trails in Omaha, Nebraska found that 81 percent of homeowners thought that a nearby trail would have a positive effect or no effect on the ease of selling their home (Greer, 2000). Similarly, 78 percent of property owners thought that the presence of a trail would have either a positive or neutral impact on sales price.

On the Wisconsin side of the River Crossing, much of the area surrounding the new trail loop currently is undeveloped. Consequently, any property value impact of the trail is yet to be determined. The aforementioned study of property values in the Minneapolis-St. Paul metro area does suggest that trails could have a negative impact in a suburban area such as the Town of St. Joseph. However, most studies show that multi-use trails either have a neutral or positive impact on residential property values. If the impacts are in fact positive, the trail loop could eventually contribute to an increased tax base.

Perhaps the most frequent means of assessing the economic contributions of multi-use trails is to consider impacts tied to trail user expenditures. Similar to impact analyses of other economic activities, these assessments measure how the spending of trail users supports employment and revenues in local businesses. The scale and scope of trail use economic impact studies vary considerably, ranging from aggregate statewide analyses to smaller-scale studies of individual trails. For purposes of this analysis, studies of individual trails provide more appropriate perspectives on economic impacts.

Table 3.1 depicts some of the impacts attributed to dedicated bicycle and pedestrian trails located throughout the United States. While these trails vary in their scale and location, two broad conclusions

should be considered. First, those trails located in metro areas (such as Orange County, Florida and Northern Virginia) tend to have larger usage levels and subsequent impacts. These figures are not surprising as urban markets provide a larger pool of potential users. Second, trails of any size tend to account for a small share of total regional employment or output. However, trail user impacts on individual businesses can be sizeable and their economic influence should not be discounted.

Table 3.6 – Sample Economic Impacts of Multi-Use Trails

Name, Location and Year of Study	Annual Estimated Trail Usage	Economic Impact ($)	Number of Jobs Supported	Figures Includes Local Expenditures?
Orange County Trails; Orange County, FL (2010)	1,700,000	$42.6 million	516	Yes
Ghost Town Trail; Cambria County and Indiana County, PA (2009)	75,500	$1.7 million*	N/A	Yes
Perkiomen Trail; Montgomery County, PA (2008)	400,000	$5.6 million*	N/A	Yes
Catskill Mountain Rail Trail; Ulster County, NY (2013)	140,000 (32,200 non-local)	$3.1 million	44	No
Washington and Old Dominion Trail; Northern, VA (2004)	1,707,353 (89,807 non-local)	$1.8 million	34	No

*Figures include direct expenditures only and were not analyzed using an I-O Model.

When considering these existing studies, it may be tempting to assume their results can be translated or extrapolated to potential economic impacts in St. Croix County. However, caution should be used as the results of economic impact studies may differ or vary for several reasons:

- Many economic impact studies of recreational facilities do not differentiate between local and non-local spending. Instead, impacts should be measured only using non-local visitor spending. Non-locals represent an outside injection of income that can be attributed to the travel motivations produced by trails. That is, visitors from outside the area spend money in a manner that would not occur but for the presence of the trail. Conversely, local residents who use trails will spend money in the locality regardless of the trail's presence (Bergstrom et al. 1990; Stynes 2004; Prey, Marcouiller and Kim, 2013). In the aforementioned studies, almost 75 percent of Orange County trail users also reside in Orange County. Moreover, 65 percent of Ghost Town Trail users originate from the local area while 78 percent of Perkiomen Trail users are local residents. Consequently, the economic impacts of these trails are likely overstated;

- The scale and scope of impact studies may differ dramatically. Studies that consider the economic impacts of trails at a larger geographic level inherently will have bigger multipliers than studies of localized trail systems. Studies also may consider a range of activities that may or may not be applicable at a local level. For instance, some studies consider the economic impact of more durable

purchases (e.g. the purchase of bicycle) while others exclude this type of spending. Furthermore, some studies may include the impact of bicycle-related events (such as bicycle races or tours). Others simply measure the impact of daily activities on roadways or trails;

Importantly, the economic impact of bicycling (or other recreational activities) also will depend on the local economic structure. Communities with few businesses in which bicyclists and pedestrians can spend their money will likely experience smaller impacts. Impacts in rural communities may also be smaller than those in metropolitan areas as rural regions tend to have less diversified economies (Kazmierski et al, 2008). This observation is particularly important for user spending attached to the River Crossing's trail loop. Specifically, downtown Stillwater currently has many more businesses to capture trail user spending than the Town of St. Joseph. Once additional businesses become available, additional spending may occur on the Wisconsin side of the trail.

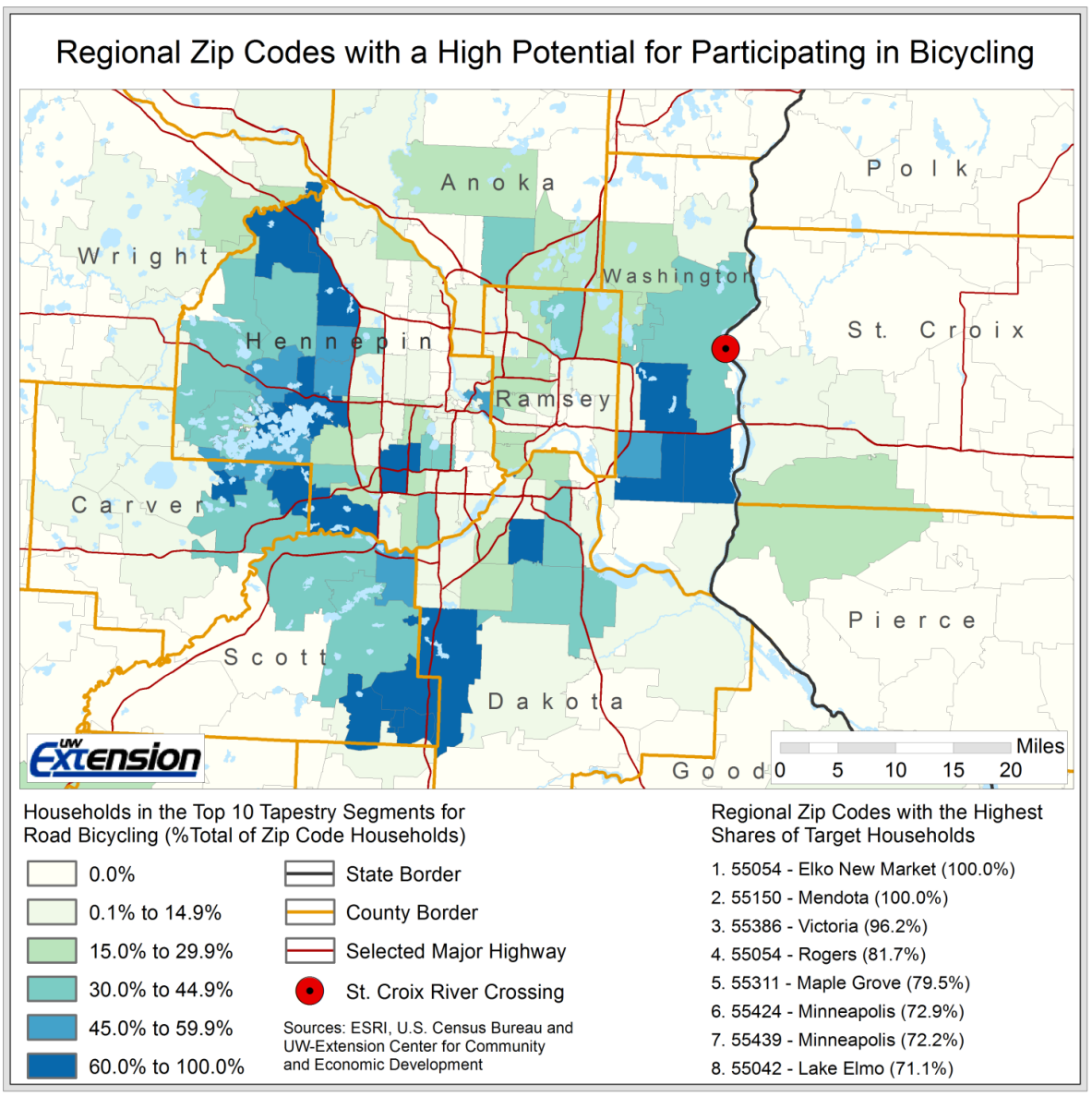
While impacts from the trail loop are expected to be incremental and somewhat limited, an argument could be made that the River Crossing's new trail loop might serve as a catalyst for other bicycle-related tourism and activities in the region. The *St. Croix County Parks and Recreation Bicycle and Pedestrian Plan* prioritizes a number of on-road and off-road facilities that enhance bicycle infrastructure and routes in the county. Once developed, the River Crossing could serve as a trail head and create improved access to this broader system of bicycling routes. This access is particularly relevant given the Minneapolis-St. Paul metro area's high rate of cycling use (Barnes and Krizek, 2005; Dill and Carr, 2003). Eventually, attracting additional riders from the metro area could create new sales opportunities for local businesses.

In terms of economic potential, households with a high propensity to participate in on-road bicycling or bicycle touring are likely key markets for St. Croix County. Many casual riders in the metro area already have access to trails as 90 percent of Twin Cities homes are within one mile of an off-street trail (Krizek, 2006). However, more passionate or advanced bicyclists desiring longer rides or a variety of routes might consider St. Croix County as an opportunity. A number of zip codes with high concentrations of this target market are found throughout the metro area. Importantly, a number of these zip codes are located in areas that may benefit from the improved access offered by the River Crossing (Figure 3.13).

Figure 3.13 – High Potential Households for Bicycling Related Activities.

Lifestyle segmentation data can be used to identify households that suggest a high potential for participating in bicycling-related activities and spending. Lifestyle segmentation systems attempt to predict specific buying habits and preferences of consumers based on their location (urban, suburban, rural); their socio-economic status (age, income, occupation, type and value of residence); and their buying behaviors and preferences.

For purposes of this analysis, the Tapestry™ lifestyle segmentation system from ESRI was used to identify the top 10 consumer segments with the highest propensity for engaging in road biking. These segments are 40 to 60 percent more likely to participate in road biking than the average U.S. household (Descriptions of these segments are found in Appendix C). As shown on the map below, a number of zip codes with high concentrations of these households are located in proximity to the St. Croix River Crossing. Information on the Tapestry methodology is available at:
downloads.esri.com/esri_content_doc/dbl/us/J9941Tapestry_Segmentation_Methodology.pdf



As with any potential impacts arising from the River Crossing's new trail loop, caution also should be used when estimating the potential economic contributions of broader bicycling activity throughout the county. For instance, economic development organizations might assume that local impacts will be similar to the statewide figures found in the 2010 report: *Valuing Bicycling's Economic and Health Impacts in Wisconsin*.[42] However, this study considers economic impacts that may or may not have a local component, such as the economic impact of bicycling manufacturing, sales and services.

As mentioned earlier, economic impact analyses performed for a larger geographic area (e.g. the state of Wisconsin) also will inherently have larger multipliers. Finally, the activity levels and spending estimates in this study are extrapolated from figures collected in Jefferson County and along the Elroy-Sparta Trail. While there is some merit in these extrapolations at a state-level, these figures are partially based on well-established trail systems and may not reflect local conditions.

Truly optimizing the impacts related to new bicycling/trail infrastructure and improved access to the county will likely require strategies for capturing the spending from these visitors. While every community will approach this consumer segment in a different manner, communities that succeed will have a clear plan for doing so. Several resources are suggested in Figure 3.2 for communities interested in developing economic development strategies around trail-users and/or broader bicycling activity.

Figure 3.14 – Selected Resources for Trail-Based and Bicycle-Related Economic Development

- *Trail Towns - Capturing Trail-Based Tourism* – From the Land Information Access Association. Includes information on how communities can assess physical design issues, create events, promote business and economic development opportunities, identify user needs, and organize local volunteers.

  Available at: www.liaa.org/downloads/trail_town_manual.pdf

- *Getting the Wheels Rolling: Using Policy to Create Bicycle Friendly Communities* - From the Center for Land Use Education (CLUE) at the University of Wisconsin-Stevens Point and the University of Wisconsin-Extension. Offers information on bicycle infrastructure planning, creating bicycle-friendly communities and a compendium of bicycle planning resources.

  Available at: www.uwsp.edu/cnr-ap/clue/Documents/Tracker/TrackerSummer2014.pdf

- *Implementing Trail-Based Economic Development Programs – A Handbook for Iowa Communities* – From the Iowa Department of Transportation. Contains principles for trail-based economic development, case studies, and benchmarking resources.

  Available at: www.iowadot.gov/iowabikes/trails/web-pdf/EconHandbook/HANDBOOK.pdf

[42] See Grabow, Hahn and Whited, 2010

Accessibility to Other Recreational Assets

Economic development activities surrounding trail use and bicycling are not the only recreational opportunities potentially related to the River Crossing. As noted in Section 2, the accessibility to many Corridor Communities will be improved once the River Crossing is complete. While this accessibility is usually framed in the context of commuting times, visitor access could also be improved to other recreational assets in Corridor Communities such as the Somerset Amphitheater and the Apple River. Willow River State Park also is a key local amenity which had a visitation of 479,000 in 2010 and accounted for $24.9 million in non-local expenditures (Prey, Marcouiller and Kim, 2013).

Depending on the visitor segment, reduced travel times or congestion offered by the River Crossing may provide some additional incentive to visit local recreational facilities. However, it is unclear how much any improved accessibility will result in an additional travel motivation for visitors. Travel costs are an important part of tourism expenditures, but are only one of many factors influencing travel decisions. Instead, Celata (2007) suggests that accessibility itself is not a source of competiveness for travel destinations. That is, "competitive advantages do not arise from being closer to the market, but from the ability to use and promote the local attractive potential to reduce the weight of distance. If a destination is unique – accessibility has no influence on its attractiveness" (pg. 38). Consequently, local destinations should continue to rely on their uniqueness or their niche. However, reduced travel times or costs could provide some local benefit if St. Croix County attractions become more accessible relative to *similar* attractions in the region.

Finally, the River Crossing may also provide better access to recreational assets located in northwest Wisconsin. In particular, the River Crossing's improved connection to Highway 35 and Highway 64 provide an enhancement to the travel corridor between the metro area and recreational destinations in high-amenity Wisconsin counties (such as Washburn, Sawyer, Bayfield and Ashland). In fact, several counties in northwest Wisconsin have among the highest national concentrations for seasonal and recreational housing units. Many owners of these units live in the Minneapolis-St. Paul metro area, while other metro area residents simply recreate in this area of Wisconsin. This transient consumer segment could provide market opportunities for Corridor Community businesses such as gas stations, grocery stores and general merchandise stores. However, it is difficult to quantify this market segment.

3.4 - Conclusions

Regional companies, workers and communities likely will realize economic benefits from the St. Croix River Crossing. However, St. Croix County and Corridor Communities are subject to many other factors that contribute to economic growth and development. Consequently, the St. Croix River Crossing should not be viewed as a panacea to growth. Instead, the Crossing will likely create opportunities that will need to be supported by local economic development efforts. Specific opportunities include:

- New household income in Corridor Communities and St. Croix County could generate significant future expenditures and employment impacts. However, communities should also consider that the River Crossing also improves access to shopping and commercial districts in Minnesota. For communities to truly benefit from this additional spending potential, they will need to develop strategies to address expenditure leakage;

- With growth also comes additional demand for local government services. Communities will need to determine how to balance additional tax revenues generated by future growth with the costs for services that may arise from new households;

- New household growth facilitated by the River Crossing also creates a potential pool of new entrepreneurs. St. Croix County and Corridor Communities may want to consider initiatives to support these individuals;

- Large firm relocations and expansions are relatively rare. Most relocating firms and so-called expansion start-ups employ fewer than 100 workers. Furthermore, most employment growth occurs among firms with 1 to 9 employees or 10 to 99 employees. Consequently, it is less likely that growth in along the Corridor will arise from large firms relocating to the region. Instead, new and expanding firms will need a range of buildings and sites to fit their needs;

- Economic impacts from the St. Croix River Crossing are likely to be incremental in nature. While some developments may appear rapidly, overall growth likely will occur gradually as individuals and businesses adapt to the River Crossing;

- The improvements arising from the River Crossing are less likely to enhance inter-regional transportation advantages for Wisconsin-based companies. However, the Crossing does create intra-regional improvements that could benefit a number of wholesale and manufacturing categories. The Crossing could also create additional access and opportunities for connecting to the region's industry clusters and talent. Communities may want to consider learning more about the needs of regional industry clusters. Communities should also contemplate developing profiles that detail characteristics of the labor force living within 15, 30 and 45 minute drive times;

Finally, this study is not a substitute for a comprehensive economic development strategy. While this analysis identifies potential economic development prospects arising from the River Crossing, communities and economic development organizations will need to craft formal strategies and initiatives around these opportunities. The University of Wisconsin-Extension can continue to support these efforts.

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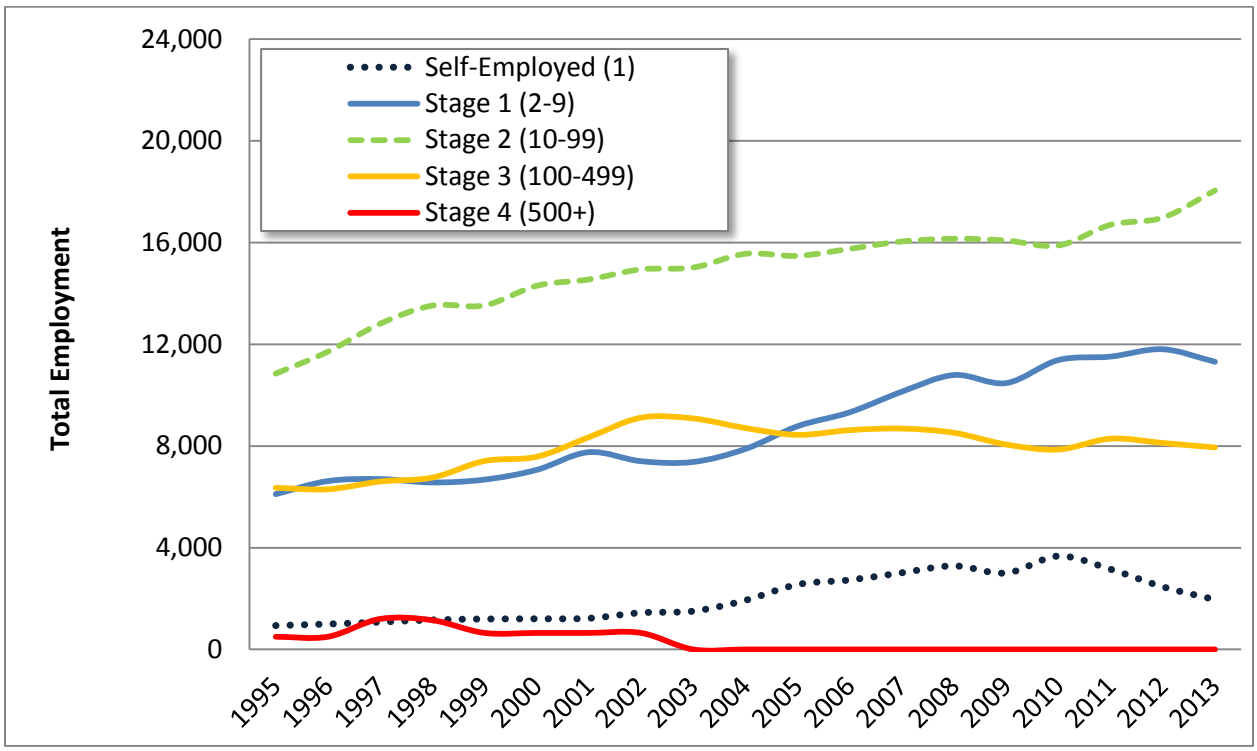
Appendix A – St. Croix County Population Projections by Age

Age Group	2010	2015	2020	2025	2030	2035	2040
0 to 4	6,166	5,750	6,530	6,830	7,010	7,090	7,270
5 to 9	6,705	6,550	6,560	7,290	7,550	7,540	7,540
10 to 14	6,396	6,980	7,250	7,130	7,880	7,950	7,840
15 to 19	5,361	5,900	6,840	6,980	6,840	7,380	7,410
20 to 24	3,924	4,270	4,880	5,550	5,650	5,380	5,770
25 to 29	5,546	4,650	5,290	5,950	6,720	6,660	6,180
30 to 34	5,996	6,200	5,690	6,310	7,020	7,620	7,380
35 to 39	6,203	6,570	7,400	6,630	7,260	7,790	8,320
40 to 44	6,437	6,440	7,360	8,130	7,210	7,670	8,100
45 to 49	6,933	6,430	6,880	7,720	8,490	7,330	7,700
50 to 54	6,683	6,770	6,550	6,920	7,750	8,350	7,180
55 to 59	5,379	6,310	6,680	6,380	6,710	7,450	8,060
60 to 64	4,148	4,900	6,080	6,340	6,050	6,280	6,970
65 to 69	2,805	3,680	4,610	5,650	5,890	5,580	5,830
70 to 74	1,867	2,460	3,410	4,220	5,160	5,380	5,140
75 to 79	1,461	1,570	2,170	2,980	3,700	4,540	4,780
80 to 84	1,176	1,170	1,300	1,780	2,460	3,050	3,790
85 to 89	723	835	840	935	1,300	1,800	2,280
90 and over	436	555	665	725	820	1,060	1,470

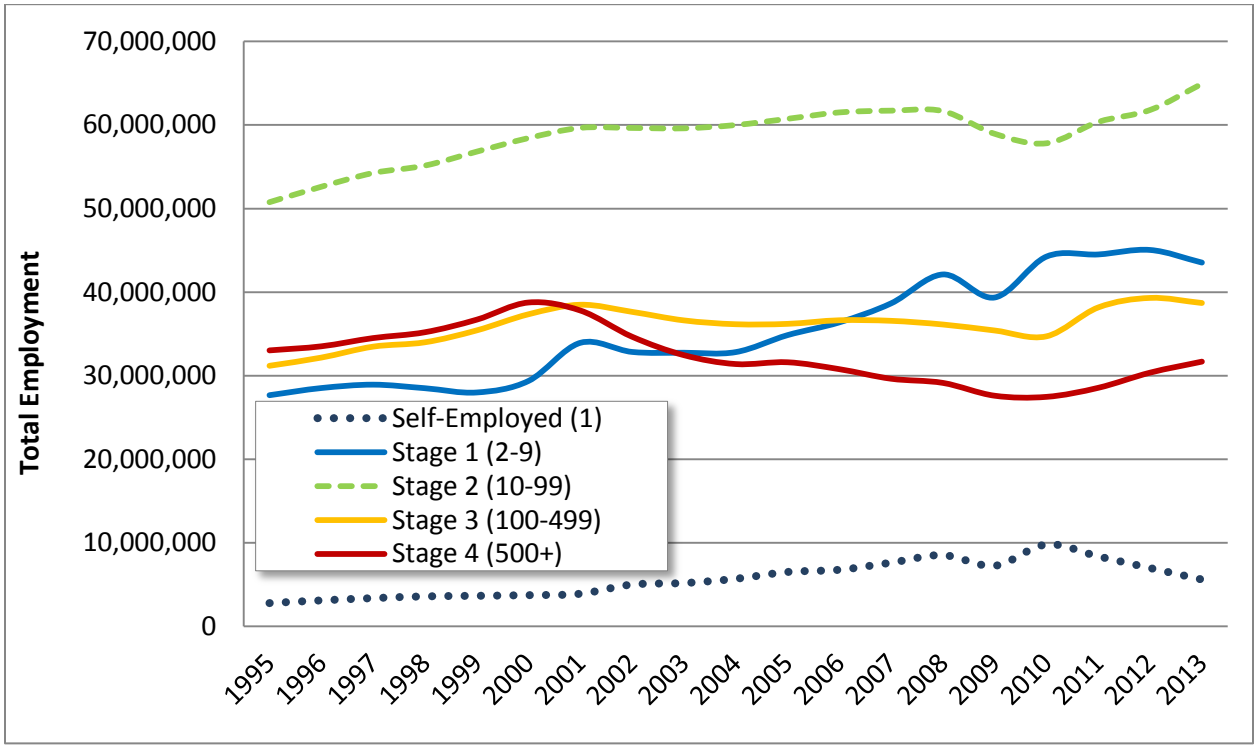
Sources: Wisconsin Department of Administration Demographic Services Center

Appendix B – Employment Trends by Establishment Stage

St. Croix County Employment 1995 to 2013 - Total Employment by Establishment Stage



St. Croix County Employment 1995 to 2013 - Total Employment by Establishment Stage



Source: National Establishment Time Series Database Extracted from YourEconomy.org

Appendix C – Tapestry Categories with High Potential for Participating in Bicycling

The following Tapestry categories show the ten largest market potential indices (e.g. likelihood) for participating in road bicycling.

Tapestry Code 01 - Top Rung: Residents of Top Rung neighborhoods are mature, married, highly educated, and wealthy. The median age is 45.4 years; one-third of the residents are in their peak earning years of 45–64. More than 77 percent of these households are composed of married couples; half of them have children. Except for the presence of children, this is a low-diversity, monochromatic market.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/01_top_rung.pdf

Tapestry Code 02 – Suburban Splendor: Suburban Splendor residents are in families in growing neighborhoods. Approximately 80 percent of the households consist of married-couple families, with or without children. Household growth in these suburbs is 2 percent annually. The median age is 40.5 years, and half of the population is aged 35–64 years. Diversity is low with a predominantly white population.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/02_suburban_splendor.pdf

Tapestry Code 03 – Connoisseurs: Residents of Connoisseurs neighborhoods are somewhat older, with a median age of 48.2 years. Approximately 70 percent of the population is married. Although residents appear closer to retirement than child-rearing age, 30 percent of the households are married couples with children living at home. Ethnic diversity is negligible.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/03_connoisseurs.pdf

Tapestry Code 04 – Boomburbs: The newest additions to the suburbs, these communities are home to busy, affluent young families. Both the neighborhoods and the families are growing. Boomburbs is the fastest-growing market in the United States; the population has been growing at a rate of 1.59 percent annually since 2010. It is also home to one of the highest concentrations of young families with children. The median age is 36.1 years; one-fifth of Boomburbs residents are between 35 and 44 years of age. There is little ethnic diversity in the population; most of the residents are white.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/04_boomburbs.pdf

Tapestry Code 08 – Laptops and Lattes: With no homeownership or child-rearing responsibilities, residents of Laptops and Lattes neighborhoods enjoy single life in the big city. Most households are singles who live alone or with a roommate. The average household size remains constant at 1.9. The median age is 38.1 years. Although most of the population is white, Asians represent 10.4 percent of the total population (almost two-and-one-half times the national level).
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/08_laptops_and_lattes.pdf

Tapestry Code 09 – Urban Chic: Urban Chic residents are professionals who live a sophisticated, exclusive lifestyle. More than half of these households are married-couple families, similar to the U.S. proportion. Fewer than half of them have children. Unlike the United States, there is a smaller proportion of single parents and a higher proportion of singles and shared households. The median age is 43.3 years; the diversity index is 49.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/09_urban_chic.pdf

Tapestry Code 14 – Prosperous Empty Nesters: Approximately 6 in 10 householders in Prosperous Empty Nesters neighborhoods are aged 55 years or older. Forty percent of the households are composed of married couples with no children living at home. Residents are enjoying the move from child-rearing to retirement. The median age is 48.5 years. Population in this segment is increasing slowly, at 0.47 percent annually; however, the pace will probably accelerate as the Baby Boomers mature. Prosperous Empty Nesters residents are not ethnically diverse; approximately 90 percent are white.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/14_prosperous_empty_nesters.pdf

Tapestry Code 15 – Silver and Gold: With a median age of 61.3 years, Silver and Gold residents are the second oldest of the Tapestry segments. More than 70 percent are aged 55 years or older. Most residents have retired from professional occupations. Half of the households are composed of married couples without children. This segment is small, less than 1 percent of all U.S. households; however, annual household growth is 0.66 percent since 2000. Residents of these neighborhoods are not ethnically diverse; 93 percent of them are white.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/15_silver_and_gold.pdf

Tapestry Code 23 – Trendsetters: On the cutting edge of urban style, Trendsetters residents are young, diverse, and mobile. More than half the households are singles who live alone or share the rent with a roommate. Families comprise the remainder. With a median age of 35.5 years, this segment is slightly younger than the U.S. median. Ethnically diverse, 13.7 percent of the residents are Asian and 23 percent are Hispanic; both percentages are well above those of the U.S.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/23_trendsetters.pdf

Tapestry Code 55 – College Towns: With a median age of 24.4 years, College Towns is the third youngest of all the Tapestry segments. Most residents are aged between 18 and 34 years and live in single-person or shared households. One-fourth of households are occupied by married-couple families. The race pro le of this market is somewhat similar to the U.S. profile. Approximately three-fourths of the residents are white.
www.esri.com/~/media/Files/Pdfs/data/esri_data/pdfs/tapestry-singles/55_college_towns.pdf

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APPENDIX D: MARKET CONDITIONS ANALYSIS FOR ST. JOSEPH TOWN, WISCONSIN

Maxfield Research & Consulting

December 22, 2015

MEMORANDUM (Updated)

TO: Mr. Phil Carlson
Stantec

From: Ms. Mary C. Bujold
Maxfield Research and Consulting, LLC

RE: Market Conditions Analysis for St. Joseph Town, Wisconsin

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Introduction

This memorandum provides demographic, economic and market data for St. Joseph Town and immediate surrounding communities. Communities included in thisanalysis are: St. Joseph Town, Hudson city, Hudson Town, North Hudson Village, Somerset Village, Somerset Town and Troy Town. All of these communities are located in St. Croix County, Wisconsin. Growth and development in St. Croix County is influenced by growth and expansion of the Twin Cities Metro Area. The Metropolitan Statistical Area (MSA) for the Twin Cities as defined by the US Census Bureau includes all of St. Croix County.

The population and household base in St. Croix County has increased and continued growth is projected for the County as the Twin Cities Metro Area continues to expand outward. Commercial growth in Hudson can be linked to the expansion of the Metropolitan Area and its location along Interstate 94. Growth in Somerset has been, to a degree influenced by households and businesses crossing the St. Croix River in Stillwater to Wisconsin.

The development of the new Mississippi River crossing (Stillwater Bridge) which will extend from Highway 36 in Minnesota across to St. Joseph in Wisconsin, will bring a considerable amount of additional traffic that will pass through St. Joseph and then spread out into various areas in St. Croix County and beyond. The bridge crossing will offer a more efficient and convenient travel route for vehicles that previously had to use the older Stillwater Bridge (Highway 64 to Houlton, connecting to Highway 35).

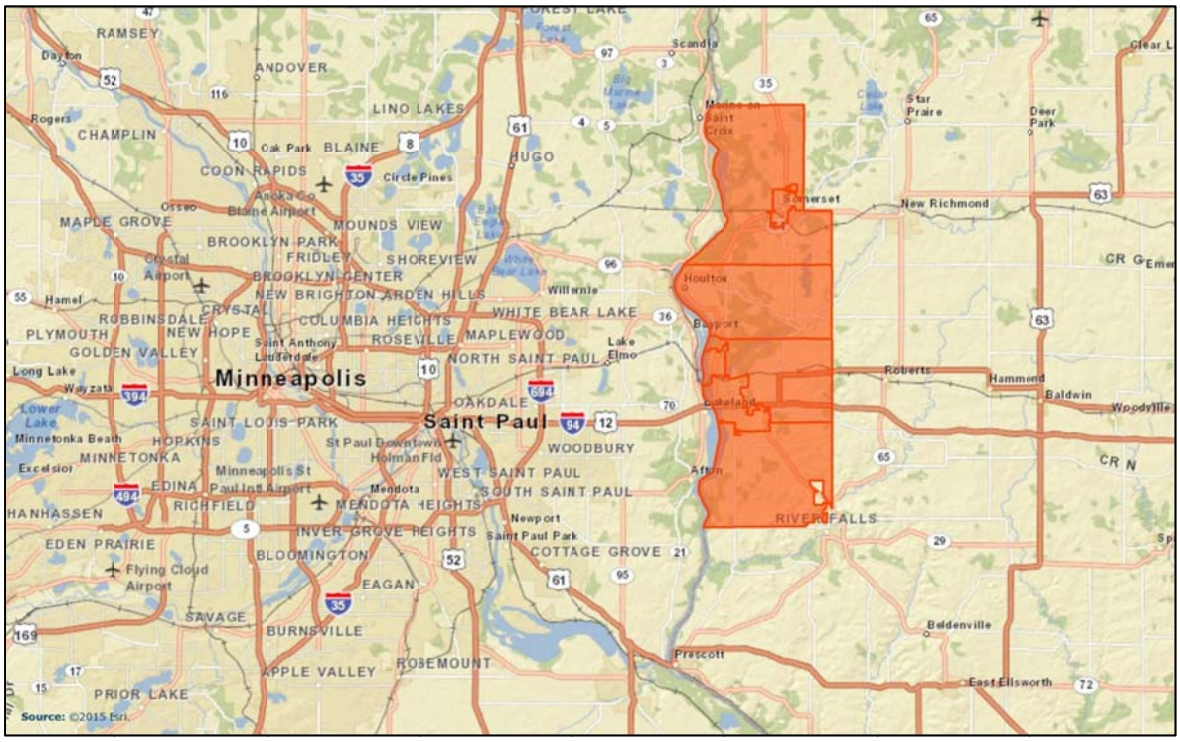
The bridge's connection between Stillwater, Oak Park Heights and St. Joseph Town will create additional development pressure in St. Joseph residentially and commercially. The convenient connection and interchange with Highway 35 in St. Joseph will create parcels that will be able

to support higher-density development. It is important to consider how this may impact St. Joseph in the future as interest in the community increases with the higher level of access.

St. Joseph Town and Surrounding Area

The map below shows St. Joseph Town and the immediate surrounding area. This area is referenced in the demographic, housing, consumer expenditures and retail leakage tables.

ST. JOSEPH HOUSING AND RETAIL AREA



Population and Household Growth Trends

Table 1 presents population and household growth trends for St. Joseph Town and the immediate surrounding communities. This information was prepared by the Wisconsin Department of Administration. We anticipate there may be some modest residential speculation in land prices prior to the opening of the Bridge. However, most of the growth and development is likely to occur post-opening of the Bridge. Once the Bridge opens, development of residential and commercial uses should expand. This means that the current projected population and household growth for St. Joseph Town is likely too conservative for 2020 and beyond. The Bridge is scheduled to open in 2017.

Maxfield Research has revised growth projections for 2020 and beyond upward for the jurisdictions that are immediately adjacent to the new Bridge to account for increased development. In addition to higher growth levels overall, increased demand is likely for some types of multifamily development such as rental apartments or townhomes and for-sale townhomes. These product types are limited in St. Joseph Town primarily because of current infrastructure. With the Bridge, more households are likely to be interested in alternate housing products, especially with more convenient access into Downtown Stillwater.

From 2000 to 2010, St. Joseph Town increased its population and households by 406 people (11.8%) and 195 households (16.3%). From 2010 to 2015, St. Joseph Town is estimated to have increased by 78 people to 3,920 and by 62 households to 1,450. From 2015 to 2020, growth for St. Joseph Town is projected at 480 people and 210 households. From 2020 to 2030, growth is projected at 700 people and 300 households. These growth projections account for additional growth as a result of the new river crossing. While St. Joseph has, in the past, tended to attract a high proportion of families, household type patterns are shifting. Growth is focused on the baby boom population, a portion of which may choose to relocate in communities such as St. Joseph, especially if there is product available that meets their needs.

TABLE 1
POPULATION AND HOUSEHOLD GROWTH TRENDS
ST. JOSEPH AND SURROUNDING COMMUNITIES
2000-2030

	US Census		WI Dept. of Admin./Maxfield Research			Change 2000-2010		Change 2010-2020		Change 2020-2030	
Population	**2000**	**2010**	**2015**	**2020**	**2030**	**No.**	**Pct.**	**No.**	**Pct.**	**No.**	**Pct.**
St. Joseph Town	3,436	3,842	3,920	4,400	5,100	406	11.8	558	14.5	700	15.9
North Hudson Village	3,463	3,768	3,815	4,030	4,300	305	8.8	262	7.0	270	6.7
Hudson City	8,775	12,719	13,800	15,650	18,810	3,944	44.9	2,931	23.0	3,160	20.2
Somerset Village	1,556	2,635	2,760	3,115	3,725	1,079	69.3	480	18.2	610	19.6
Somerset Town	2,644	4,036	4,250	4,770	5,650	1,392	52.6	734	18.2	880	18.4
Hudson Town	6,213	8,461	8,820	9,820	11,470	2,248	36.2	1,359	16.1	1,650	16.8
Troy Town	3,661	4,705	4,910	5,400	6,185	1,044	28.5	695	14.8	785	14.5
Total PMA	31,748	40,166	42,275	47,185	55,240	8,418	26.5	7,019	17.5	8,055	17.1
St. Croix County	63,155	84,345	86,169	96,985	111,470	21,190	33.6	12,640	15.0	14,485	14.9
Wisconsin	5,363,375	5,386,956	5,783,015	6,005,080	6,375,910	23,581	0.4	618,124	11.5	370,830	6.2
Households	**2000**	**2010**	**2015**	**2020**	**2030**	**No.**	**Pct.**	**No.**	**Pct.**	**No.**	**Pct.**
St. Joseph Town	1,193	1,388	1,450	1,660	1,960	195	16.3	272	19.6	300	18.1
North Hudson Village	1,315	1,471	1,525	1,633	1,796	156	11.9	162	11.0	163	10.0
Hudson City	3,687	5,287	5,872	6,745	8,331	1,600	43.4	1,458	27.6	1,586	23.5
Somerset Village	635	990	1,062	1,214	1,494	355	55.9	224	22.6	280	23.1
Somerset Town	927	1,391	1,500	1,706	2,083	464	50.1	315	22.6	377	22.1
Hudson Town	1,925	2,703	2,885	3,255	3,917	778	40.4	552	20.4	662	20.3
Troy Town	1,250	1,665	1,780	1,983	2,341	415	33.2	318	19.1	358	18.1
Total PMA	12,932	14,895	16,074	18,196	21,922	1,963	15.2	3,301	22.2	3,726	20.5
St. Croix County	23,410	31,799	33,976	37,933	44,851	8,389	35.8	6,134	19.3	6,918	18.2
Wisconsin	2,084,544	2,271,385	2,363,326	2,483,442	2,689,289	186,841	9.0	212,057	9.3	205,847	8.3

Sources: US Census; ESRI Inc.

Age Distribution

Table 2 shows the age distribution of the population for St. Joseph Town and the surrounding jurisdictions. The totals have been combined into a single Market Area. It is this general area whereby St. Joseph Town is expected to complete most directly for people and households. Growth will also come from outside of this area, from Minnesota and from other locations in eastern Wisconsin. We account for potential growth from outside of the Market Area in considering demand.

TABLE 2
AGE DISTRIBUTION OF THE OLDER ADULT POPULATION
ST. JOSEPH AND SURROUNDING COMMUNITIES
2000-2020

					Change			
					2000-2010		2010-2020	
St. Joseph Town	2000	2010	2015	2020	No.	Pct.	No.	Pct.
Under 19	1,076	1,039	1,010	1,012	-37	-3.4	-27	-2.6
20-24	99	130	159	211	31	31.3	81	62.3
25-34	378	338	340	365	-40	-10.6	27	8.0
35-44	780	564	524	568	-216	-27.7	4	0.7
45-54	582	798	700	730	216	37.1	-68	-8.5
55-64	311	593	690	814	282	90.7	221	37.3
65-74	152	260	363	528	108	71.1	268	103.1
75+	58	120	134	172	62	106.9	52	43.3
Total	3,436	3,842	3,920	4,400	406	11.8	558	14.5
Surrounding Communities								
Under 19	8,096	10,924	10,959	11,278	2,828	34.9	354	3.2
20-24	1,459	1,622	2,153	2,607	163	11.2	985	60.7
25-34	4,045	4,645	4,485	5,063	600	14.8	418	9.0
35-44	4,946	5,809	5,571	5,983	863	17.4	174	3.0
45-54	3,838	5,968	5,943	6,062	2,130	55.5	94	1.6
55-64	2,041	4,049	4,985	5,743	2,008	98.4	1,694	41.8
65-75	1,046	1,989	2,739	3,741	943	90.2	1,752	88.1
75+	831	1,318	1,520	2,308	487	58.6	990	75.1
Total	26,302	36,324	38,355	42,785	10,022	38.1	6,461	17.8

Sources: US Census; ESRI Inc.

The table shows that people age 55 to 74 are expected to show the largest numerical growth in St. Joseph Town and in the surrounding communities. Proportion growth is highest in the surrounding communities among those age 65 to 74 and age 75+. In St. Joseph however, people age 20 to 24 are projected to exhibit the second highest proportional rate of growth in

St. Joseph, second only to people age 65 to 74. Once the bridge is complete, other age cohorts in St. Joseph may increase relative to empty-nesters and young people as St. Joseph will be more attractive as a residential location.

Household Incomes

Table 3 presents household income by age of householder for St. Joseph and surrounding communities. This information has been combined into a single Market Area that includes St. Joseph Town.

The table shows that the average annual income for the Market Area is high, estimated at $83,738 as of 2015. This figure is projected to rise to $94,803 by 2020. Median household incomes are generally high in the Market Area across all age cohorts and are higher than median household incomes in the Twin Cities Metro Area as a whole.

Because of the larger household size that exists in the Market Area, it is likely that a portion of households have moved to this area to find housing that is less expensive than in the core of the Twin Cities Metro Area. Later in the report, we examine average sales prices of existing homes and current pricing of new homes in the area.

The highest household incomes are found among households ages 35 to 44, 45 to 54 and 55 to 64. This is somewhat atypical of other areas of the Twin Cities Metro where the incomes of households age 35 to 44 are usually somewhat less. In the Market Area, the median household incomes of each of these cohorts are very similar.

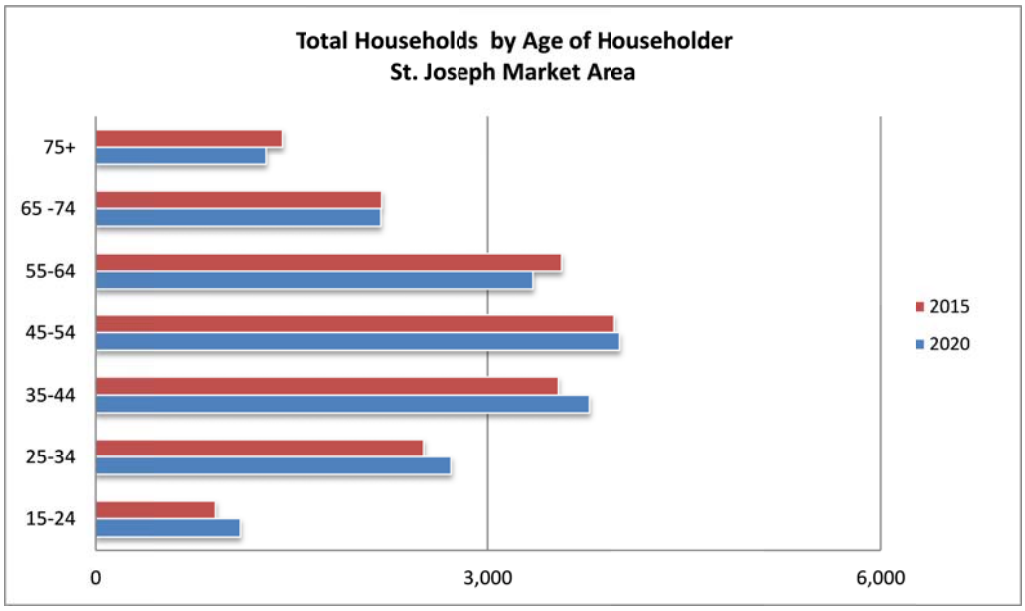


TABLE 3
HOUSEHOLD INCOME BY AGE OF HOUSEHOLDER
ST. JOSEPH PRIMARY MARKET AREA
2015 and 2020

		Age of Householder						
	Total	15-24	25-34	35-44	45-54	55-64	65 -74	75+
2015								
Less than $15,000	1,104	134	148	118	141	185	131	247
$15,000 to $24,999	1,014	109	149	149	148	136	129	194
$25,000 to $34,999	994	105	145	99	140	155	111	239
$35,000 to $49,999	1,706	119	306	301	297	235	188	260
$50,000 to $74,999	2,826	119	451	498	522	464	467	305
$75,000 to $99,999	2,786	85	451	606	590	530	332	192
$100,000 or more	5,644	88	610	1,435	1,665	1,356	278	212
Total	**16,074**	**759**	**2,260**	**3,206**	**3,503**	**3,061**	**1,636**	**1,649**
Median Income	**$83,738**	**$43,457**	**$74,060**	**$95,185**	**$99,581**	**$94,371**	**$72,595**	**$42,520**
Twin Cities Metro	*$67,795*	*$34,820*	*$58,146*	*$81,972*	*$88,167*	*$80,649*	*$58,179*	*$37,464*
2020								
Less than $15,000	1,038	150	168	152	164	131	105	168
$15,000 to $24,999	804	120	153	151	152	63	79	86
$25,000 to $34,999	848	127	150	125	151	81	72	142
$35,000 to $49,999	1,620	171	304	297	299	187	172	190
$50,000 to $74,999	2,747	184	449	472	476	396	486	284
$75,000 to $99,999	3,338	166	557	717	686	611	429	172
$100,000 or more	7,801	168	879	1,822	2,021	1,851	823	237
Total	**18,196**	**1,086**	**2,660**	**3,736**	**3,949**	**3,320**	**2,166**	**1,279**
Median Income	**$94,803**	**$52,466**	**$83,992**	**$104,327**	**$107,924**	**$105,316**	**$83,008**	**$52,356**
Twin Cities Metro	*$78,703*	*$37,641*	*$68,180*	*$92,464*	*$99,756*	*$93,254*	*$69,137*	*$42,675*
Change 2015-2020								
Less than $15,000	-66	16	20	34	23	-54	-26	-79
$15,000 to $24,999	-210	11	4	2	4	-73	-50	-108
$25,000 to $34,999	-146	22	5	26	11	-74	-39	-97
$35,000 to $49,999	-86	52	-2	-4	2	-48	-16	-70
$50,000 to $74,999	-79	65	-2	-26	-46	-68	19	-21
$75,000 to $99,999	552	81	106	111	96	81	97	-20
$100,000 or more	2,157	80	269	387	356	495	545	25
Total	**2,122**	**327**	**400**	**530**	**446**	**259**	**530**	**-370**
Median Income	**$11,065**	**$9,009**	**$9,932**	**$9,142**	**$8,343**	**$10,945**	**$10,413**	**$9,836**

Sources: ESRI Inc.; Maxfield Research and Consulting, LLC

Household incomes are also high for older adult and seniors, ages 65+. As these households age, a portion may prefer to reside in association-maintained housing products such as single-level townhomes or may prefer housing with services. Higher-density locations within the City could accommodate some of these product types, thereby retaining existing residents and attracting new residents that would purchase their homes in the future.

Household Tenure by Age of Householder

Table 4 shows household tenure by age of householder or the number and proportion of households that own and rent their housing in St. Joseph Town and the immediate surrounding communities.

The majority of households in the Towns own their housing, although there are households that rent, primarily single-family homes and/or twinhomes or townhomes. Apartment rentals are clustered in municipalities and villages, although there are a limited number of traditional rentals in these areas also.

The table shows that ownership rates are high in St. Joseph and in St. Croix County. Homeownership rates for nearly all age categories are in the mid- 80th percentile range for households age 35 to 64, the high 70th percentile range for households age 65 year or older and the high 60th percentage range for households ages 25 to 34. The only age group to have a higher proportion of renter households is the under 25 age category with 78% of its households renting. These homeownership patterns are typical for areas that are predominantly ex-urban in character.

TABLE 4
TENURE BY AGE OF HOUSEHOLDER
ST. JOSEPH MARKET AREA
2010 AND 2013

		Market Area				St. Croix County				Twin Cities Metro	
		2010		2013		2010		2013		2010	2013
Age		No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	Pct.	Pct.
15-24	Own	86	22.6	92	22.5	2,790	10.9	1,849	8.0	16.0	12.1
	Rent	295	77.4	316	77.5	22,734	89.1	21,219	92.0	84.0	87.9
	Total	**381**	**100.0**	**408**	**100.0**	**25,524**	**100.0**	**23,068**	**100.0**	**100.0**	**100.0**
25-34	Own	1,409	61.5	1,542	67.8	39,850	42.3	40,201	41.2	50.6	49.4
	Rent	881	38.5	733	32.2	54,312	57.7	57,323	58.8	49.4	50.6
	Total	**2,290**	**100.0**	**2,275**	**100.0**	**94,162**	**100.0**	**97,524**	**100.0**	**100.0**	**100.0**
35-44	Own	2,780	81.6	2,876	81.8	57,684	66.6	57,811	65.1	72.3	70.5
	Rent	625	18.4	639	18.2	28,946	33.4	31,032	34.9	27.7	29.5
	Total	**3,405**	**100.0**	**3,515**	**100.0**	**86,630**	**100.0**	**88,843**	**100.0**	**100.0**	**100.0**
45-54	Own	3,264	86.1	3,385	87.7	75,651	75.4	73,360	75.1	79.8	79.4
	Rent	526	13.9	475	12.3	24,688	24.6	24,269	24.9	20.2	20.6
	Total	**3,790**	**100.0**	**3,860**	**100.0**	**100,339**	**100.0**	**97,629**	**100.0**	**100.0**	**100.0**
55-64	Own	2,385	88.8	2,478	87.3	65,466	79.5	66,987	78.2	82.6	82.0
	Rent	302	11.2	361	12.7	16,891	20.5	18,620	21.8	17.4	18.0
	Total	**2,687**	**100.0**	**2,839**	**100.0**	**82,357**	**100.0**	**85,607**	**100.0**	**100.0**	**100.0**
65 +	Own	1,824	77.9	1,938	77.5	64,680	74.4	66,496	75.1	75.8	71.5
	Rent	518	22.1	563	22.5	22,221	25.6	22,096	24.9	24.2	28.5
	Total	**2,342**	**100.0**	**2,501**	**100.0**	**86,901**	**100.0**	**88,592**	**100.0**	**100.0**	**100.0**
TOTAL	Own	11,748	78.9	12,311	80.0	306,121	64.3	306,704	63.7	70.0	69.3
	Rent	3,147	21.1	3,087	20.0	169,792	35.7	174,559	36.3	30.0	30.7
	Total	**14,895**	**100.0**	**15,398**	**100.0**	**475,913**	**100.0**	**481,263**	**100.0**	**100.0**	**100.0**

Sources: U.S. Census Bureau; Maxfield Research and Consulting LLC

Existing Home Values

Table 5 presents data on median and average home values in St. Joseph Town and in St. Croix County from the period of 2010 through October 2015. The information is from the Greater Minneapolis Area Association of Realtors and shows total number of home sales in addition to time on market. This data helps to inform the strength of the housing market in St. Joseph and the surrounding area.

The data shows that the median home values in St. Joseph Town decreased from 2010 through 2012, but has increased after that through October 2015. Market times have fluctuated during this period, most likely due to the limited number of closed sales that have occurred, especially in 2014 and 2015. As of October 2015, the median home value was $438,750 in St. Joseph Town, but we note that this reflects a very small number of sales (seven).

Median home values in St. Croix County exhibited a similar pattern to that of St. Joseph Town, but the low point occurred in 2011 in the County after which time the median home value increased. As of October 2015, the year-to-date median home value was $219,900. Time on market in St. Croix County has continued to decrease in each year since 2010. The current median time on market for 2015 is 61 days.

TABLE 5
RESALE PRICE OF EXISTING HOMES
2010 THROUGH 2015*

	Median Price	Average Price	Days on Market	Total Sales
St. Joseph Town				
2010	$302,170	$357,185	141	24
2011	$210,000	$212,679	90	21
2012	$205,000	$234,164	68	20
2013	$244,500	$236,871	121	16
2014	$259,300	$272,114	73	7
2015	$438,750	$480,394	124	9
St. Croix County				
2010	$167,000	$201,002	85	658
2011	$150,000	$178,526	84	662
2012	$155,000	$180,653	75	906
2013	$189,000	$216,181	76	990
2014	$195,000	$216,545	73	919
2015	$219,900	$243,663	61	883

* Through October 15, 2015

Sources: Greater Twin Cities Area Association of Realtors
Maxfield Research and Consulting LLC

New Home Construction

Table 6 shows a summary of new home construction in St. Joseph and St. Croix County as of 2nd Quarter 2015. This information is sourced from Metrostudy, a national provider of new construction home sale data. The information reveals that St. Joseph Town as of 2nd Quarter 2015 accounts for only 5% of total new construction starts and closings in the County. Most of the active subdivisions have lots that are remaining after the acceleration of the housing

market pre-Recession. Active subdivisions in St. Joseph Town began marketing in 2002. There are two recent subdivisions that just started marketing in 2015, Orchards of St. Croix and Pioneer Ridge. These subdivisions have a total of 21 and 43 lots, respectively. There are no active subdivisions in St. Joseph Town that offer attached housing product. Moving forward, with the aging of the population, single-level living is likely to become more popular. Households that want more convenience in their living options may often consider an association-maintained housing product.

TABLE 6
TOTAL ACTIVE SUBDIVISIONS
ST. JOSEPH TOWN AND ST. CROIX COUNTY
2nd Quarter 2015

	Total Active Subdivisions	Annual Starts	Annual Closings	Total Occupied	Current Inventory	Vacant Developed Lots	Future Lots
St. Joseph - Detached	11	10	11	111	3	148	0
St. Croix County-Detached	130	218	213	3,121	112	1,888	1,568
St. Joseph-Attached	0	0	0	0	0	0	0
St. Croix County-Attached	24	27	11	737	20	436	561

Source: Metrostudy

Commuter Patterns

Table 7 presents information on commuter travel patterns for St. Joseph Town. This information shows the number of people that live in St. Joseph and where they work. This information helps to inform people's housing and employment choices and where they live in relation to where they work. This data is compiled by the US Census Bureau's Local Employment Household Dynamics (LEHD). The most recent estimates are as of 2013.

Workers in St. Joseph Town hold an estimated 1,911 jobs. Of those, the top locations that people that live in St. Joseph commute to for work are: St. Paul, Hudson, Minneapolis, Stillwater, Somerset Village, New Richmond, Marshfield, Bayport, Oak Park Heights Woodbury, Maplewood, Oseola Village, Bloomington, LaCrosse, Eagan, River Falls and Wausau. Approximately 48% of the top 50 locations are those in Minnesota suggesting that St. Joseph is a location for those that work in Minnesota and in a number of locations in the eastern Twin Cities Metro.

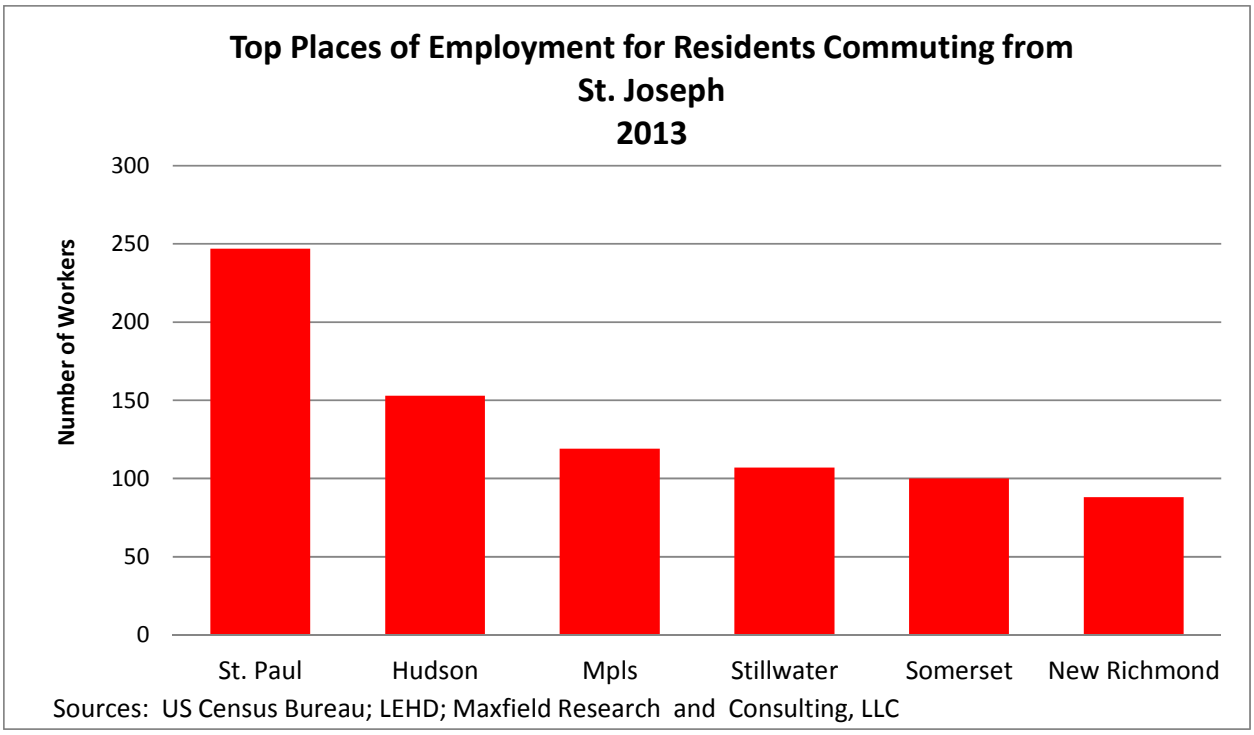
Of those that work in St. Joseph Town, the top residential locations are Somerset Village, New Richmond, Hudson, River Falls, Osceola village, Stillwater, MN, Shoreview, MN, Eau Claire and Menomonie. Those that work in St. Joseph are more likely to live in somewhat close proximity to their place of employment versus those that work elsewhere in the Twin Cities Metro Area or in eastern Wisconsin.

Once the new bridge is complete, we may expect to see more people choosing St. Joseph as a residence and then commuting into eastern Minnesota as the commute is likely to be less time.

TABLE 7
ST. CROIX COUNTY COMMUTING PATTERNS
2013

Place of Residence	Employment	Count	Percent
Place of Employment for St. Joseph Residents			
St. Joseph Town	St. Paul, MN	247	12.9%
St. Joseph Town	Hudson, WI	153	8.0%
St. Joseph Town	Minneapolis, MN	119	6.2%
St. Joseph Town	Stillwater, MN	107	5.6%
St. Joseph Town	Somerset Vil., WI	100	5.2%
St. Joseph Town	New Richmond, WI	88	4.6%
St. Joseph Town	Marshfield, WI	86	4.5%
St. Joseph Town	Bayport, MN	67	3.5%
St. Joseph Town	Oak Park Heights, MN	44	2.3%
St. Joseph Town	Woodbury, MN	37	1.9%
St. Joseph Town	Maplewood, MN	27	1.4%
St. Joseph Town	Oseola Village, WI	25	1.3%
St. Joseph Town	Bloomington, MN	24	1.3%
St. Joseph Town	LaCrosse, WI	23	1.2%
St. Joseph Town	Eagan, MN	22	1.2%
St. Joseph Town	River Falls, WI	19	1.0%
St. Joseph Town	Wausau, WI	19	1.0%
St. Joseph Town	**All other locations**	704	36.8%
Total		1,911	100.0%
Place of Residence for Workers Commuting to St. Joseph Town			
Somerset village, WI	St. Joseph Town	23	7.5%
New Richmond, WI	St. Joseph Town	22	7.1%
Hudson city, WI	St. Joseph Town	12	3.9%
River Falls, WI	St. Joseph Town	8	2.6%
Osceola Village, WI	St. Joseph Town	6	1.9%
Stillwater, MN	St. Joseph Town	5	1.6%
Shoreview, MN	St. Joseph Town	4	1.3%
Eau Claire, WI	St. Joseph Town	4	1.3%
Menomonie, WI	St. Joseph Town	4	1.3%
Star Prairie Village, WI	St. Joseph Town	4	1.3%
Baldwin Village, WI	St. Joseph Town	3	1.0%
Glenwood, WI	St. Joseph Town	3	1.0%
Cottage Grove, MN	St. Joseph Town	2	0.6%
Lakeland, MN	St. Joseph Town	2	0.6%
All other locations	St. Joseph Town	206	66.9%
Total		308	100.0%

Sources: US Census Bureau: LEHD; Maxfield Research Inc.



The map on the following page shows the inflow and outflow of residents to and from St. Joseph Town to their place of employment. As shown, 1,889 workers leave St. Joseph Town for jobs elsewhere, while 22 workers work in St. Joseph and 286 workers come into St. Joseph for work. The opening of the bridge is likely to provide some opportunities for St. Joseph to attract more employment to the community through commercial and industrial development because of more convenient access.

Consumer Expenditures

Table 8 shows consumer expenditures for St. Joseph Town and the communities that are located in close proximity to St. Joseph. This data helps to understand how and where households spend their money. This information was provided by ESRI, a national demographic services provider and is derived from the survey of Consumer Finances, published by the US Government.

The table shows that household expenditures for St. Joseph Town and the immediate surrounding communities are higher on average, than the Twin Cities as a whole and the US. This is demonstrated in the number of retail categories where the index exceeds 100. An index above 100 indicates that the household spends, on average, that proportional amount higher. For example, under Apparel and Services, households in the area spend, on average, 33% more on goods in this category than the average US household. The index for the Twin Cities overall is 121.

TABLE 8
HOUSEHOLD EXPENDITURES BY SELECTED PRODUCT TYPE
PRIMARY MARKET AREA
2015

Category	Annual Expenditures Total ($000's)	Annual Expenditures Average Per HH	TCMA Expenditures Average Per HH	Spending Potential Index to USA St. Joseph Market Area	Spending Potential Index to USA Twin Cities Metro Area
Goods & Services				**Index**	**Index**
Apparel & Services	49,479	3,078	2,803	133	121
Entertainment and Recreation	70,859	4,408	3,935	133	122
Nonprescription Drugs	2,636	164	146	127	113
Prescription Drugs	10,143	631	557	127	112
Eye Glasses & Contact Lenses	1,913	119	105	132	117
Personal Care Products	9,983	621	558	133	119
Day Care	10,320	642	571	144	127
School Books & Supplies	3,874	241	221	133	122
Smoking Products	8,664	539	513	116	110
Computer Hardware	4,678	291	265	135	122
Computer Software	434	27	26	135	126
Pets	25,800	734	646	129	114
Food				**Index**	**Index**
Food at Home	178,802	11,123	10,123	129	118
Food Away from Home	70,650	4,395	3,976	134	121
Alcoholic Beverages	12,024	748	691	135	124
Misc. Beverages at Home	10,224	636	583	127	117
Home				**Index**	**Index**
Home Mortgage Payment/Rent	217,013	13,500	11,355	144	121
Maintenance & Remodeling Services	37,616	2,340	1,988	139	118
Maintenance & Remodeling Materials	6,285	391	326	130	109
Utilities	105,147	6,541	5,883	129	116
Household Furnishings, Equipment, & Operations				**Index**	**Index**
Household Textiles	2,106	131	119	133	121
Furniture	11,445	712	630	138	122
Floor Coverings	530	33	30	135	120
Major Appliances	5,883	366	316	133	117
Small Appliances	948	59	54	128	118
Housewares	1,543	96	87	128	120
Luggage	948	59	11	138	124
Telephone & Accessories	1,029	64	58	128	116
Lawn & Garden	9,259	576	498	133	115
Moving/Storage/Freight Express	1,543	96	93	130	126
Housekeeping Supplies	15,046	936	842	130	117
Financial & Insurance				**Index**	**Index**
Investments	51,327	3,193	3,072	116	112
Vehicle Loans	93,717	5,830	5,066	138	120
Owners & Renters Insurance	10,931	680	576	135	114
Vehicle Insurance	25,800	1,605	1,442	132	119
Life/Other Insurance	10,143	631	535	137	116
Health Insurance	55,716	3,466	3,065	131	116

CONTINUED

TABLE 8
(CONTINUED)
HOUSEHOLD EXPENDITURES BY SELECTED PRODUCT TYPE
PRIMARY MARKET AREA
2015

Category	Annual Expenditures Total ($000's)	Annual Expenditures Average Per HH	TCMA Average Per HH	Spending Potential Index to USA Primary Market Area	Spending Potential Index to USA Twin Cities Metro
Transportation				**Index**	**Index**
Cars and Trucks (Net Outlay)	87,014	5,413	4,741	134	117
Gasoline and Motor Oil	73,527	4,574	4,071	130	116
Vehicle Maintenance/Repair	23,871	1,485	1,333	133	119
Travel				**Index**	**Index**
Airline Fares	10,690	665	604	139	126
Lodging	10,143	631	550	139	122
Vehicle Rental	804	50	43	147	129
Food & Drink	10,272	639	565	137	121
Summary					
Goods & Services	198,783	11,495	10,346		
Food	271,700	16,902	15,373		
Home	366,060	22,772	19,552		
Household	50,283	3,128	2,738		
Financial and Insurance	247,635	15,405	13,756		
Transportation	184,412	11,472	10,145		
Travel	31,909	1,985	1,762		
Total	***1,350,782***	***83,159***	***73,672***		

Note: The Spending Potential Index is based on households and represents the amount spent for a product or service relative to the national benchmark index of 100.

Sources: ESRI Inc; Maxfield Research and Consulting, LLC

Higher household expenditures in virtually every category indicate larger household sizes, on average, with more families and higher household incomes, as demonstrated on the household income table shown earlier.

Expenditures are highest for items that are typically associated with family households and ownership housing such as mortgage payments, home furnishings, child care, food at home, etc.

Retail Leakage

Table 9 presents data for various retail expenditure categories in St. Joseph and immediately surrounding communities. Most of the businesses that are identified in the table are located in Hudson along the Interstate 94 commercial corridor. The data on retail leakage provides an assessment of where households are shopping, either at businesses within their immediate area or outside of it. A positive retail leakage (black figures) identify areas where there are opportunities to recapture sales from outside of the area with new or expanded commercial uses.

As shown on the table, most households in the area purchase a considerable amount of goods and services outside of the area. The categories with the highest leakage factors include:

Auto Parts and Accessories Stores	59.4%
Furniture Stores	47.9%
Home Furnishings Stores	35.8%
Electronics and Appliances Stores	58.8%
Lawn and Garden Supply Stores	61.5%

However, these types of stores are most likely to locate along large commercial corridors or in substantial regional clusters such as in Woodbury or in Hudson along major transportation arteries. The leakage factors listed on the table also incorporate the large amount of retail that exists along Interstate 94 in Hudson. As traffic increased on the bridge between Hudson and Minnesota and as more people decided to live on the Wisconsin side of the bridge, additional retail development occurred to serve people in the nearby surrounding communities in Wisconsin and the large amount of traffic commuting back and forth daily between Wisconsin and Minnesota. Traffic counts on the Hudson bridge are estimated at about 85,000 vehicle trips per day. Traffic counts on the existing Stillwater Bridge are much lower. As of 2014, traffic counts were estimated at 16,600, which is about the number that was crossing the bridge in 2000. The Stillwater bridge had reached its capacity to handle the substantial amount of traffic that was going back and forth between Minnesota and communities in Wisconsin north of Hudson. Once the new St. Croix Crossing bridge opens, we could expect to see the vast majority of the traffic on the bridge cross over from the existing bridge to the new bridge. The existing bridge is anticipated to be closed to vehicle traffic and converted to a pedestrian and biking trail connection. With no vehicles allowed on the existing bridge, it will force most of the traffic to use the new bridge.

At opening, we could anticipate that vehicle traffic will be approximately 16,000 vehicle trips per day or higher, rising to an estimated 48,000 vehicles per day by 2030. At this initial level of traffic on the bridge in 2017, an interchange in the Town of St. Joseph would be able to attract a variety of highway commercial uses shortly after opening. These uses would include convenience gas station, coffee shop with drive-through, fast food (national chains), and other service-related retail businesses including small fitness outlet, shipping/mailing, hair salon, liquor store, etc. Some of these uses may decide initially to co-locate within a gas station/ convenience store concept to improve sales early on until customer traffic increases to a level where they could support a freestanding location. More substantial retail uses such as family-style restaurant, grocery store, and other uses that require larger footprints may be attracted later if additional population and household growth occurs in St. Joseph to support these uses.

Providing for areas of higher-density housing that would include smaller single-family lots, townhomes, and/or a modest amount of multifamily rental housing could also help to increase housing density to support additional retail development in a core central location near to the new interchange.

Commercial uses most likely to be attracted to St. Joseph once the bridge is completed are neighborhood-related goods and services or convenience items, those purchased frequently such as gas, convenience food items, liquor stores, pharmacy/drugstore, hair and nail salons and limited service eating establishments. With traffic counts at between 16,000 to 18,000 vehicles per day, there may also be one or two hotels that are interested in a site near to the interchange in St. Joseph.

The interchange for the new bridge in St. Joseph will provide opportunities for the community to increase its commercial uses in close proximity to increased traffic volumes that will occur because of the interchange.

In addition, residents of St. Joseph will be able to access frequently purchased items nearer their home rather than having to drive out of their way or a greater distance to obtain these items.

TABLE 9
RETAIL DEMAND POTENTIAL AND LEAKAGE
PRIMARY MARKET AREA
2015

Industry Group (NAICS Code)	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap (Demand - Supply)	Surplus/Leakage Factor	Number of Businesses
SUMMARY					
Total Retail Trade and Food & Drink (NAICS 44-45, 722)	$650,202,699	$478,560,661	$171,642,037	15.2	331
Total Retail Trade (NAICS 44-45)	$582,684,063	$431,612,903	$151,071,160	14.9	268
Total Food & Drink (NAICS 722)	$67,518,636	$46,947,758	$20,570,877	18.0	63
EXPENDITURE TYPE					
Motor Vehicle & Parts Dealers (NAICS 441)	$122,059,476	$76,209,029	$45,850,447	23.1	16
Automobile Dealers (NAICS 4411)	$106,354,867	$66,492,672	$39,862,195	23.1	7
Other Motor Vehicle Dealers (NAICS 4412)	$8,092,997	$7,780,298	$312,699	2.0	6
Auto Parts, Accessories, and Tire Stores (NAICS 4413)	$7,611,612	$1,936,059	$5,675,552	59.4	3
Furniture & Home Furnishings Stores (NAICS 442)	$12,682,459	$4,468,578	$8,213,881	47.9	27
Furniture Stores (NAICS 4421)	$7,864,941	$2,190,342	$5,674,599	56.4	8
Home Furnishings Stores (NAICS 4422)	$4,817,519	$2,278,237	$2,539,282	35.8	19
Electronics & Appliance Stores (NAICS 443/NAICS 4431)	$20,060,344	$5,211,108	$14,849,236	58.8	14
Bldg Materials, Garden Equip. & Supply Stores (NAICS 444)	$21,066,489	$39,306,572	($18,240,083)	(30.2)	27
Building Material and Supplies Dealers (NAICS 4441)	$17,651,544	$38,491,275	($20,839,731)	(37.1)	23
Lawn and Garden Equipment and Supplies Stores (NAICS 4442	$3,414,945	$815,297	$2,599,648	61.5	4
Food & Beverage Stores (NAICS 445)	$91,267,076	$88,278,859	$2,988,217	1.7	31
Grocery Stores (NAICS 4451)	$84,310,895	$78,094,483	$6,216,412	3.8	7
Specialty Food Stores (NAICS 4452)	$2,277,384	$1,946,183	$331,200	7.8	12
Beer, Wine, and Liquor Stores (NAICS 4453)	$4,678,797	$8,238,193	($3,559,396)	(27.6)	12
Health & Personal Care Stores (NAICS 446/NAICS 4461)	$50,082,295	$16,123,035	$33,959,260	51.3	12
Gasoline Stations (NAICS 447/NAICS 4471)	$67,758,032	$106,763,304	($39,005,273)	(22.3)	11
Clothing and Clothing Accessories Stores (NAICS 448)	$32,476,524	$3,514,439	$28,962,085	80.5	21
Clothing Stores (NAICS 4481)	$21,408,831	$2,432,128	$18,976,704	79.6	14
Shoe Stores (NAICS 4482)	$5,449,725	$399,331	$5,050,393	86.3	3
Jewelry, Luggage, and Leather Goods Stores (NAICS 4483)	$5,617,968	$682,980	$4,934,988	78.3	4
Sporting Goods, Hobby, Book, and Music Stores (NAICS 451)	$13,341,796	$4,188,429	$9,153,367	52.2	21
Sporting Goods/Hobby/Musical Instrument Stores (NAICS 451	$10,248,073	$3,936,349	$6,311,724	44.5	16
Book, Periodical, and Music Stores (NAICS 4512)	$3,093,723	$252,080	$2,841,643	84.9	5
General Merchandise Stores (NAICS 452)	$90,120,125	$71,827,748	$18,292,377	11.3	6
Department Stores Excluding Leased Depts. (NAICS 4521)	$43,823,466	$64,727,822	($20,904,356)	(19.3)	3
Other General Merchandise Stores (NAICS 4529)	$46,296,659	$7,099,926	$39,196,733	73.4	3
Miscellaneous Store Retailers (NAICS 453)	$12,488,254	$8,659,728	$3,828,526	18.1	14
Florists (NAICS 4531)	$616,714	$233,409	$383,306	45.1	5
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	$4,032,416	$906,121	$3,126,295	63.3	16
Used Merchandise Stores (NAICS 4533)	$2,575,542	$3,910,621	($1,335,079)	(20.6)	11
Other Miscellaneous Store Retailers (NAICS 4539)	$5,263,581	$3,609,577	$1,654,004	18.6	38
Nonstore Retailers (NAICS 454)	$49,281,196	$7,062,075	$42,219,121	74.9	12
Electronic Shopping and Mail-Order Houses (NAICS 4541)	$42,558,120	$1,872,658	$40,685,462	91.6	1
Vending Machine Operators (NAICS 4542)	$2,073,771	$556,922	$1,516,849	57.7	3
Direct Selling Establishments (NAICS 4543)	$4,649,304	$4,632,495	$16,809	0.2	8
Food Services & Drinking Places (NAICS 722)	$67,518,636	$46,947,758	$20,570,877	18.0	63
Full-Service Restaurants (NAICS 7221)	$24,562,318	$12,892,788	$11,669,530	31.2	18
Limited-Service Eating Places (NAICS 7222)	$35,310,386	$27,561,306	$7,749,080	12.3	23
Special Food Services (NAICS 7223)	$3,114,654	$926,268	$2,188,387	54.2	3
Drinking Places - Alcoholic Beverages (NAICS 7224)	$4,531,277	$5,567,396	($1,036,119)	(10.3)	19

Note: All figures quoted in 2010 dollars. Supply (retail sales) estimates sales to consumers by establishments, sales to businesses are excluded. Demand (retail potential) estimates the expected amout spent by consumers at a retail establishment. Leakage/Surplace factor measures the relationship between supply and demand and ranges from +100 (total leakage) to -100 (total surplus). A positive value represents "leakage" of retail opportunity outlide the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

Sources: ESRI; Maxfield Research Inc.

Employment Growth

Employment characteristics are an important component in assessing real estate needs in any given market area. These trends are important to consider since job growth can generally fuel household and population growth as people typically desire to live near where they work. Job growth is a primary driver of demand for office and industrial real estate, as commercial real estate is needed to provide workspace for those employed in the production process (manufacturing, management, sales, or services). The map below shows the areas that are referenced as the "region" in the tables that follow.

Regional Employment Area

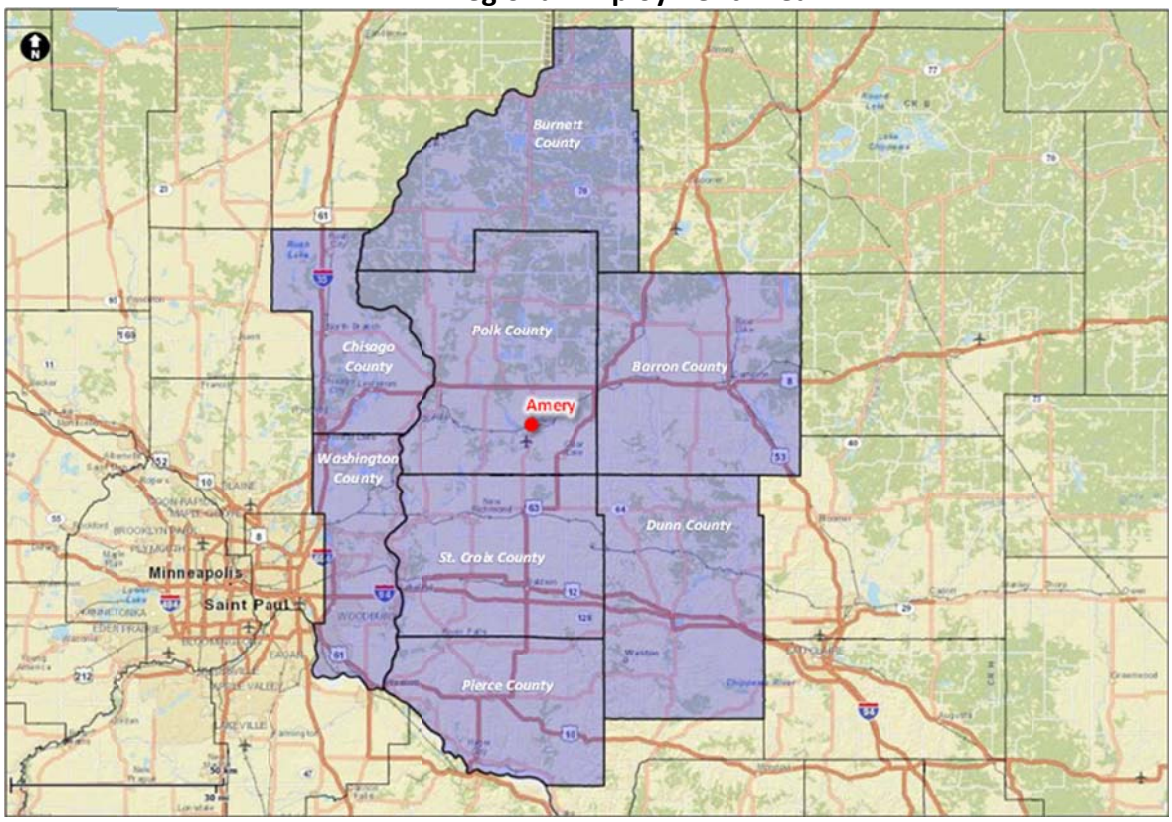


Table 10 shows employment growth trends and projections from 2000 to 2030 based on the most recent information available from the Bureau of Labor Statistics, the Wisconsin Department of Workforce Development, and the Minnesota Department of Employment and Economic Development. Data for 2000, 2005, and 2010 represents the annual average employment for that year. The 2013 employment numbers are based on preliminary data for the second quarter, the most recent data available. The 2020 forecasts for each County are based on 2010-2020 regional industry projections published by the Wisconsin Department of

Workforce Development and by the Minnesota Department of Employment and Economic Development, the most recent employment forecasts available.

Because industrial development is typically drawn from a much broader area, the counties shown represent four different regions, including; West Central Wisconsin (the Counties of Polk, Barron, Dunn, Pierce, and St. Croix), Northwest Wisconsin (Burnett County), the Twin Cities Metro Area (Washington County), and Central Minnesota (Chisago County). Maxfield Research applied the projected ten-year growth rate for each region to the 2010 employment data to arrive at the 2020 forecast for that region. Projected growth rates are as follows: West Central Wisconsin (11.7%); Northwest Wisconsin (10.7%); Twin Cities Metro Area (12.0%); and Central Minnesota (18.3%).

We arrived at the 2020 forecast for each county in the region based on a historical review of the proportion of regional jobs located in that county from 2000 through the second quarter of 2013. We then estimated 2020 employment based on several factors, including historical growth, changes in the proportion of jobs in each County over time and projected population growth. Employment projections for 2030 were derived utilizing a population to employment ratio.

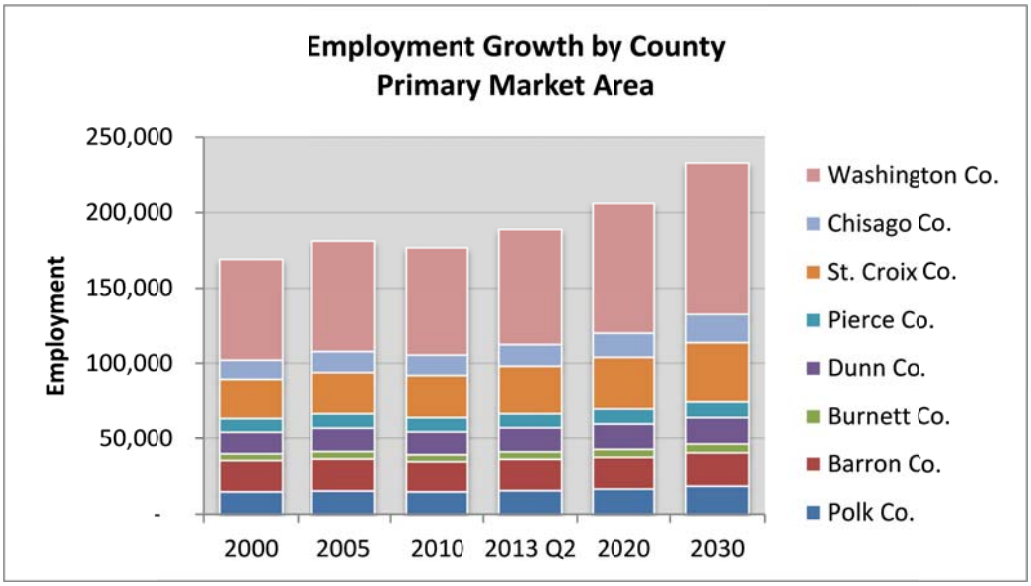
Although employment growth often parallels population growth, it often is tied more strongly to transportation access. Cities with interstate access and intra- and inter-metro transportation connections attract more businesses and post higher employment gains. Manufacturers, however, will often locate in less-developed areas where there is a concentration of available land.

- In 2000, there were 169,088 jobs in the region, 31,343 (16.6%) of which were located in St. Croix County. Despite the economic recession, employment in the region increased 4.5% (7,567 jobs) by 2010. By comparison, employment in the Twin Cities Metro Area declined by -4.0% and the Eau Claire MSA experienced little change in employment over the decade.

- Most of the job growth occurred between 2000 and 2005, as 12,083 jobs were added (+7.1%) during the five-year time period. Between 2005 and 2010, the region lost -4,516 jobs (-2.5%). St. Croix County and Pierce County were the only counties in the region to experience job growth during the second half of the decade, expanding 2.8% and 0.8%, respectively.

- Data from the Quarterly Census of Employment and Wages indicates that the Region gained 3,097 jobs (1.7%) between 2012 and the second quarter of 2013. From 2010 through 2nd quarter 2013, the number of jobs increased 6.8% (12,033 jobs) in the region, 3.2% in the Eau Claire MSA, and 5.7% in the Twin Cities Metro Area.

- Solid job growth is expected to occur in the region between 2010 and 2020. The region is projected to experience a 16.6% gain (29,347 jobs) during the decade, compared to projected growth of 12.0% in the Twin Cities Metro Area and 11.1% in the Eau Claire MSA.



- The region is expected to outperform the Twin Cities Metro Area and the Eau Claire MSA during the next several years as employers become increasingly attracted to the growing labor pool and convenient access to the major transportation corridors located in the area.

- Additionally, employers are likely to be forced now into hiring as many either reduced their workforces significantly or refrained from creating new jobs during the recession and can no longer achieve significant productivity increases with the existing number of employees. Increases in employment are likely to come from economic recovery and the need to increase labor force to accommodate further increases to demand and production.

- The most rapid employment growth is expected to occur in the counties experiencing the fastest population growth, notably Washington County, St. Croix County, and Chisago County. These counties will also benefit from access to the interstate highway system: I-94 and the new river crossing in St. Croix County; I-94, I-494 and I-35 in Washington County; and, I-35 in Chisago County.

TABLE 10
EMPLOYMENT GROWTH TRENDS AND PROJECTIONS
INDUSTRIAL MARKET AREA
2000-2030

	Annual Data			Preliminary	Forecast		Change 2000-2010		Change 2010-2020	
	2000	2005	2010	2013 Q2	2020	2030	No.	Pct.	No.	Pct.
Primary Market Area	**169,088**	**181,171**	**176,655**	**188,688**	**206,002**	**232,511**	**7,567**	**4.5%**	**29,347**	**16.6%**
Polk County, WI	14,472	15,260	14,516	15,419	16,333	18,238	44	0.3%	1,817	12.5%
Barron County, WI	20,834	21,074	19,895	20,734	21,050	22,182	-939	-4.5%	1,155	5.8%
Burnett County, WI	4,449	4,802	4,684	4,884	5,362	5,908	235	5.3%	678	14.5%
Dunn County, WI	14,533	16,009	15,432	16,269	17,152	17,717	899	6.2%	1,720	11.1%
Pierce County, WI	9,283	9,430	9,508	9,380	9,940	10,522	225	2.4%	432	4.5%
St. Croix County, WI	**25,792**	**27,189**	**27,950**	**31,343**	**34,109**	**39,203**	**2,158**	**8.4%**	**6,159**	**22.0%**
Chisago County, MN	12,668	13,951	13,378	14,373	16,110	18,811	710	5.6%	2,732	20.4%
Washington County, MN	67,057	73,456	71,292	76,286	85,945	99,929	4,235	6.3%	14,653	20.6%
Eau Claire, WI MSA	75,767	74,842	75,849	78,255	84,298	88,336	82	0.1%	8,449	11.1%
Twin Cities Metro Area	1,600,760	1,593,973	1,537,052	1,624,474	1,721,498	1,892,287	-63,708	-4.0%	184,446	12.0%

Sources: Bureau of Labor Statistics; Wisconsin Department of Workforce Development; Metropolitan Council; Minnesota Department of Employment & Economic Development; Maxfield Research and Consulting, LLC

- The St. Croix Crossing Bridge, which will connect Oak Park Heights and Stillwater, Minnesota to the Town of St. Joseph in St. Croix County, will also generate opportunities for employment growth along the corridor once the bridge opens in 2016.

- By 2030, we anticipate that another 26,509 jobs will be added in the PMA, representing 12.9% growth between 2020 and 2030. As mentioned previously, job growth will be tied to transportation access and population growth. Due to the flat growth projected in the age groups comprising the workforce population from 2020 to 2030, proximity to labor will increase in importance.

- We anticipate that employment growth will be concentrated in St. Croix County and Washington County.

Resident Employment

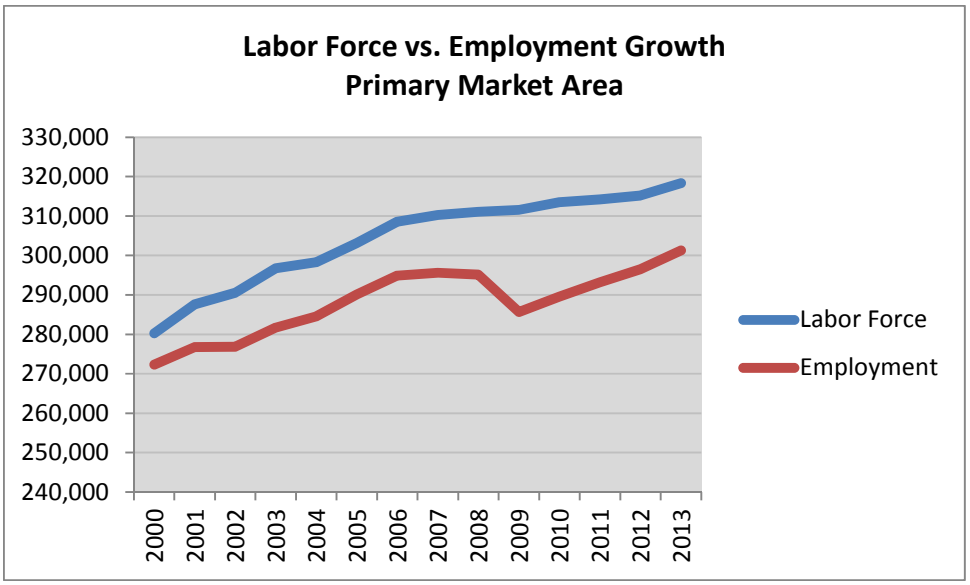
Tables 11 and 12 display information on labor force and resident employment trends in the region, the Eau Claire MSA, the seven-county Twin Cities Metro Area, and the State of Wisconsin. The data is sourced from the Wisconsin Department of Workforce Development and Minnesota Department of Employment and Economic Development (DEED). Resident employment data reveals the work force and number of employed people living in the area, though not all of these individuals necessarily work in the area. The points following the table summarize key resident employment trends in the Market Area.

- The size of the region's labor force has fluctuated over the years, from as small as 22,807 in 2000 to over 24,400 in 2009. In 2013, the County's labor force was at 23,714, a 4.0% increase since the year 2000, relatively small growth when compared to the region's (13.6% growth during that same time period). By comparison, the labor force expanded 10.6% in the Eau Claire MSA, 4.7% in the Twin Cities, and 2.4% across the State of Wisconsin.

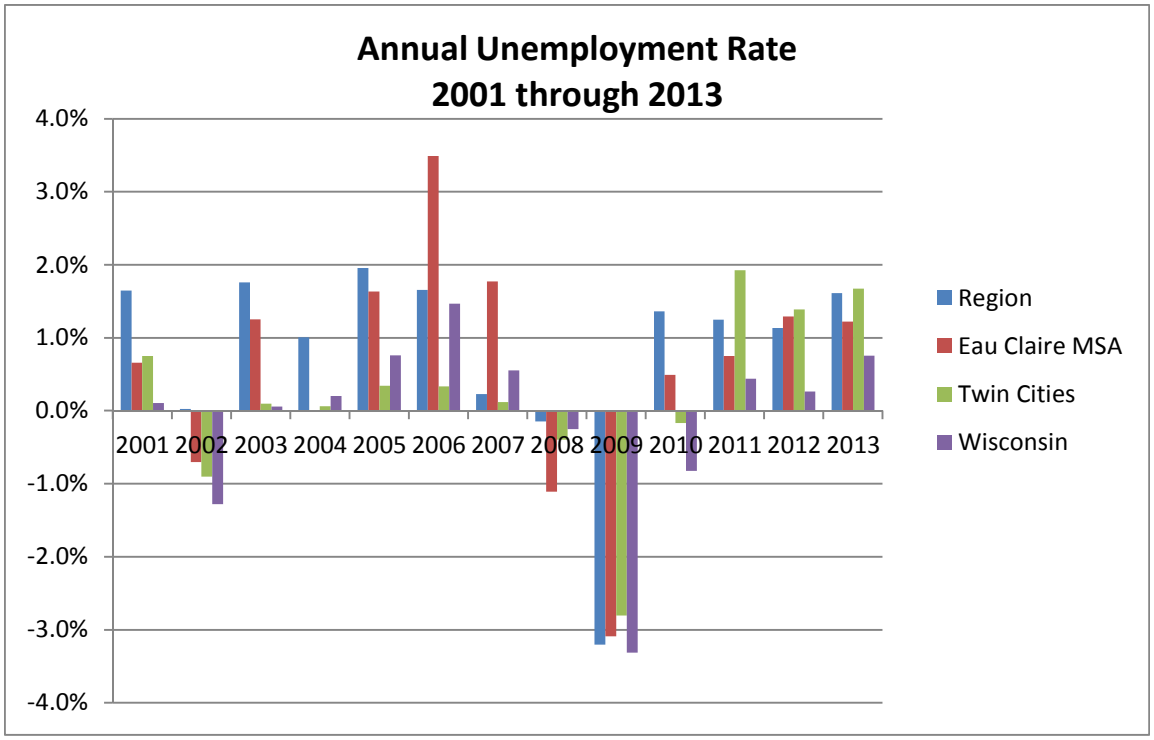
TABLE 11
LABOR FORCE AND RESIDENT EMPLOYMENT TRENDS
INDUSTRIAL MARKET AREA
February 2014

	Primary Market Area	Eau Claire MSA	Twin Cities Metro	Wisconsin
Labor Force				
2000	280,289	83,467	1,560,501	2,996,091
2001	287,584	84,837	1,585,486	3,030,998
2002	290,493	84,898	1,585,351	3,021,068
2003	296,760	86,073	1,591,241	3,033,674
2004	298,328	85,632	1,587,933	3,020,402
2005	303,147	86,823	1,584,881	3,035,808
2006	308,591	89,636	1,588,693	3,077,096
2007	310,299	91,352	1,599,172	3,096,927
2008	311,104	90,313	1,606,108	3,090,838
2009	311,558	90,400	1,606,061	3,116,226
2010	313,501	90,587	1,594,816	3,081,360
2011	314,275	90,753	1,609,284	3,063,544
2012	315,246	91,293	1,617,345	3,051,732
2013 Avg.	318,347	92,324	1,633,255	3,068,656
Employment				
2000	272,294	80,524	1,519,395	2,894,884
2001	276,780	81,052	1,530,810	2,897,937
2002	276,851	80,482	1,516,993	2,860,915
2003	281,716	81,490	1,518,496	2,862,587
2004	284,550	81,477	1,519,467	2,868,376
2005	290,114	82,806	1,524,691	2,890,117
2006	294,917	85,698	1,529,756	2,932,482
2007	295,591	87,216	1,531,616	2,948,725
2008	295,162	86,249	1,525,560	2,941,323
2009	285,705	83,585	1,482,756	2,843,857
2010	289,594	83,994	1,480,239	2,820,453
2011	293,204	84,625	1,508,752	2,832,826
2012	296,529	85,719	1,529,685	2,840,288
2013 Avg.	301,300	86,767	1,555,228	2,861,755

Sources: Wisconsin Department of Workforce Development;
Minnesota Department of Employment and Economic Development;



- The region's labor force labor force has grown, albeit at a slower pace than experienced during the first half of the 2000s. From 2000 to 2007, the region's labor force expanded at an average rate of 1.6% per year. The rate of growth dropped to 0.4% per year between 2007 and 2013.



- Employment in the region dropped sharply in 2008 and 2009 in response to the economic recession, but has experienced steady gains since 2010. Since the year 2000, resident employment in the region has expanded nearly 11% (+29,000 employed residents), despite the employment losses experienced in 2008 and 2009.

- Unemployment in the Market Area remains relatively low (5.4% in the PMA, 6.0% in the Eau Claire MSA, and 4.8% in the Twin Cities).

- Between 2009 and 2013, the region experienced a -2.9% drop in unemployment to 5.4%. By comparison, the Eau Claire MSA experienced a -1.5% decline in the unemployment rate to 6.0% and the Twin Cities Metro Area's unemployment rate fell -2.9% to 4.8%.

TABLE 12
UNEMPLOYMENT RATE COMPARISON
INDUSTRIAL MARKET AREA
2000 through 2013

	Primary Market Area	Eau Claire MSA	Twin Cities Metro	Wisconsin
2000	2.9%	3.5%	2.6%	3.4%
2001	3.8%	4.5%	3.4%	4.4%
2002	4.7%	5.2%	4.3%	5.3%
2003	5.1%	5.3%	4.6%	5.6%
2004	4.6%	4.9%	4.3%	5.0%
2005	4.3%	4.6%	3.8%	4.8%
2006	4.4%	4.4%	3.7%	4.7%
2007	4.7%	4.5%	4.2%	4.8%
2008	5.1%	4.5%	5.0%	4.8%
2009	8.3%	7.5%	7.7%	8.7%
2010	7.6%	7.3%	7.2%	8.5%
2011	6.7%	6.8%	6.2%	7.5%
2012	5.9%	6.1%	5.4%	6.9%
2013 Avg.	5.4%	6.0%	4.8%	6.7%

Sources: Wisconsin Department of Workforce Development;
Minnesota Department of Employment and Economic Development;

- It appears that increased hiring is driving the unemployment rate down throughout much of the Market Area as growth in the number of employed residents outpaced labor force growth.

- At 5.4% in 2013, the unemployment rate in the region was lower than the State of Wisconsin (6.7%) and the Eau Claire MSA (6.0%), but was slightly higher than the Twin Cities Metro Area (4.8%).

Covered Employment by Industry

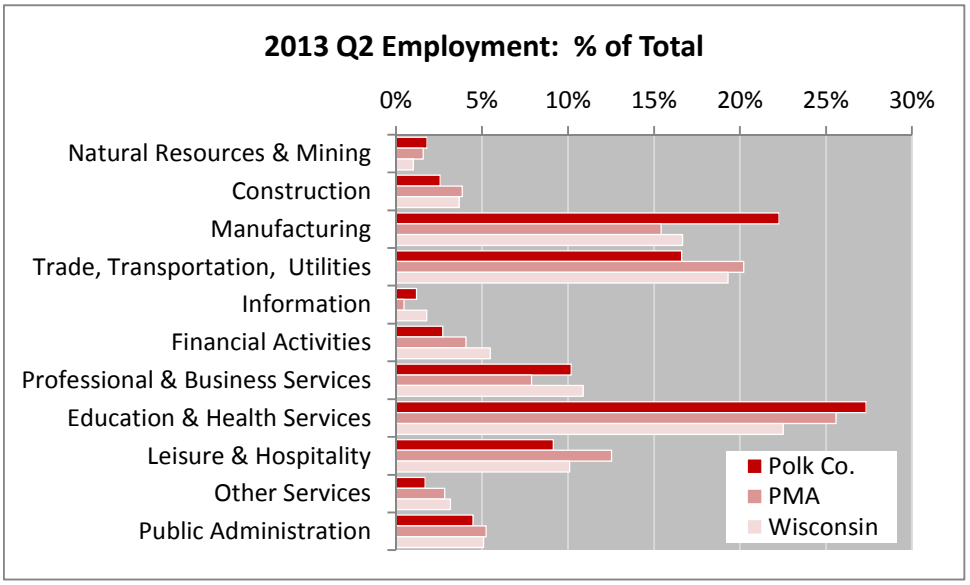
Table 13 displays information on the employment and wage situation in the region and the State of Wisconsin. The Quarterly Census of Employment and Wages (QCEW) data is sourced from the Wisconsin Department of Workforce Development and Minnesota DEED for the second quarters of 2012 and 2013.

All establishments covered under the Unemployment Insurance (UI) Program are required to report wage and employment statistics quarterly to their respective State employment agencies. Federal government establishments are also covered by the QCEW program. Certain industries in the table may not display any information which means that there is either no reported economic activity for that industry or the data has been suppressed to protect the confidentiality of cooperating employers. This generally occurs when there are too few employers or one employer comprises too much of the employment in that geography.

The following are key trends derived from Table 13.

- The resident to employment ratio for the region was 0.33, but lower than the State of Wisconsin (0.48).

- Education and Health Services is also the largest employment sector in the PMA (26% of all jobs) and the State of Wisconsin (23%).



- The region gained 3,097 jobs (+1.7%) in 2013. Noteworthy increases occurred in the Education and Health Services sector, as employment increased by 821 jobs (+1.7%), as well as the Professional and Business Services sector (+756 jobs for a 5.4% increase). Most sectors experienced employment growth, including the Manufacturing industry which gained 641 jobs (+2.3%). Job losses occurred in Public Administration (-332 jobs for a -3.3% decline) and Information (-39 jobs for a -4.2% loss).

- There was a 1.9% increase in the number of business establishments in the region over the year (+258 establishments). Most sectors expanded during the year, but notable changes occurred in the Education and Health Services industry which grew by 82 establishments (+5.5%) and Professional and Business Services which gained 57 businesses (+3.0%). The Trade, Transportation, and Utilities sector gained 30 businesses (+1.1%), while the number of Manufacturing establishments held steady. The Leisure and Hospitality industry and the Public Administration sector experienced modest losses over the year.

- Statewide employment experienced 3.0% growth over the year, adding 2,853 jobs, with most industry sectors gaining jobs during the year. The Trade, Transportation, and Utilities sector (+1.1%) and the Professional and Business Services industry (+2.1%) experienced the largest growth, gaining nearly 6,000 jobs each. Job losses occurred in Public Administration (-3.7%), Other Services (-2.8%), and Financial Activities (-0.6%).

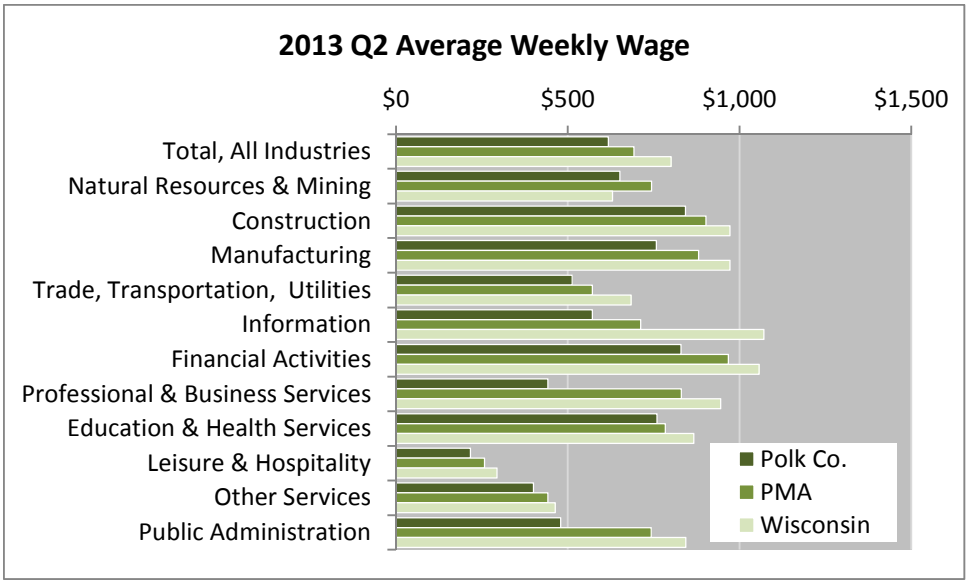
- Led by growth in Education and Health Services, which expanded by 14%, the State of Wisconsin experienced a 1.3% increase in the number of business establishments during the year. The Trade, Transportation, and Utilities industry also experienced substantial growth, increasing the number of business establishments by 4.8%.

TABLE 13
QUARTERLY CENSUS OF EMPLOYMENT AND WAGES
INDUSTRIAL MARKET AREA

Industry	2012 Q2			2013 Q2			Change 2012 - 2013			
	Establish-ments	Employ-ment	Weekly Wage	Establish-ments	Employ-ment	Weekly Wage	Employment #	Employment %	Wage #	Wage %
PRIMARY MARKET AREA										
Total, All Industries	13,308	185,591	$673	13,566	188,688	$693	3,097	1.7%	$20	2.9%
Natural Resources & Mining	248	2,843	$652	264	2,983	$744	140	4.9%	$92	14.1%
Construction	1,533	7,027	$885	1,545	7,292	$902	265	3.8%	$17	1.9%
Manufacturing	824	28,436	$865	824	29,077	$881	641	2.3%	$16	1.9%
Trade, Transportation, Utilities	2,842	37,808	$560	2,872	38,138	$571	330	0.9%	$12	2.1%
Information	96	937	$618	103	898	$712	-39	-4.2%	$94	15.2%
Financial Activities	1,229	7,589	$945	1,249	7,665	$968	76	1.0%	$23	2.4%
Professional & Business Services	1,929	14,094	$826	1,986	14,850	$831	756	5.4%	$5	0.6%
Education & Health Services	1,485	47,441	$759	1,567	48,262	$784	821	1.7%	$25	3.4%
Leisure & Hospitality	1,452	23,197	$256	1,445	23,632	$257	435	1.9%	$2	0.7%
Other Services	1,145	5,282	$398	1,188	5,328	$442	46	0.9%	$43	10.9%
Public Administration	444	10,192	$705	443	9,860	$743	-332	-3.3%	$38	5.4%
WISCONSIN										
Total, All Industries	159,994	2,713,746	$778	162,045	2,730,705	$801	16,959	0.6%	$23	3.0%
Natural Resources & Mining	2,552	27,326	$608	2,609	27,720	$630	394	1.4%	$22	3.6%
Construction	14,326	97,024	$951	14,084	100,400	$972	3,376	3.5%	$21	2.2%
Manufacturing	9,460	453,964	$966	9,460	455,227	$972	1,263	0.3%	$6	0.6%
Trade, Transportation, Utilities	34,893	521,346	$670	36,553	527,303	$684	5,957	1.1%	$14	2.1%
Information	2,053	47,939	$1,008	2,097	48,628	$1,071	689	1.4%	$63	6.3%
Financial Activities	12,661	150,284	$1,024	12,717	149,344	$1,057	-940	-0.6%	$33	3.2%
Professional & Business Services	21,975	291,222	$884	22,534	297,197	$945	5,975	2.1%	$61	6.9%
Education & Health Services	17,738	610,184	$844	20,220	614,869	$867	4,685	0.8%	$23	2.7%
Leisure & Hospitality	16,215	273,468	$286	16,095	275,620	$294	2,152	0.8%	$8	2.8%
Other Services	18,106	88,831	$443	16,985	86,356	$463	-2,475	-2.8%	$20	4.5%
Public Administration	3,794	144,412	$797	3,725	139,033	$844	-5,379	-3.7%	$47	5.9%

Sources: Wisconsin Department of Workforce Development; Minnesota Department of Employment and Economic Development; Maxfield Research and Consulting, LLC

- Average weekly wages in the Region ($693) are lower than the statewide average of $801. Wages in the region climbed 2.9% compared to 3.0% statewide.



- Average weekly wages increased 2.9% in the region, with wage growth occurring in all industry sectors. The highest wages occur in the Financial Activities sector ($968) and the Construction industry ($902). The largest wage increases occurred in the Information sector (+15.2%), Natural Resources and Mining (+14.1%), and Other Services (+10.9%). Wages climbed 1.9% in the Manufacturing industry to $881, Construction wages also increased 1.9% to $902, and the Trade, Transportation, and Utilities sector experienced a 2.1% increase in the average weekly wage to $571.

- In the State of Wisconsin, average wages increased 3.0% over the year as all industry sectors experienced wage growth. Highest average wages are found in the Information ($1,071), Financial Activities ($1,057), Construction ($972), and Manufacturing ($972) sectors. The average weekly wage held steady in the Manufacturing industry over the year, Construction wages increased by 2.2% to $972 and the Trade, Transportation, and Utilities sector experienced 2.1% increase in the average weekly wage to $684.

Business Growth by Type of Business

In order to assess the need for additional industrial space, we examine demand and supply trends affecting the industrial real estate market. This portion focuses on trends in the business sectors most likely to require industrial space. The primary business sectors impacting demand for industrial real estate include Construction, Manufacturing, Wholesale Trade, and

Transportation and Warehousing. The following definitions for these sectors come directly from the U.S. Census Bureau 2007 NAICS definitions.

Construction

The construction sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale as building sites also are included in this sector. There are substantial differences in the types of equipment and work force skills required by establishments in this sector. To highlight these differences and variations in the underlying production functions, this sector is divided into three subsectors.

- Construction of Buildings, comprises establishments of the general contractor type and operative builders involved in the construction of buildings.

- Heavy and Civil Engineering Construction, comprises establishments involved in the construction of engineering projects.

- Specialty Trade Contractors, comprises establishments engaged in specialty trade activities generally needed in the construction of all types of buildings.

Manufacturing

The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing. Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

The materials, substances, or components transformed by manufacturing establishments are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying as well as products of other manufacturing establishments. The materials used may be purchased directly from producers, obtained through customary

trade channels, or secured without recourse to the market by transferring the product from one establishment to another, under the same ownership. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semi-finished to become an input for an establishment engaged in further manufacturing.

Wholesale Trade

The Wholesale Trade sector comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries. The wholesaling process is an intermediate step in the distribution of merchandise. Wholesalers are organized to sell or arrange the purchase or sale of the following: Goods for resale (i.e., goods sold to other wholesalers or retailers); Capital or durable nonconsumer goods; and, Raw and intermediate materials and supplies used in production.

Wholesalers sell merchandise to other businesses and normally operate from a warehouse or office. These facilities are characterized by having little or no display of merchandise. In addition, neither the design nor the location of the premises is intended to solicit walk-in traffic. Wholesalers do not normally use advertising directed to the general public. Customers are generally reached initially via telephone, in-person marketing, or by specialized advertising that may include Internet and other electronic means. Follow-up orders are either vendor-initiated or client-initiated, generally based on previous sales, and typically exhibit strong ties between sellers and buyers. In fact, transactions are often conducted between wholesalers and clients that have long-standing business relationships. This sector comprises two main types of wholesalers: Merchant wholesalers that sell goods on their own account; and, Business to business electronic markets, agents, and brokers that arrange sales and purchases for others generally for a commission or fee. Many wholesalers have created strong public retail components of their business operations, selling direct to consumers at a discount or wholesale price, or selling items that are not of first quality through an outlet area on-site.

Transportation and Warehousing

The Transportation and Warehousing sector includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation facilities as a productive asset.

> The Transportation and Warehousing sector distinguishes three basic types of activities: subsectors for each mode of transportation; a subsector for warehousing and storage; and, a subsector for establishments providing support activities for transportation. In addition, there are subsectors for establishments that provide passenger transportation for scenic and sightseeing purposes, postal services, and courier services. A separate subsector for support activities is established in the sector because, first, support activities for transportation are inherently multimodal, such as freight transportation arrangement, or have multimodal aspects. Secondly, there are production process similarities among the support activity industries. Warehousing establishments in this sector are distinguished from merchant wholesaling in that the warehouse establishments do not sell the goods

Tables 14 and 15 on the following pages present the distribution of typical industrial space-using businesses by location and by number of employees in the region in the years 2000 and 2011. The data is extracted from the Business Register, a database of all known employer companies which is maintained and updated by the U.S. Census Bureau and is accumulated based on County boundaries.

While the industries shown do not represent all users of industrial space, these industries account for the majority of users. Growth in these sectors is an important indicator of total demand for industrial space and the size of businesses provides an indication of the type and sizes of spaces required.

Table 14 shows business growth trends for the counties comprising the regional area. The following are key points.

- The number of businesses in these categories in the region increased from 3,391 in 2000 to 3,402 businesses in 2011 (0.3% growth over that time period). However, an examination of County-level changes reveals significant differences among the counties comprising the region.

- St. Croix County experienced the most substantial growth, as the number of businesses expanded by over 18% (+96 businesses) from 530 in 2000 to 626 in 2011. Much of this growth occurred in the Construction industry, but all four sectors experienced business growth during that time period.

- The only other counties in the region to experience growth were the two Minnesota counties, as the number of industrial businesses in Chisago County expanded by 3.9% (+15) and Washington County experienced 3.4% growth (+39).

TABLE 14
INDUSTRIAL BUSINESS BY INDUSTRY
REGIONAL AREA BY COUNTY
2000 and 2011

	Construction		Manufacturing		Wholesale Trade		Transportation/ Warehousing		Total		Change	
	2000	2011	2000	2011	2000	2011	2000	2011	2000	2011	2000-2011	
Primary Market Area	**1,626**	**1,658**	**803**	**771**	**534**	**536**	**428**	**437**	**3,391**	**3,402**	**11**	**0.3%**
Wisconsin Counties	**828**	**809**	**482**	**486**	**260**	**250**	**273**	**255**	**1,843**	**1,800**	**-43**	**-2.3%**
Polk Co.	**148**	**136**	**102**	**101**	**31**	**32**	**37**	**24**	**318**	**293**	**-25**	**-7.9%**
Barron Co.	137	146	96	96	65	45	53	54	351	341	-10	-2.8%
Burnett Co.	81	54	33	23	7	12	14	11	135	100	-35	-25.9%
Dunn Co.	128	87	60	57	48	38	54	45	290	227	-63	-21.7%
Pierce Co.	105	105	46	50	22	19	46	39	219	213	-6	-2.7%
St. Croix Co.	229	281	145	159	87	104	69	82	530	626	96	18.1%
Minnesota Counties	**798**	**849**	**321**	**285**	**274**	**286**	**155**	**182**	**1,548**	**1,602**	**54**	**3.5%**
Chisago Co.	211	228	91	80	47	45	40	51	389	404	15	3.9%
Washington Co.	587	621	230	205	227	241	115	131	1,159	1,198	39	3.4%

Sources: Bureau of the Census; County Business Patterns; Maxfield Research Inc.

- The largest decline occurred in Dunn County, which lost -63 industrial business establishments (-21.7%), followed by Burnett County (-35 businesses for a -25.9% decline). Barron County and Pierce County also experienced modest contraction in the number of industrial establishments, losing -10 businesses (-2.8%) and -6 businesses (-2.7%), respectively.

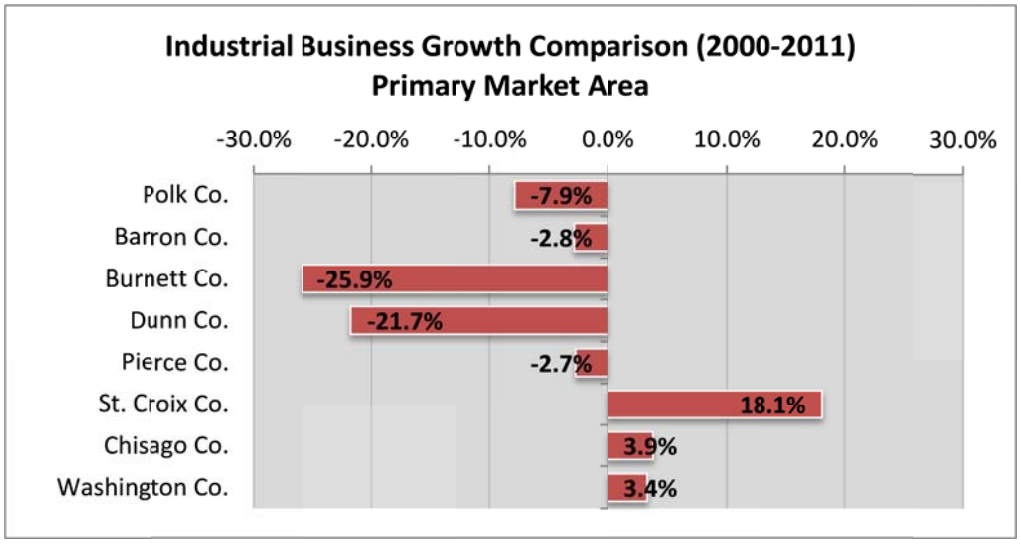


Table 15 shows business growth trends for the region by industry sector and size of business. The following are key points.

- The number of businesses in these categories in the region increased from 3,391 in 2000 to 3,402 businesses in 2011 (0.3% growth over that time period). The total number of business establishments operating in the area expanded from 11,851 in 2000 to 13,039 in 2011, an increase of 10% (+1,188 businesses). Business growth occurred in most industry sectors during that time period, although the most substantial growth occurred in the Health Care and Social Assistance sector, which gained over 400 businesses (+47%).

TABLE 15
INDUSTRIAL BUSINESSES BY INDUSTRY AND SIZE OF BUSINESS
REGIONAL AREA
2000 and 2011

	Construction	Manufacturing	Wholesale Trade	Transportation/ Warehousing	*PMA Total*	
	Region	Region	Region	Region	*No.*	*Pct.*
2000						
1 to 4	1,172	300	332	282	***2,086***	***61.5***
5 to 9	251	124	86	62	***523***	***15.4***
10 to 19	132	126	67	37	***362***	***10.7***
20 to 49	56	120	36	32	***244***	***7.2***
50 to 99	12	61	8	5	***86***	***2.5***
100 to 249	1	43	2	9	***55***	***1.6***
250 or more	2	29	3	1	***35***	***1.0***
Total	***1,626***	***803***	***534***	***428***	***3,391***	***100.0***
2011						
1 to 4	1,358	329	324	275	***2,286***	***67.2***
5 to 9	177	113	91	70	***451***	***13.3***
10 to 19	76	92	57	31	***256***	***7.5***
20 to 49	36	122	49	37	***244***	***7.2***
50 to 99	8	51	9	10	***78***	***2.3***
100 to 249	3	47	4	11	***65***	***1.9***
250 or more	0	17	2	3	***22***	***0.6***
Total	***1,658***	***771***	***536***	***437***	***3,402***	***100.0***

Sources: Bureau of the Census; County Business Patterns; Maxfield Research and Consulting, LLC

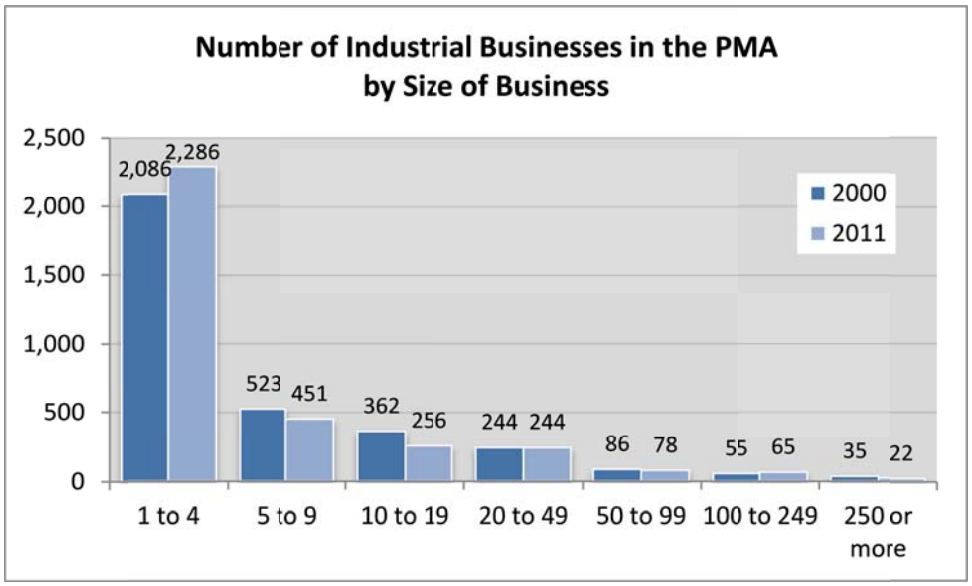
- In 2011, the region had a total of 3,402 businesses which typically occupy industrial space. There were 1,658 businesses in the Construction sector, representing nearly half (49%) of all of the businesses that would likely occupy industrial real estate. The Manufacturing sector comprised 771 business establishments (23%). The Transportation and Warehousing sector

accounted for 536 companies (16%) and the Wholesale Trade sector comprised 437 business establishments (13%).

- Approximately 67% of the industrial businesses in the region had fewer than five employees, while 13% had between five to nine employees and 8% had between 10 and 20 employees. Roughly 7% of the establishments employed between 20 and 50 people while 5% of the businesses in the region had 50 or more employees.

- Nearly 82% of the businesses in the Construction industry had fewer than five employees in 2011 while 63% of the Transportation and Warehousing establishments had fewer than five employees. The Manufacturing sector had the highest percentage of businesses with 20 or more employees at 31% (237 businesses) while 14% of all Transportation and Warehousing establishments and 12% of the Wholesale Trade businesses had 20 or more employees.

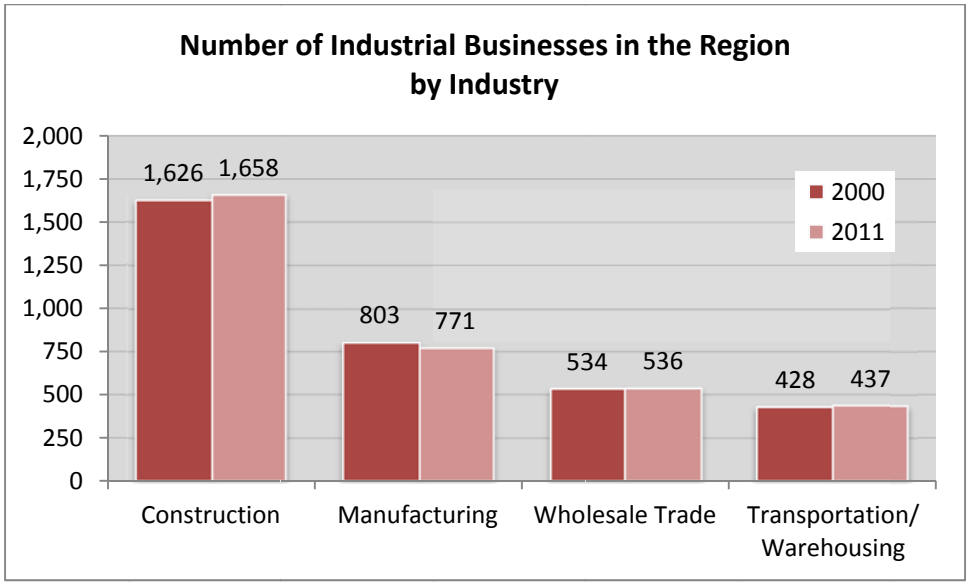
- Between 2000 and 2011, the number of establishments with 100 to 249 employees grew by 18.2% (+10 establishments), while the number of businesses with fewer than five employees increased 9.6% (+200). The number of companies with 20 to 49 employees held steady. All other business size categories contracted.



- Of the sectors that typically utilize industrial space, the Construction industry experienced the most dramatic growth between 2000 and 2011, adding 32 businesses (+2.0%). The Transportation and Warehousing industry expanded 2.1% (+9 businesses) while the Wholesale Trade sector held steady. The Manufacturing industry contracted by -4.0%, losing -32 business establishments.

- Most of the Construction industry growth in the region occurred in the 1 to 4 employee size range, which added 186 businesses (+16%). In the Transportation and Warehousing sector, nearly all of the growth occurred in establishments with 20 or more employees, as all size ranges above 20 employees experienced growth. The 5 to 9 employee size range also experienced growth, while the number of companies with fewer than 5 employees and with 10 to 19 employees declined. The Wholesale Trade sector experienced substantial growth in the number of establishments with 20 to 49 employees.

- The Manufacturing sector contracted in most size ranges. Although the number of businesses with fewer than five employees expanded by 29 (+9.7%), and businesses with 100 to 249 employees increased by four (+9%).



- While the number of industrial businesses expanded modestly between 2000 and 2011, the amount of square feet needed to house these establishments likely declined due to the business size ranges that either experienced growth or contraction. Based on an industry benchmark of roughly 1,000 square feet of industrial space occupied per employee, we estimate that about 37.3 million square feet was needed to accommodate all of the businesses in the region in 2011, compared to roughly 41.6 million square feet in 2000 (-10% decline).

- Between 2000 and 2011, the greatest growth occurred in the amount of space required to accommodate businesses with between 100 and 250 employees. In 2011, we estimate that roughly 9.1 million square feet of space was needed in the region to accommodate these users, compared to 7.7 million square feet in 2000. It is estimated that companies in this size range would occupy approximately 140,000 square feet of industrial space, on average.

- Significant growth also occurred in the amount of space required to house businesses with fewer than five employees (+10%), while declines occurred in the amount of space needed to accommodate all other size ranges.

- The effect of these business growth trends was likely overall negative absorption of industrial space and an increase in the amount of vacant space across the region. Counties in the region however, that experienced business expansion (St. Croix County, Washington County, and Chisago County) likely experienced positive absorption of industrial space.

- These trends suggest growing demand from smaller industrial spaces, as well as blocks of space in the 100,000 to 249,000 square foot range. All of the industrial sectors experienced business growth in this size range.

Summary

With the completion of the bridge crossing to St. Joseph in 2017, population and household growth is anticipated to accelerate. This should result in additional housing developed in St. Joseph. Although St. Joseph has plenty of single-family homes, there is very limited ownership attached product and apartments. As the population ages and with the increased access to the Town, consideration could be given to zoning some areas near the interchange for medium-density to high-density housing. This housing could be supported by nearby convenience goods and services that are likely to locate in St. Joseph because of the new bridge crossing.

Creating an area within the Downtown that is walkable and has more of a "village" environment can attract households that are more interested in a location near to the highway and employment opportunities, but prefer other housing products instead of a single-family home on a large lot. Options include rental apartments, for-sale townhomes (single-level living to attract empty-nesters and seniors) and small lot single-family homes close to a school so that children would be able to walk back and forth. In addition, establishing a new city center would create a focus for the community and would also support demand for additional retail.

Traffic on the bridge is likely to be the driving force for retail development initially. This can be supported through urban style development in a central core location that will serve as the center of community activity. After additional residential uses and businesses are located in a cohesive cluster in close proximity to the interchange, additional retail businesses such as grocery, hardware, lawn and garden, and other types of businesses are likely to be attracted to the higher population densities in the community. The level and amount of retail development is highly dependent on the number of rooftops and the support population (residential and employment) located in close proximity to one another. The higher the number of people and

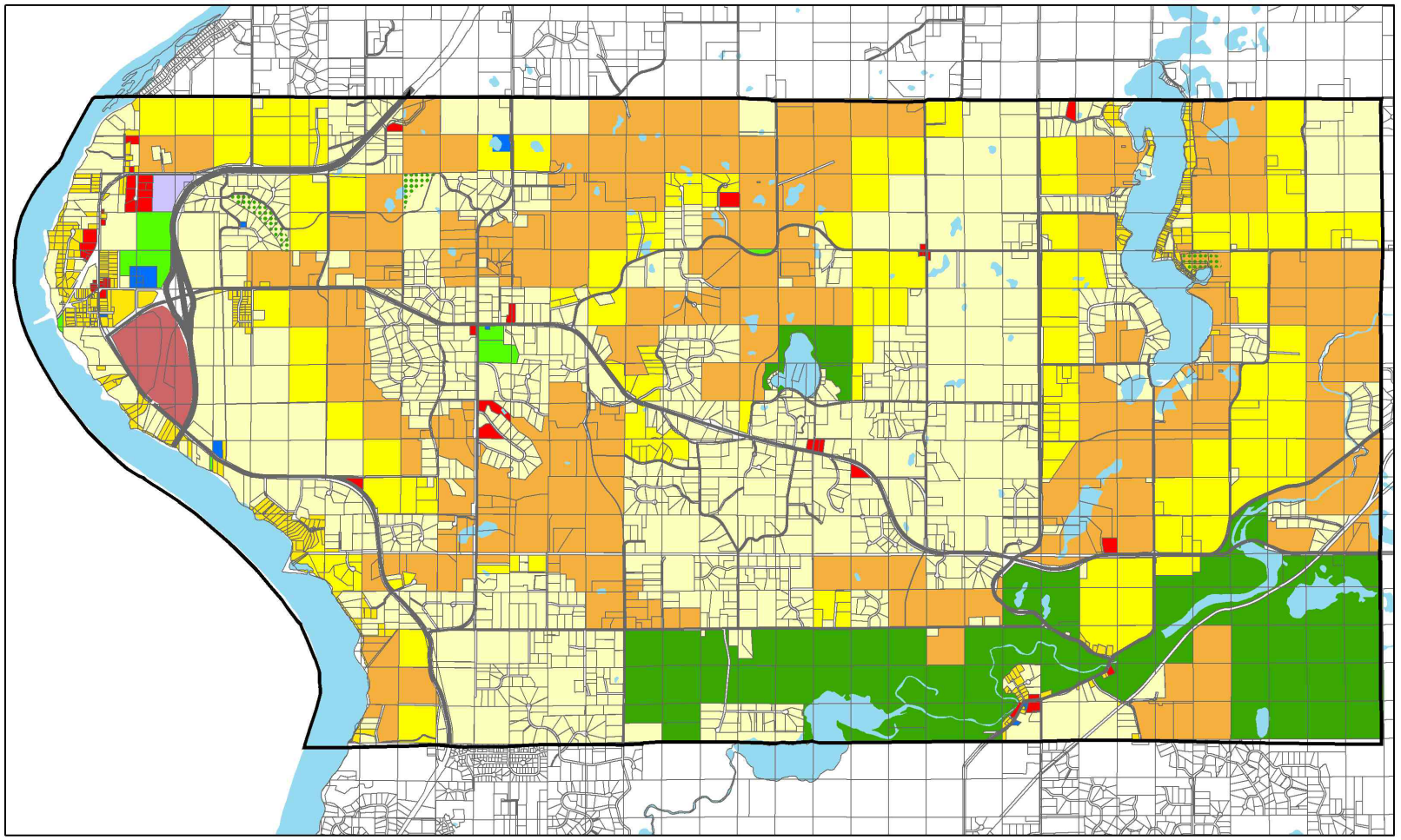
businesses in close proximity to one another, the more likely it is that retail businesses will be attracted to the community.

Household incomes are high in the area and additional traffic volumes on the bridge coming into St. Joseph should support convenience retail within the first 18 to 24 months of the bridge opening. As development increases, additional retail could be supported as residential and business density increases.

St. Croix County has already exhibited strong employment growth similar to Washington County in the Twin Cities Metro Area. The bridge crossing is anticipated to increase the attractiveness of St. Joseph Town for light industrial and other business uses. Ease of transportation between the core Metro Area and St. Joseph is likely to make the community desirable for businesses in Construction, Manufacturing (light) and Wholesale Distribution. The location of a business park near to the interchange, but separate from the core business district for the community would strengthen employment opportunities for residents and increase the tax base.

In addition to an increased household base, employment growth may also be supported from businesses that would prefer to locate near the bridge to improve their transportation access. The City should consider an area near to the bridge interchange but somewhat separate from residential areas where construction, light manufacturing and other types of commercial operations could grow and prosper. Improved high speed transportation access from St. Joseph Town to Minnesota is likely to be attractive to businesses that place a high degree of emphasis on accessibility for a location.

APPENDIX E: 2006 FUTURE LAND USE PLAN



Future Land Use

2006 Town of St. Joseph Comprehensive Plan

Town of St. Joseph, Wisconsin

2,000 0 2,000 Feet

N

- Agricultural Residential
- Residential Transition
- Residential
- Preservation Residential
- Public/Semi-Public
- Parks
- County/State Parks
- Commercial
- Light Industrial
- Business Park
- Open Water
- Conservation Easements
- Municipal Boundary
- Right-of-Way
- Planned Principle Arterial
- Planned Minor Arterial
- Planned Major Collector
- Planned Minor Collector

Prepared by:
DSU
May 2, 2006
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APPENDIX F: HOULTON MUNICIPAL SERVICES MEMORANDUM

Memorandum

DATE: July 9, 2015

TO: St. Joseph Town Board

FROM: Phil Carlson, AICP; Lee Mann, PE; Tom Dye, PE

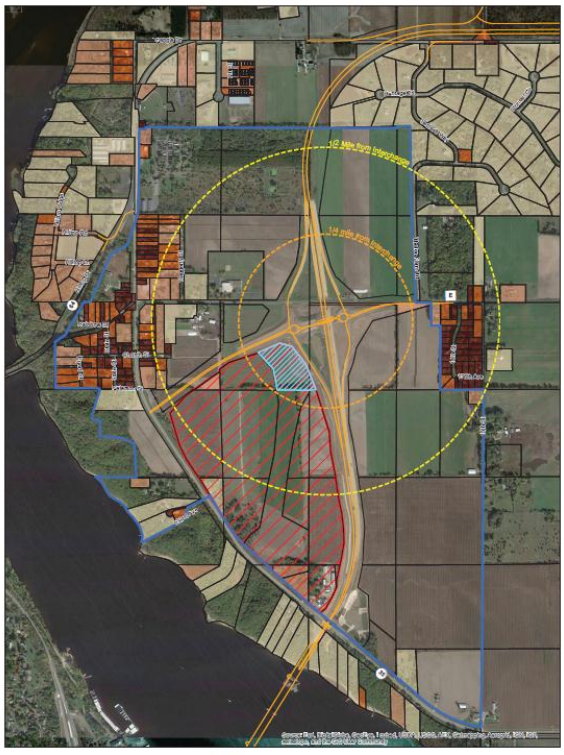
RE: St. Joseph Comprehensive Plan, Municipal Services Discussion

Introduction

As part of the Town's Comprehensive Plan update, potential development of a portion of the Houlton area with municipal services, including sanitary sewer, has been reviewed and discussed by the Plan Commission at three meetings, on April 22, May 20 and June 10. Attached are two memos from Stantec to the Plan Commission, dated 5-18-15 and 6-10-15, with background and generalized analysis involved in this discussion. The Plan Commission reached consensus that modest scale sewered development of a Houlton Village would be reasonable to consider. Further analysis of the wastewater facility, site options and development concepts for the Houlton area would be the subject of a separate facility plan, not within the Comp Plan scope.

Request

The Town Board is being asked to review this information and discussion, and if the Board agrees with the Plan Commission's consensus, schedule a community meeting where the ideas and information could be reviewed and discussed, and input gathered. If community consensus is forthcoming it would then be the basis for a request to GMAT to fund a facility study to more fully address the question of how to provide municipal sanitary sewer service to the Houlton area.



Houlton Sanitary Sewer Study Area

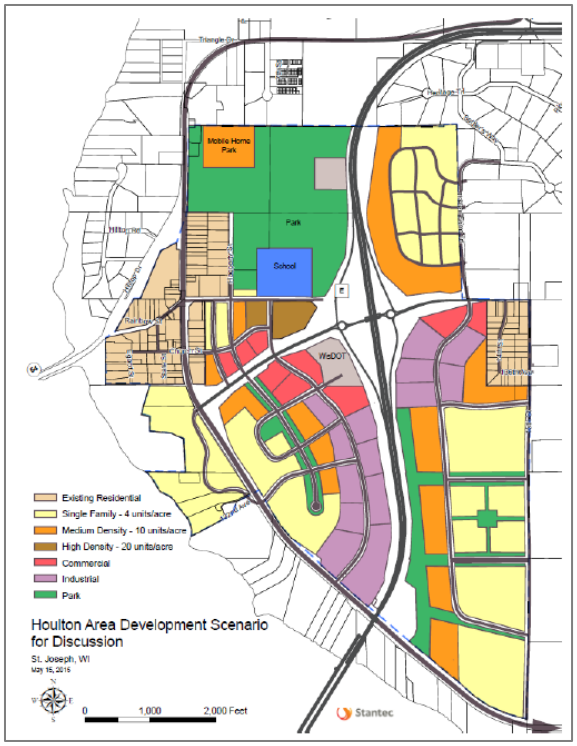
Background

The main points and conclusions from the Plan Commission discussion are:

1) A study area around Houlton was identified for the purpose of discussing municipal sewer service. This area extends a half mile more or less from the new interchange.

Re: Municipal Services Discussion

2) Generalized future land uses were assigned to the area so that sewer flows could be estimated.



3) Total development under this scenario within the study area included:
   a. About 440 acres of new development
   b. Over 2,000 units of new housing; 120 units of existing housing
   c. Over 900,000 sq ft of Commercial/Industrial uses on 100 acres

4) Four treatment options were considered:
   a. Connection to Hudson's existing sewage treatment facility;
   b. Connection to Stillwater's existing facility;
   c. Connection to Somerset's existing facility;
   d. Construction of a new sewage treatment facility in the Houlton area.

5) Total cost for each of the four options was roughly equal, at about $40 million, $20 million for each of the east and west sides of the new highway.

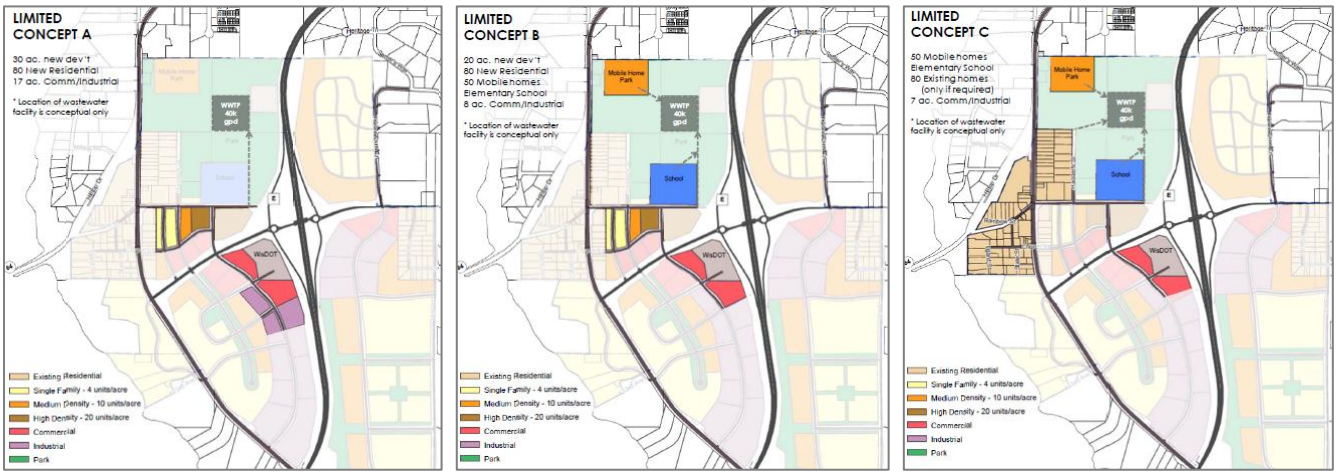
6) The Plan Commission agreed that full development was not likely or wanted, especially on the east side of the highway. It is also uncertain if any of the neighboring communities would agree to take Houlton's sewage. The Plan Commission asked Stantec to consider a very small treatment facility serving the west side only.

7) The smaller facility was estimated to provide 40,000 gallons/day of treatment at a cost of about $2 million. We estimated the cost per dwelling unit or acre of commercial/industrial land would be about 50% higher with this smaller plant than with the full development option and a larger plant.

8) Initial costs for treatment and collection in this latter scenario might be about $22,500 per housing unit.

Re: Municipal Services Discussion

9) This amount of treatment could serve a variety of land uses and three limited concepts were presented, involving varying amounts of commercial, industrial, new residential, and existing residential uses.



Please refer to the attached memos for additional information and detail.

Memorandum

To:	St. Joseph Plan Commission Stantec – St. Paul	From:	Phil Carlson, AICP & Tom Dye, PE St. Paul, MN
File:	193803109	Date:	May 18, 2015

Re: Houlton Area Development Scenarios

Introduction

Potential development of a portion of the Houlton area at urban densities with municipal services, including sanitary sewer service, has been reviewed as part of the Town's Comprehensive Plan update. This memo summarizes the conceptual work completed to analyze this issue.

A generalized study area for this analysis was identified to include most of Houlton plus an additional area within a half mile or so of the future interchange at Highway 64 and County Road E. A concept plan for the study area, illustrated in the map on Page 3, was developed showing general land uses and future roadways in order to estimate the total amount of development that might take place within the study area. Then engineering estimates were applied to this development scenario to arrive at rough costs to serve this development with sanitary sewer.

Summary & Conclusion

The development concept and assumptions include the following:

- West side of Highway 64:
  - 192 acres total new development
  - 790 units of new housing on 117 acres; 80 units of existing housing
  - 660,000 sq ft of Commercial/Industrial uses on 75 acres

- East side of Highway 64:
  - 250 acres total new development
  - 1,260 units of new housing on 216 acres; 40 units of existing housing
  - 270,000 sq ft of Commercial/Industrial uses on 32 acres

- Total/both sides of Highway 64:
  - 440 acres total new development
  - 2,050 units of new housing on 333 acres; 120 units of existing housing
  - 930,000 sq ft of Commercial/Industrial uses on 107 acres

- The cost of providing sanitary sewer collection and treatment, under four different options, totals approximately $40 million, with about $20 million each for the West and East sides.

- Wastewater treatment options include:
  - Connection to another community (Hudson, Stillwater or Somerset), or
  - Construction of a treatment facility within the Houlton planning area.

Re: Houlton Area Development Scenarios

- In very rough numbers, the full cost for both the East and West sides would add about $15,000 per unit up front to the cost of residential development and about $60,000-$90,000/acre, or $1.50-$2.00/sq ft, to the cost of commercial/industrial land.

- Under the scenarios connecting to another community, about half the above cost, or $7,000-$9,000 per lot, would be for collection and connection. These costs are typical for any new development in a sewered community. The other half – conveyance under the scenarios connecting to another community, or construction of a facility in Houlton – are above what would be typical in a community with sewer already in place.

- The costs for connecting to another community are an all-or-nothing situation – the entire pipe to Somerset, Hudson or Stillwater must be paid for, regardless of how much development occurs. Building a new Houlton facility, however, could be done in stages, with somewhat higher costs per unit or acre for this smaller development.

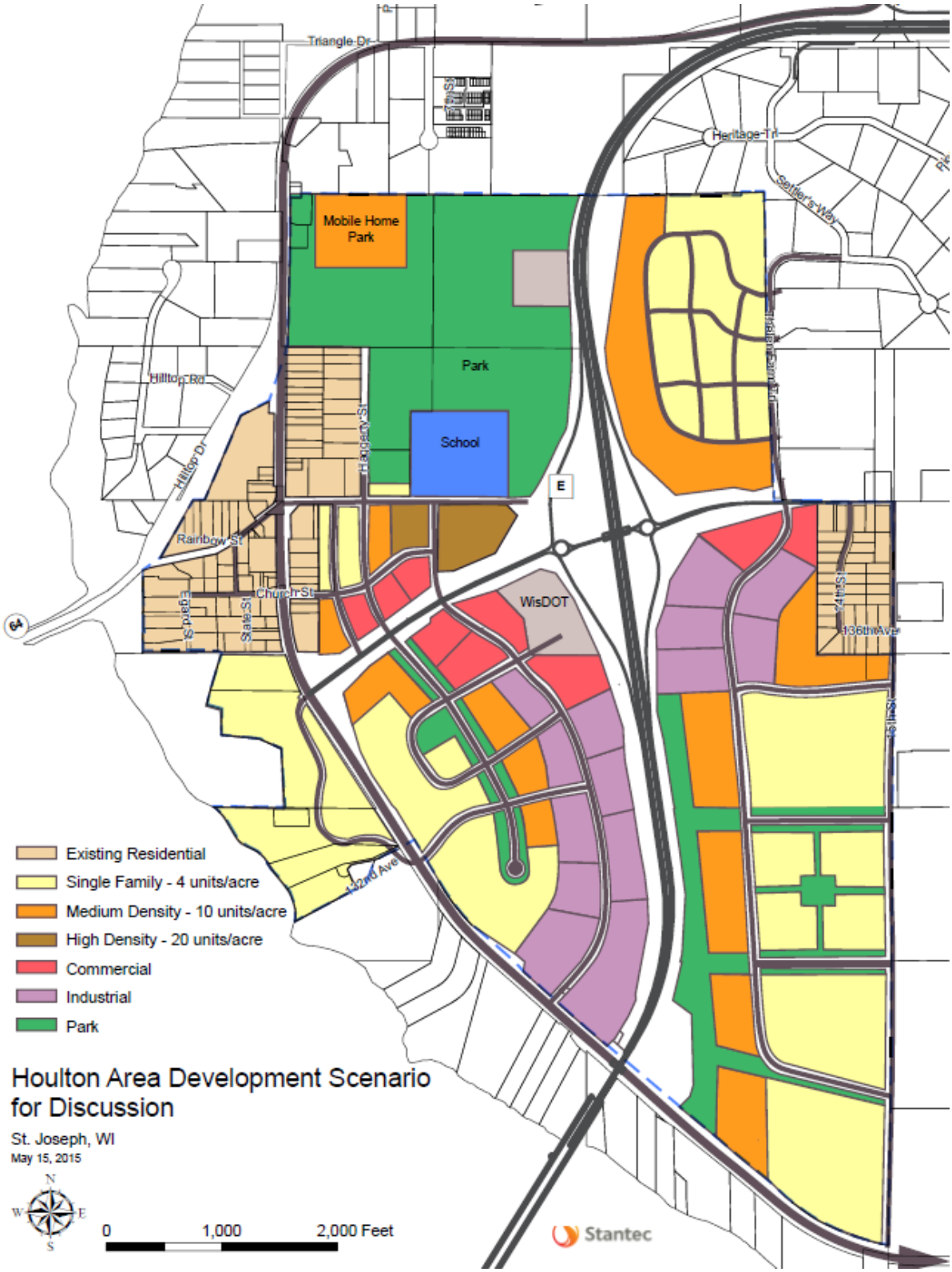
- It seems unlikely that a developer would be willing or able to pay the above costs to start a sewered community in Houlton given the current development climate, and equally unlikely that the Town of St. Joseph would bond or borrow to pay such costs.

Land Use Analysis

The development concept was based on the following assumptions:

- Commercial development users will want to be in the most visible and most accessible locations, at the first access points off the new interchange, on both the west and east sides.
- Industrial or business park development users will want good access and visibility, but do not need the most visible locations.
- Land near Houlton Elementary School is most appropriate for a concentration of residential development at higher densities.
- Most of the land north of Houlton Elementary School is assumed to be park land.
- Appropriate land use transitions will generally place commercial, industrial, or high density residential next to a highway, transitioning to medium density residential, then single family residential beyond that. New single family uses would be placed next to the existing residential areas of Houlton. New park land and linear park buffers are included as generalized features in the concept.
- We assume the first intersections on either side of the new interchange need to be at least 600'-800' back from intersections with the Highway 64/County Road E interchange ramp roundabouts. In practical terms – considering the arrangement of parcels and roadways – the logical locations for these intersections is about 1,000' back on each side.
- There are about 1,600 housing units in St. Joseph today. The development concept would add about 800 units on the west side, or about half again as many households as in the whole Town. Another 1,200+ units could be developed on the east side at full development, giving the entire new development concept more households than are in the Town today.
- New urban development on the west side of Highway 64 will likely be more desirable than on the east side, being nearer the river and the existing village of Houlton. Therefore, the sewer service analysis below has provided estimates for the east and west sides separately.

Re: Houlton Area Development Scenarios



Design with community in mind

Re: Houlton Area Development Scenarios

Sewer Service Analysis

The analysis below is a preliminary review of centralized wastewater collection and treatment alternatives for the study area. The purpose is to provide the Town with a ball-park idea of the costs to serve the study area with a centralized sanitary sewer system.

Wastewater Collection and Treatment
For any non-urban area or unsewered community there are two basic alternatives for wastewater treatment:

1) Individual on-site systems (septic and drain field) or

2) A centralized system where wastewater is collected, treated at a wastewater treatment facility (WWTF), and effluent is discharged. For wastewater treatment, the community can construct a facility or convey it to another existing facility (regionalization).

Flow Rates
Based on the acreages and estimated number of housing units in the study area the following are the estimated flow rates:

Initial Development (West of Highway 64):

- Average Daily Flow = 280,000 gallons per day (gpd) = 194 gallons per minute (gpm)

- Peak Hourly Flow = 700 gpm

Ultimate Development for Study Area:

- Average Daily Flow = 640,000 gpd = 443 gpm

- Peak Hourly Flow = 1330 gpm

The Average Daily Flow is used to size treatment facilities and the Peak Hourly Flow is used to design pump stations and piping.

Collection System
The configuration of a collection system is dictated by land use, configuration of roadways, and topography. The topography of the study area has relatively little difference in elevation other than along the river bluff. Since the land use and roadways are not definite the estimated cost for a collection system was based on a per acre cost for the study area.

Wastewater Treatment – Regionalization Alternatives
The Houlton study area is located about 7.9 miles from the Hudson WWTF and about 8.3 miles from the Somerset WWTF. Hudson's WWTF has a capacity of 2.2 million gallons per day (mgd) and currently treats about 1.5 mgd. Somerset's WWTF has the capacity to treat 300,000 gpd with a current flow of about 190,000 gpd. Both of these facilities have some available capacity but the Somerset facility would need to be immediately expanded to accommodate flow from the Houlton

area. The Hudson WWTF would need to be expanded to accommodate flow from the ultimate Houlton area. In this event Houlton would expectedly pay their share of the expansion costs.

Either of these alternatives would include a large pump station and a 14-inch diameter forcemain. In addition to these capital improvements there would likely be a fee to connect to Hudson's or Somerset's wastewater treatment facility. Basically this is a cost to buy treatment capacity in the community's facility. Although somewhat shorter than the pipe to Somerset, the pipe to Hudson has to traverse through 2.5 miles of urban area which would require road reconstruction.

A third regionalization alternative would be to construct a river crossing and connect to the Metropolitan Council Environmental Services system that serves the Twin Cities area. The WWTF that serves the Stillwater area is located in Bayport. This would require about 1.5 miles of piping including a 4,000 foot river crossing.

Houlton Wastewater Treatment Facility

Another wastewater treatment alternative would be to construct a WWTF in the Houlton area. The biggest hurdle to this alternative is disposal of the treated effluent. Obtaining a permit to discharge the treated effluent to a surface water may not be viable. The regulations on the St. Croix River are so strict that the cost to produce such high quality water is prohibitive. The other surface waters in the area (Apple River, Willow River) are basically the same distance as pumping to Somerset or Hudson. In addition there will be stringent effluent limits to discharge to these streams due to their low assimilative capacity.

Another possibility is to infiltrate treated effluent into the soil. The soils in the area are very sandy and don't hold water for very long. The Wisconsin DNR prefers this method be applied in areas with soils that can retain water longer to absorb nutrients. However, the WDNR would consider infiltration of high quality effluent water produced by a membrane treatment facility that contains low levels of nutrients. The WDNR would require analysis of groundwater movement in relation to drinking water wells in the area. The estimated cost for "Houlton WWTF" shown below includes a membrane WWTF.

Re: Houlton Area Development Scenarios

Estimated Costs

The tables below show preliminary estimated costs for the alternatives described above. The Houlton study area is split into West and East development areas.

West Area

Alternative	Collection System	Conveyance	Treatment/ Connection	Total
Hudson	$7,800,000	$10,800,000	$2,400,000[1]	$21,000,000
Somerset	$7,800,000	$9,400,000	$6,300,000[2]	$23,500,000
Stillwater	$7,800,000	$10,700,000	$2,400,000[1]	$20,900,000
Houlton WWTF	$7,800,000	-	$11,600,000	$19,400,000

[1]Based on $2,000/residential connection, 250 gpd/connection.
[2]Includes estimated cost to expand community's WWTF.

East Area

Alternative	Collection System	Conveyance	Treatment	Total
Hudson	$9,800,000	$200,000	$8,400,000[1]	$18,400,000
Somerset	$9,800,000	$200,000	$8,400,000[1]	$18,400,000
Stillwater	$9,800,000	$200,000	$8,400,000[1]	$18,400,000
Expand Houlton WWTF	$9,800,000	-	$9,500,000	$19,300,000

[1]Includes estimated cost to expand community's WWTF.

The Houlton WWTF option could be scaled down to provide sanitary service to a smaller portion of the study area. In this scenario the cost of both the Collection System and the Treatment System would be reduced for the Houlton WWTF option. However for the Hudson, Somerset and Stillwater options the Collection and Treatment/Connection costs would be reduced but the conveyance cost would remain unchanged. In other words, the piping system to convey wastewater to another community cannot be scaled down; it is an all-or-nothing component for these options.

- For example, connecting to Hudson, the entire $10.8M for conveyance for the initial pipe must be spent to connect to the Hudson WWTF (or $9.4M to Somerset, $10.7M to Stillwater), no matter the scale of development in Houlton.

- For a Houlton WWTF a smaller initial treatment plant could be built for the initial stages of development, and expanded as development grows. However, due to economies of scale, building a plant for only 25% of the total development estimated for the West Area might cost 35% of the $11.6M estimate.

Memorandum

DATE: June 10, 2015

TO: Town of St. Joseph Plan Commission

FROM: Phil Carlson, AICP, Stantec

RE: St. Joseph Comprehensive Plan, Municipal Services Discussion

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The Plan Commission agreed at our last meeting that the Commission would be open to a portion of the Houlton area being served by municipal sewer and requested additional analysis on what a very small wastewater treatment plant would cost, as a start. We estimate the cost for a 40,000 gpd (gallons per day) membrane treatment system and infiltration system to be about $2,000,000. On a per unit basis this is about 50% higher than the previous cost estimate for a large system serving the entire study area (estimated to handle 645,000 gpd). This is understandable given the economies of scale. Rough cost estimates per residential unit for the small vs. large system are:

- Full Development Scenario (645k gpd): $15,000/unit (total – treatment and collection)
  - $8,300/unit treatment, $ 6,700/unit collection
- Small System Scenario (40k gpd): $22,500/unit (total – treatment and collection)
  - $12,500/unit treatment, $10,000/unit collection

There would be operation and maintenance costs as well – including sludge disposal which we assume would be hauled to Hudson or Somerset. Estimated capital costs for this small system are shown in the table below.

Houlton WWTP Cost Estimate

Alternative	Item	Quantity	Cost/Unit	Total
Small MBR Facility				
	40,00 GPD MBR Pkg System	1	$ 900,000	$ 900,000
	Bldg, Piping	1	$ 200,000	$ 200,000
	Infiltration System	1	$ 140,000	$ 140,000
	Electrical	1	$ 150,000	$ 150,000
			Total	**$ 1,390,000**
			15% Contingency	$ 210,000
		25% Engineering, Admin, Finance		$ 350,000
			Project Cost	**$ 1,950,000**

Re: Municipal Services Discussion

Development Concepts

Four development concepts are illustrated on the following pages. The first, *Full Development Concept*, is the scenario we discussed at our last meeting covering the entire study area. The next three, labelled *Limited Concepts A, B, and C* represent different combinations of land uses that would add up to about 40,000 gpd for the small system discussed above.

Full Development Concept (previous)

- 440 acres new development
- 2,000+ Residential units
- 100+ acres of Commercial/Industrial development (900,000+ sq ft)
- 645,000 gallons/day

Limited Concept A – all new development

- 30 acres new development
- 80 New Residential units
- 17 acres of Commercial/Industrial development (150,000 sq ft)
- 40,000 gallons/day

Limited Concept B – some new development, serve School and Mobile Home Park

- 20 acres new development
- 80 New Residential units
- 50 Existing mobile homes
- Houlton Elementary School (230 students)
- 8 acres of Commercial/Industrial development (70,000 sq ft)
- 40,000 gallons/day

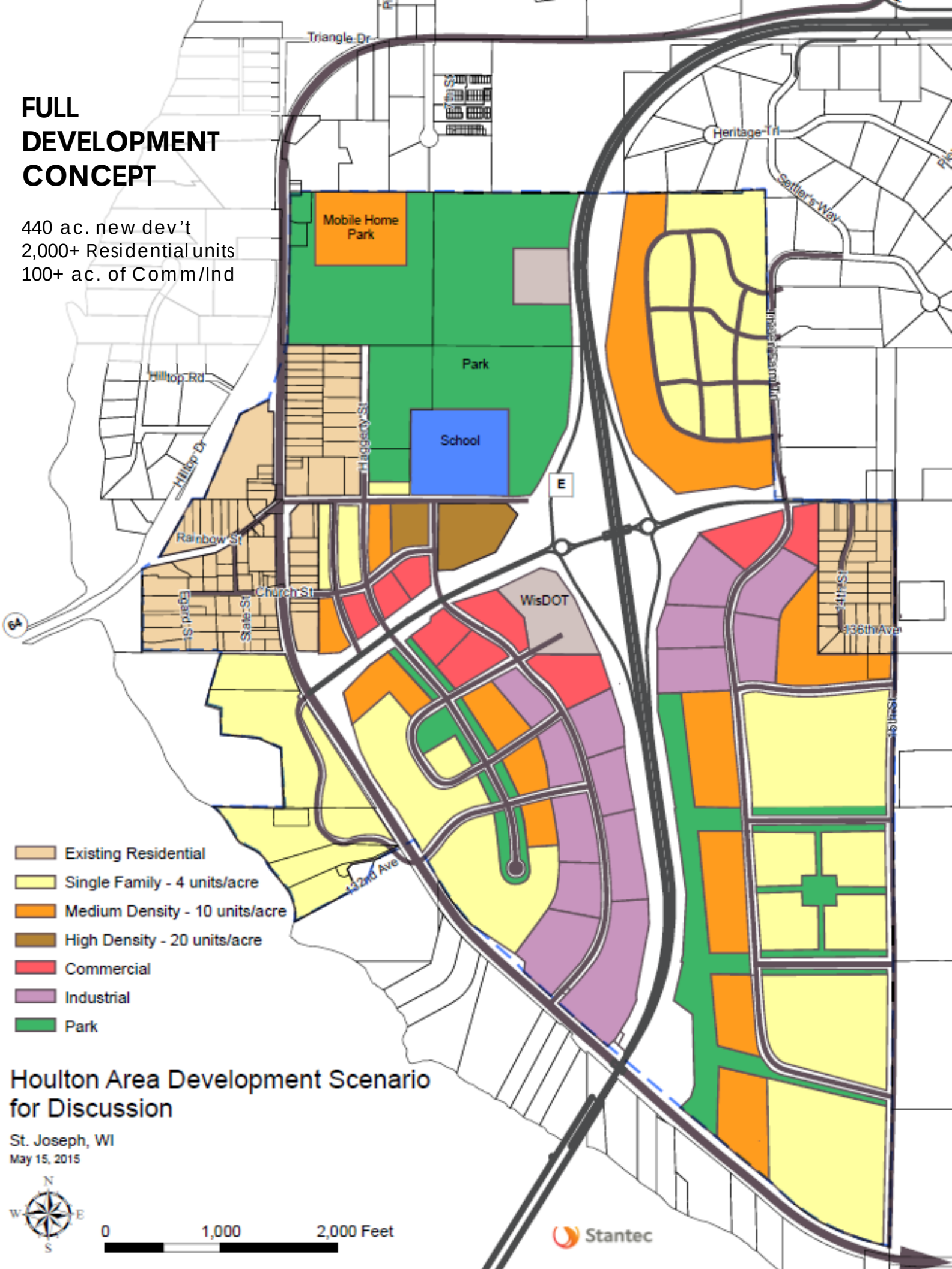
Limited Concept C – no new residential, serve School, Mobile Home Park, & 80 existing homes

- No new Residential development
- 80 Existing Residential units
- 50 Existing mobile homes *(only if required at some point in the future)*
- Houlton Elementary School (230 students)
- 7 acres of Commercial/Industrial development (65,000 sq ft)
- 40,000 gallons/day

Further analysis of the wastewater facility and associated development concepts for the Houlton Village area would be the subject of a separate facility plan, not within the Comp Plan scope. The Comp Plan scope envisions a community meeting and a Town Board meeting to discuss the municipal service issue.

FULL DEVELOPMENT CONCEPT

440 ac. new dev't
2,000+ Residential units
100+ ac. of Comm/Ind



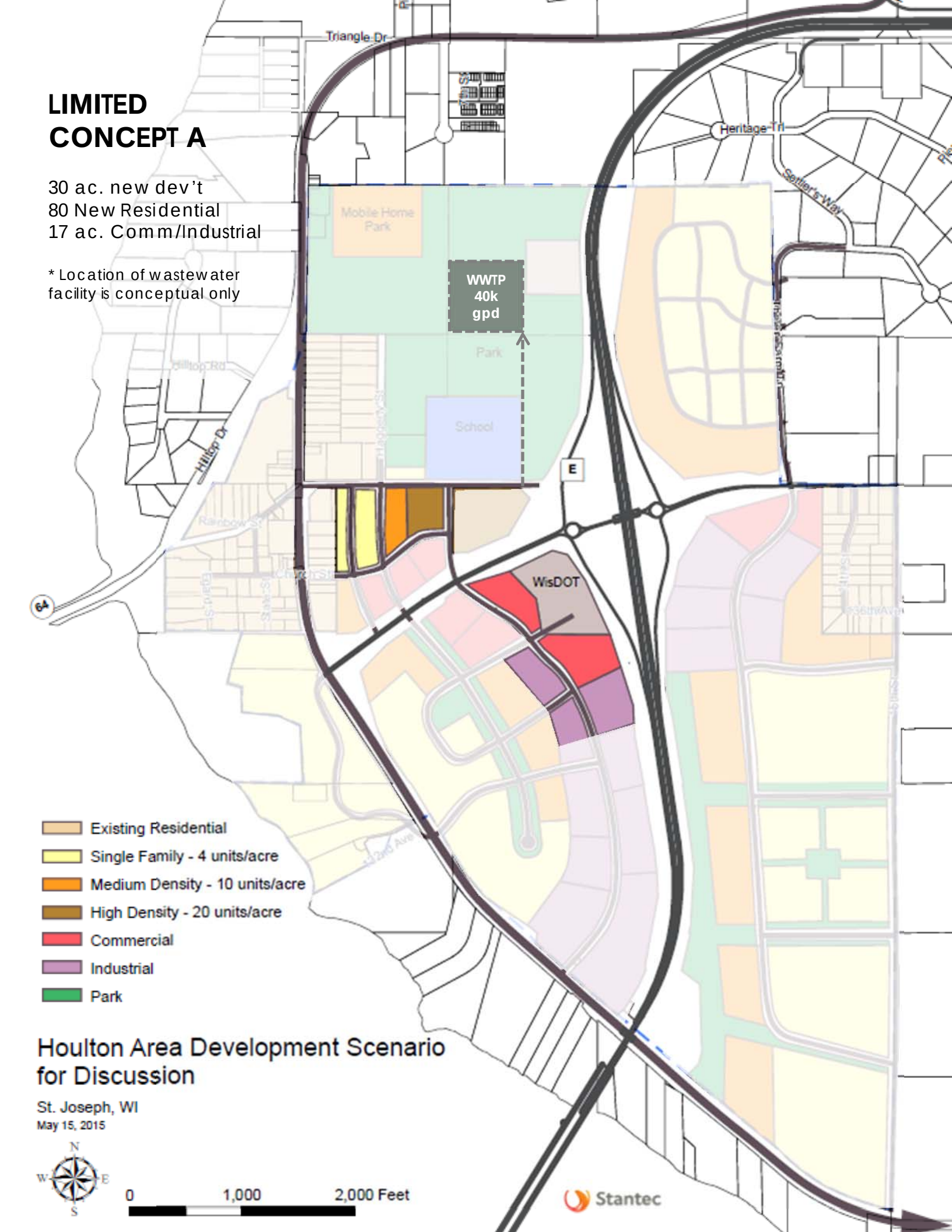
Houlton Area Development Scenario for Discussion

St. Joseph, WI
May 15, 2015

N W E S

0 1,000 2,000 Feet

Stantec


LIMITED
CONCEPT A
30 ac. new dev't
80 New Residential
17 ac. Comm/Industrial
* Location of wastewater facility is conceptual only
WWTP
40k
gpd
WisDOT
Triangle Dr
Heritage Trl
Setter's Way
Mobile Home Park
Park
School
Hilltop Rd
Hilltop Dr
Happy St
Rainbow St
E
6A
Existing Residential
Single Family - 4 units/acre
Medium Density - 10 units/acre
High Density - 20 units/acre
Commercial
Industrial
Park
Houlton Area Development Scenario for Discussion
St. Joseph, WI
May 15, 2015
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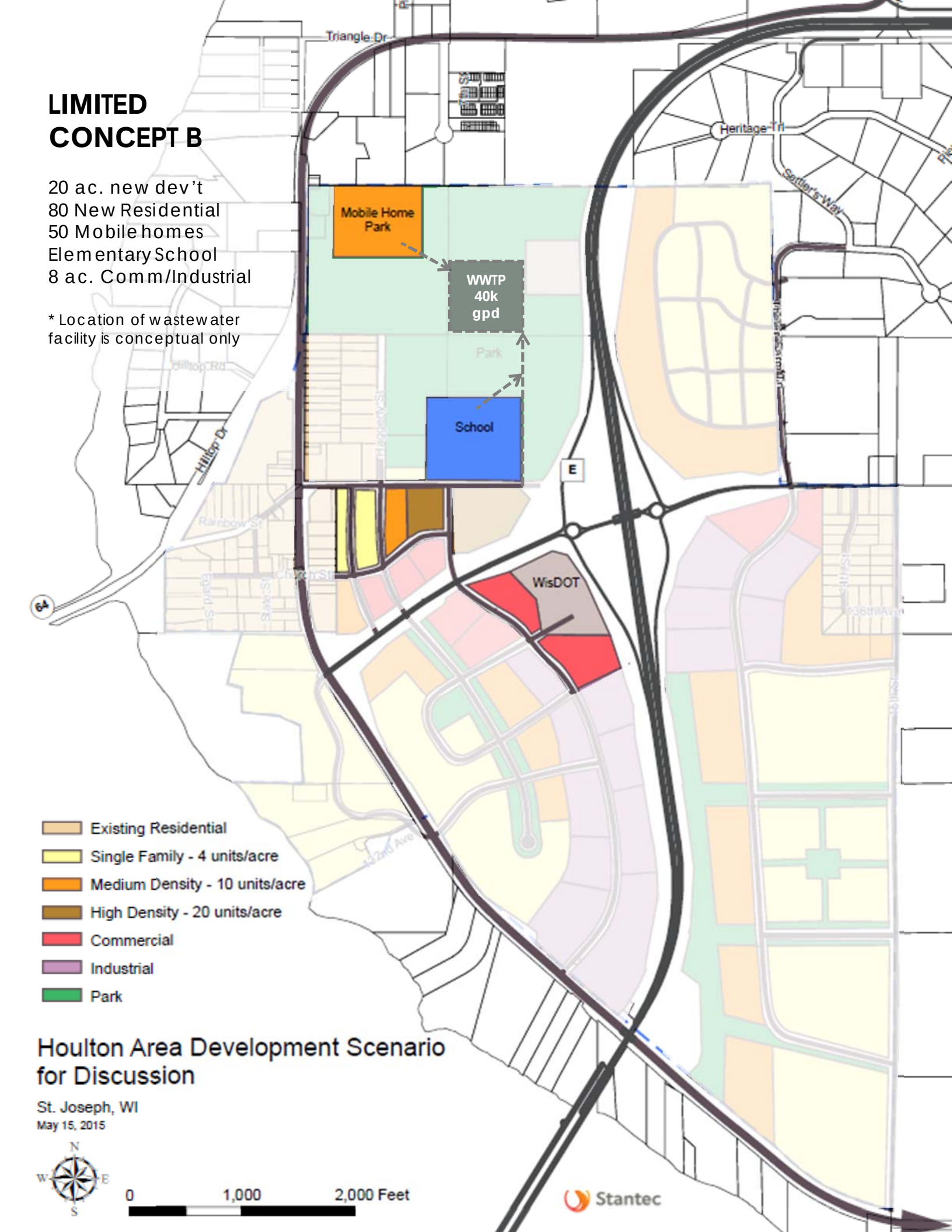
2,000 Feet
Stantec


LIMITED
CONCEPT B
20 ac. new dev't
80 New Residential
50 Mobile homes
Elementary School
8 ac. Comm/Industrial
* Location of wastewater facility is conceptual only
Mobile Home Park
WWTP 40k gpd
School
WisDOT
Triangle Dr
Heritage Tri
Settler's Way
Hilltop Rd
Hilltop Dr
Rainbow St
Park
E
6A
Existing Residential
Single Family - 4 units/acre
Medium Density - 10 units/acre
High Density - 20 units/acre
Commercial
Industrial
Park
Houlton Area Development Scenario for Discussion
St. Joseph, WI
May 15, 2015
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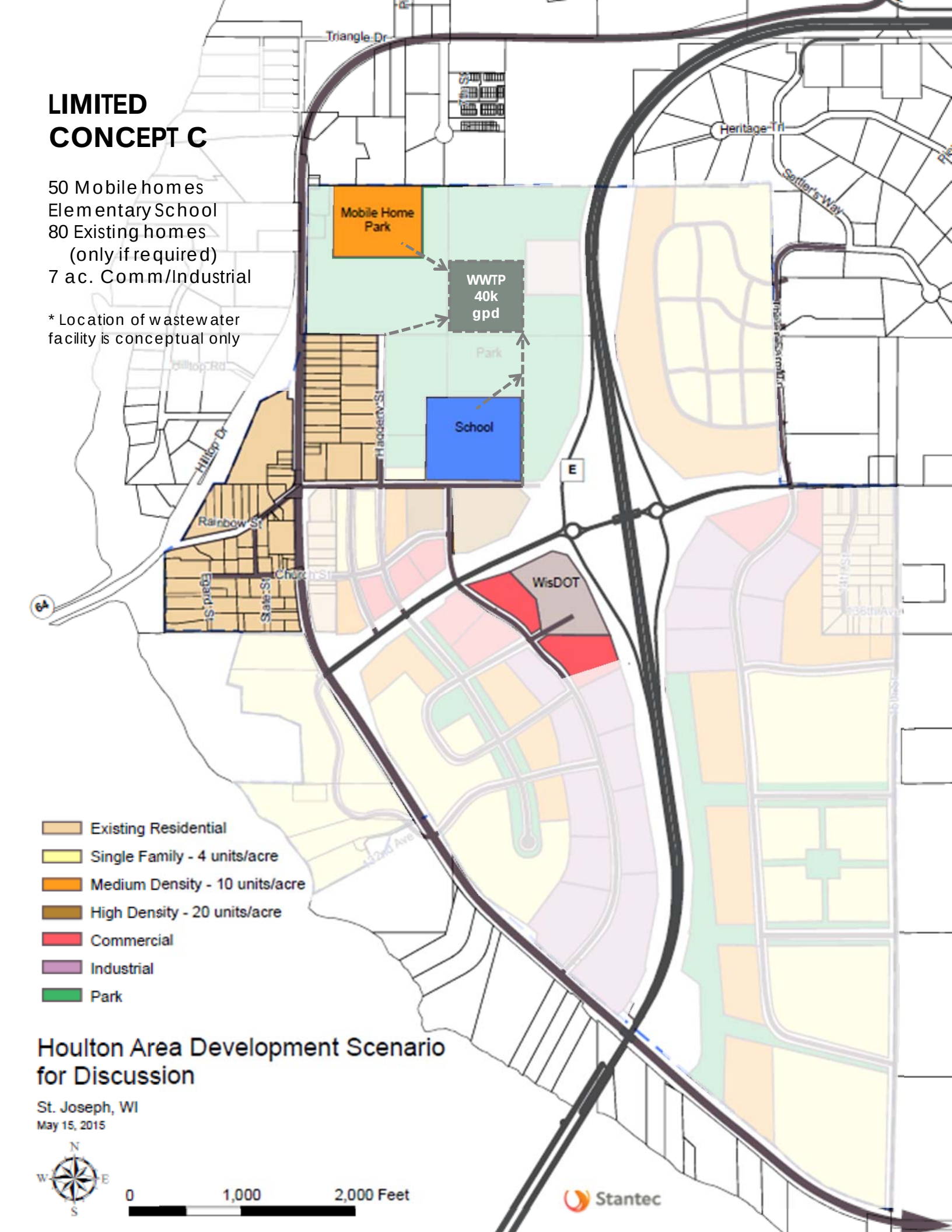
LIMITED
CONCEPT C
50 Mobile homes
Elementary School
80 Existing homes
(only if required)
7 ac. Comm/Industrial
* Location of wastewater facility is conceptual only
Mobile Home Park
WWTP 40k gpd
School
Park
WisDOT
Triangle Dr
Heritage Tri
Settler's Way
Hilltop Rd
Hilltop Dr
Hackberry St
Rainbow St
State St
Church St
E
6A
Existing Residential
Single Family - 4 units/acre
Medium Density - 10 units/acre
High Density - 20 units/acre
Commercial
Industrial
Park
Houlton Area Development Scenario for Discussion
St. Joseph, WI
May 15, 2015
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Stantec

APPENDIX G: STORMWATER PHASE II FINAL RULE - MS4s IN HOULTON

United States Environmental Protection Agency | Office of Water (4203) | EPA 833-F-00-003 January 2000 (revised June 2012) Fact Sheet 2.1

Stormwater Phase II Final Rule

Who's Covered? Designation and Waivers of Regulated Small MS4s

Who Is Affected by the Phase II Small MS4 Program?

The Stormwater Phase II Final Rule applies to operators of *regulated small* municipal separate storm sewer systems (MS4s), which are designated based on the criteria discussed in this fact sheet. In this fact sheet, the definition of an MS4 and the distinction between small, medium, and large MS4s is reviewed. Conditions under which a small MS4 may be designated as a *regulated* small MS4, as well as the conditions for a waiver from the Phase II program requirements, are outlined. This fact sheet also attempts to clarify possible implementation issues related to determining one's status as an operator of a regulated small MS4.

What Is a Municipal Separate Storm Sewer System (MS4)?

What constitutes an MS4 is often misinterpreted and misunderstood. The term MS4 does not solely refer to municipally-owned storm sewer systems, but rather is a term of art with a much broader application that can include, in addition to local jurisdictions, State departments of transportation, universities, local sewer districts, hospitals, military bases, and prisons. An MS4 also is not always just a system of underground pipes – it can include roads with drainage systems, gutters, and ditches. The regulatory definition of an MS4 is provided below.

> According to 40 CFR 122.26(b)(8), "***municipal separate storm sewer*** means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
>
> (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States.
>
> (ii) Designed or used for collecting or conveying stormwater;
>
> (iii) Which is not a combined sewer; and
>
> (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2."

What Is a Small, Medium, or Large MS4?

- EPA's NPDES (National Pollutant Discharge Elimination System) stormwater permitting program labels MS4s as either "small," "medium," or "large" for the purposes of regulation.
- A ***small* MS4** is any MS4 that is not already covered by the Phase I stormwater program. Small MS4s include Federally-owned systems, such as military bases.
- The Phase I stormwater program covers *medium* and *large* MS4s. Phase I MS4s were automatically designated nationwide as ***medium* MS4s** if they were located in an incorporated place or county with a population between 100,000 - 249,999 or as ***large* MS4s** if located in an incorporated place or county with a population of 250,000 or greater. Many MS4s in areas below 100,000 in population, however, have been individually brought into the Phase I program by NPDES permitting authorities. Such already regulated MS4s do not have to develop a Phase II program.

Are All Small MS4s Covered by the Phase II Final Rule?

No. The universe of small MS4s is quite large since it includes every MS4 except for the approximately 900 medium and large MS4s already regulated under the Phase I stormwater program. Only a select sub-set of small MS4s, referred to as ***regulated* small MS4s**, is covered by the Phase II Final Rule, either through automatic nationwide designation or designation on a case-by-case basis by the NPDES permitting authority.

How Is A Small MS4 Designated as a Regulated Small MS4?

A small MS4 can be designated by the permitting authority as a *regulated* small MS4 in one of three ways:

❶ Automatic Nationwide Designation

The Phase II Final Rule requires nationwide coverage of all operators of small MS4s that are located within the boundaries of a Bureau of the Census-defined "urbanized area" (UA) based on the latest decennial Census. Once a small MS4 is designated into the program based on the UA boundaries, it cannot be removed from the program on that basis that a subsequent decennial UA calculation shows that the small MS4 is no longer within the UA boundaries. However, the designated small MS4 remains eligible for a waiver if it meets the criteria.

- ***Urbanized Areas***

> An ***urbanized area*** (**UA**) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas.

More information about urbanized areas maps is available at: http://www.epa.gov/npdes/stormwater/urbanmaps

Additionally, information about urbanized areas is available directly from the U.S. Bureau of the Census at: http://www.census.gov/geo/www/ua/2010urbanruralclass.html

❷ Potential Designation by the NPDES Permitting Authority – Required Evaluation

An operator of small MS4 located outside of a UA have been designated as a regulated small MS4 if the NPDES permitting authority determined that its discharges cause, or have the potential to cause, an adverse impact on water quality. The Phase II Final Rule required the NPDES permitting authority to develop a set of designation criteria and apply them, *at a minimum*, to all small MS4s located outside of a UA serving a jurisdiction with a population of at least 10,000 and a population density of at least 1,000 people/square mile.

- ***Designation Criteria***

  EPA recommended that the NPDES permitting authority use a balanced consideration of the following designation criteria on a watershed or other local basis:

  - ✓ Discharge to sensitive waters;
  - ✓ High population density;
  - ✓ High growth or growth potential;
  - ✓ Contiguity to a UA;
  - ✓ Significant contributor of pollutants to waters of the United States; and
  - ✓ Ineffective protection of water quality concerns by other programs.

❸ Potential Designation by the NPDES Permitting Authority – Physically Interconnected

Under the final rule, the NPDES permitting authority was required to designate any small MS4 located outside of a UA that contributes substantially to the pollutant loadings of a *physically interconnected* MS4 regulated by the NPDES stormwater program. The final rule did not set a deadline for designation of small MS4s meeting this criterion.

> ***Physically interconnected*** means that one MS4 is connected to a second MS4 in such a way that it allows for *direct* discharges into the second system.

State and EPA permitting authorities can be contacted to obtain a full list of regulated MS4s, including both the automatically designated MS4s and those that were additionally designated.

Are Waivers from the Phase II Permit/Program Requirements Possible?

Yes, two waiver options are available to operators of automatically designated small MS4s if discharges do not cause, or have the potential to cause, water quality impairment.

The first applies where:

(1) the jurisdiction served by the system is less than 1,000 people within the urbanized area;

(2) the system is not contributing substantially to the pollutant loadings of a physically interconnected regulated MS4; and

(3) if the small MS4 discharges any pollutants identified as a cause of impairment of any water body to which it discharges, stormwater controls are not needed based on wasteload allocations that are part of an EPA approved or established "total maximum daily load" (TMDL) that addresses the pollutant(s) of concern.

> ***TMDLs*** are water quality assessments that determine the source or sources of pollutants of concern for a particular waterbody, consider the maximum amount of pollutants the waterbody can assimilate, and then allocate to each source a set level of pollutants that it is allowed to discharge (i.e., a "wasteload allocation"). Small MS4s that are not given a wasteload allocation would meet the third criterion above.

The second applies where:

(1) the jurisdiction served by the system is less than 10,000 people;

(2) an evaluation of all waters of the U.S. that receive a discharge from the system shows that stormwater controls are not needed based on wasteload allocations that are part of an EPA approved or established TMDL that addresses the pollutant(s) of concern or an equivalent analysis; and

(3) it is determined that future discharges from the small MS4 do not have the potential to result in exceedances of water quality standards.

The NPDES permitting authority is required to periodically review any waivers granted to MS4 operators to determine whether any information required for granting the waiver has changed. Minimally, such a review needs to be conducted once every five years.

Can More than One MS4 in the Same Political Jurisdiction Be Automatically Designated?

Yes. Since the final rule provides automatic coverage of all small MS4s within a UA, the result would likely be coverage of several governments and agencies with multiple, perhaps overlapping, jurisdictions. For example, a city that is located within a UA and operates its own small MS4 could be designated alongside the State's department of transportation (DOT) and the county's DOT if the State and county operate roads that are within the borders of the city. All three entities would be responsible for developing a stormwater management program for the portion of their respective MS4s within the city limits. In such a case, the permittees are strongly encouraged to work together to form a unified stormwater management program.

Who Is Responsible if the Small MS4 Operator Lacks the Necessary Legal Authority?

Some regulated small MS4s may lack the necessary legal authority to implement one or more of the required minimum control measures that comprise the Phase II stormwater management program. For example, a local government that is a small MS4 operator may be in a State that does not have an enabling statute that allows local regulatory control of construction site runoff into the sewer system. Another example is a State DOT that may not have the legal authority to require and enforce controls on illicit discharges into its system. In these situations the small MS4 is encouraged to work with the neighboring regulated small MS4s. As co-permittees, they could form a shared stormwater management program in which each permittee is responsible for activities that are within their individual legal authorities and abilities.

For Additional Information

Contacts

- U.S. EPA Office of Wastewater Management
  Phone: 202-564-9545
  http://www.epa.gov/npdes/stormwater

- Your NPDES Permitting Authority. Most States and Territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

District of Columbia	Guam
Idaho	Johnston Atoll
Massachusetts	Midway and Wake Islands
New Hampshire	Northern Mariana Islands
New Mexico	Trust Territories
Puerto Rico	American Samoa

- A list of names and telephone numbers for each EPA Region and State is located at
  http://www.epa.gov/npdes/stormwater
  (click on "Contacts")

Reference Documents

- EPA's Stormwater Web Site
  http://www.epa.gov/npdes/stormwater
  - Stormwater Phase II Final Rule Fact Sheet Series
  - Stormwater Phase II Final Rule (64 *FR* 68722)
  - National Menu of Best Management Practices for Stormwater Phase II
  - Measurable Goals Guidance for Phase II Small MS4s
  - Stormwater Case Studies

- Census Urbanized Area Information
  http://www.epa.gov/npdes/stormwater/urbanmaps
  - General Information:
    http://www.census.gov/geo/www/ua/uaucbndy.html

United States Environmental Protection Agency | Office of Water (4203) | EPA 833-F-00-004 December 1999 (revised June 2012) Fact Sheet 2.2

Stormwater Phase II Final Rule

Urbanized Areas: Definition and Description

As discussed in Fact Sheet 2.1, *Who's Covered? Designation and Waivers of Regulated Small MS4s*, the Phase II Final Rule covers all small municipal separate storm sewer systems (MS4s) located within an "urbanized area" (UA). UAs constitute the largest and most dense areas of settlement. UA calculations delineate boundaries around these dense areas of settlement and, in doing so, identify the areas of concentrated development. UA designations are used for several purposes in both the public and private sectors. For example, the Federal Government has used UAs to calculate allocations for transportation funding, and some planning agencies and development firms use UA boundaries to help ascertain current, and predict future, growth areas.

What Is an Urbanized Area (UA)?

The Bureau of the Census determines UAs by applying a detailed set of published UA criteria (see 55 *FR* 42592, October 22, 1990) to the latest decennial census data. Although the full UA definition is complex, the Bureau of the Census' general definition of a UA, based on population and population density, is provided below.

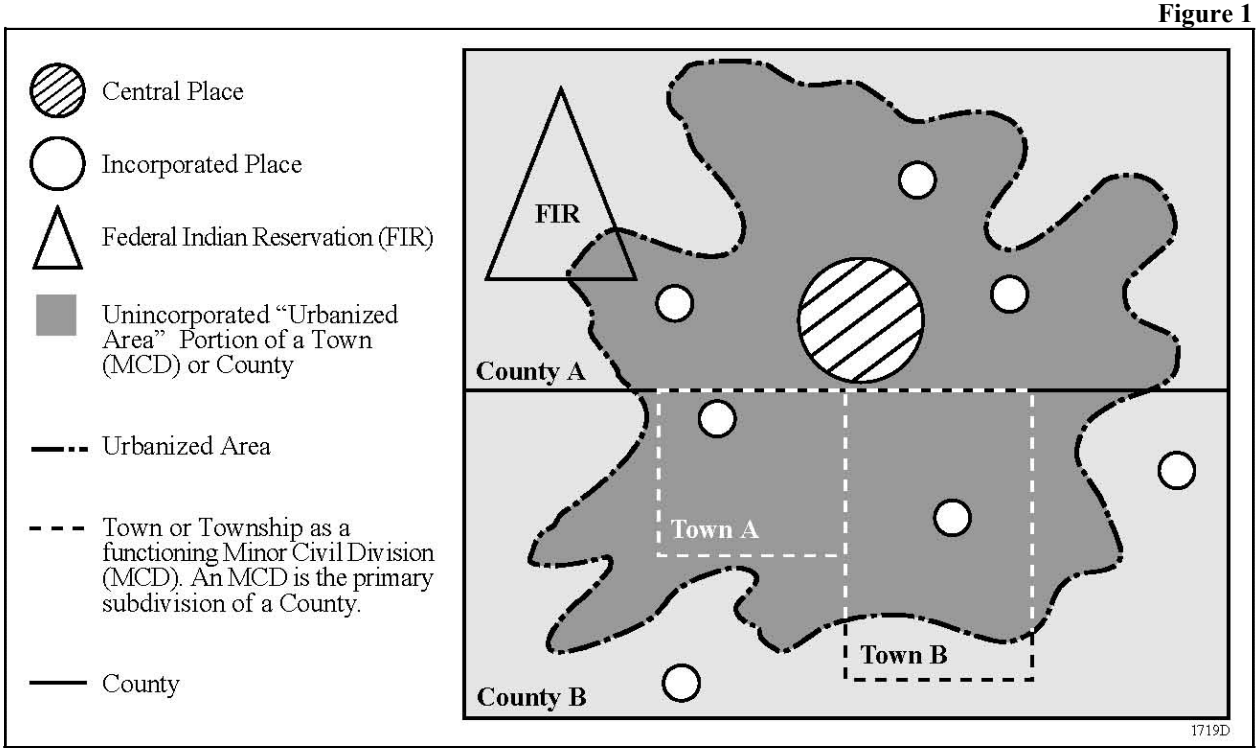
> An ***urbanized area*** (**UA**) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas.

The basic unit for delineating the UA boundary is the census block. Census blocks are based on visible physical boundaries, such as the city block, when possible, or on invisible political boundaries, when not. An urbanized area can comprise places, counties, Federal Indian Reservations, and minor civil divisions (MCDs - towns and townships).

How Can Status as a Regulated Small MS4 Be Determined?

The drawing below (see Figure 1) is a simplified UA illustration that demonstrates the concept of UAs in relation to the Phase II Final Rule. The "urbanized area" includes within its boundaries incorporated places, a portion of a Federal Indian reservation, an entire MCD, a portion of another MCD, and portions of two counties. Any and all operators of small MS4s located within the boundaries of the UA are covered under the Phase II Final Rule, regardless of political boundaries. Operators of small MS4s located outside of the UA are subject to potential designation into the Phase II MS4 program by the NPDES permitting authority.

Figure 1



Operators of small MS4s can determine if they are located within a UA, and therefore covered by the Phase II storm water program, by contacting one or more of the institutions listed below for more detailed information on the location of the UA boundary. EPA and the States have compiled a list of municipalities to be covered under the Phase II Rule, but the urbanized area boundaries are important in some cases for determining the specific area within a municipality's boundaries that is covered (e.g., a county included in Phase II might only be required to implement their program for the urbanized area of the county).

❑ The State or NPDES Permitting Authority (may be the State or the U.S. EPA Region)

Storm Water Coordinators: The NPDES permitting authority may be the State or the U.S. EPA Region. The Storm Water Coordinators for each U.S. EPA Region are listed in the *For Additional Information* section in Fact Sheet 2.9. These regional contacts can assist with UA information and provide the names of State storm water contacts. Regional and State contact information can also be obtained from OWM.

State Data Centers: Each State's Data Center receives listings of all entities that are located in UAs, as well as detailed maps and electronic files of UA boundaries. The Bureau of the Census web site includes a list of contact names and phone numbers for the data in each State at www.census.gov/sdc/www.

State Planning/Economic/Transportation Agencies: These agencies typically use UAs to assess current development and forecast future growth trends and, therefore, should have detailed UA information readily available to help determine the UA boundaries in any given area.

❑ County or Regional Planning Commissions/ Boards

As with State agencies, these entities are likely to have detailed UA data and maps to help determine UA boundaries.

❑ U.S. EPA

NPDES Website: Information about urbanized areas maps is available at EPA's website: http://www.epa.gov/npdes/stormwater/urbanmaps

Enviromapper Website: EPA modified a Web-based geographic program called *Enviromapper*. This allows MS4 operators to enter a location and see a detailed map of the UA boundary (called "city boundaries"). *Enviromapper* can be accessed at http://www.epa.gov/emefdata/em4ef.home

- **The Bureau of the Census**

  The site provides information on downloading UA maps and other electronic files for use with computerized mapping systems. http://www.census.gov/geo/www/ua/2010urbanruralclass.html

How Will Subsequent Censuses Affect the Determination of Status as a Regulated Small MS4?

Any additional automatic designations of small MS4s based on subsequent census years is governed by the Bureau of the Census' definition of a UA in effect for that year and the UA boundaries determined as a results of the definition. Once a small MS4 is designated into the program based on the UA boundaries, it cannot be waived from the program if in a subsequent UA calculation the small MS4 is no longer within the UA boundaries. An automatically designated small MS4 remains regulated unless, or until, it meets the criteria for a waiver (see Fact Sheet 2.1 for more information on the regulated small MS4 waiver option).

For Additional Information

Contacts

- U.S. EPA Office of Wastewater Management
  Phone: 202-564-9545
  http://www.epa.gov/npdes/stormwater

- Your NPDES Permitting Authority. Most States and Territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

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Massachusetts	Midway and Wake Islands
New Hampshire	Northern Mariana Islands
New Mexico	Trust Territories
Puerto Rico	American Samoa

- A list of names and telephone numbers for each EPA Region and State is located at http://www.epa.gov/npdes/stormwater (click on "Contacts")

Reference Documents

- EPA's Stormwater Web Site
  http://www.epa.gov/npdes/stormwater
  - Stormwater Phase II Final Rule Fact Sheet Series
  - Stormwater Phase II Final Rule (64 *FR* 68722)
  - National Menu of Best Management Practices for Stormwater Phase II
  - Measurable Goals Guidance for Phase II Small MS4s
  - Stormwater Case Studies

- Census Urbanized Area Information
  http://www.epa.gov/npdes/stormwater/urbanmaps
  - General Information:
    http://www.census.gov/geo/www/ua/uaucbndy.html

FIN 52317
FID 656114360

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notice of Intent to Apply for Coverage Under WPDES MS4 General Permit No. WI-S050181-1

Form 3400-191 (R 10/14)

Notice: Pursuant to ss. 283.33 and 283.37, Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, this form is used to apply for coverage under Wisconsin Pollutant Discharge Elimination System (WPDES) Municipal Separate Storm Sewer System (MS4) General Permit No. WI-S050181-1. This form and any required attachments constitute the permit application. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Public Records Laws (ss. 19.31-19.39, Wis. Stats.).

Instructions: Complete all sections of this permit application. If additional space is needed to respond to a question, attach additional pages. Provide descriptions below that explain the program activities that you expect to develop and implement to comply with the MS4 general permit. Information on the MS4 general permit and the MS4 storm water program are available at: http://dnr.wi.gov/topic/stormwater/municipal/. Section 3 of the MS4 general permit contains the compliance schedule that directs when the individual program activities need to be developed and submitted to the Department for review. The detailed programs that are developed and submitted to the Department for review may deviate from the program activities described below if necessary. The descriptions provided below are necessary for the Department to verify that the municipality's program activities comply with the permit.

Section I: Applicant Information

Name of Municipality			
Town of St. Joseph			
Mailing Address	City	State	ZIP Code
1337 County Road V	Hudson	WI	54016
County(s) in which Applicant is located	Type of Municipality: (check one)		
St. Croix County	☐ County ☐ City ☐ Village ☒ Town ☐ Other (specify)		

Section II: Local Contact Information

Name of Municipal Contact Person		Title	
Dan Gavin		Chairman	
Mailing Address	City	State	ZIP Code
1337 County Road V	Hudson	WI	54016
Email address	Phone Number (incl. area code)	Website address, if available	
chair@townofstjoseph.com	(715) 222-6235	www.townofstjoseph.com	

Section III: Water Quality Concerns

Yes	No	
☒	☐	Does any part of the MS4 discharge to an outstanding resource water (ORW) or exceptional resource water (ERW) listed under s. NR 102.10 or 102.11, Wis. Adm. Code? (A list of ORWs and ERWs may be found on the Department's Internet site at: http://dnr.wi.gov/topic/surfacewater/orwerw.html)
☒	☐	Does any part of the MS4 discharge to an impaired waterbody listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC § 1313(d)(1)(C)? (A list of Wisconsin impaired waterbodies may be found on the Department's Internet site at: http://dnr.wi.gov/topic/impairedwaters/)

Section IV: Potential Permit Exemption

Yes	No	Section NR 216.023, Wis. Adm. Code, allows certain MS4s that have less than 1000 people residing in an urbanized area to be waived from municipal storm water permit coverage.
☐	☒	Do you believe that the MS4 may be eligible for this potential exemption as described in s. NR 216.023, Wis. Adm. Code?

If yes, please provide documentation supporting a permit exemption including the following (Attach additional pages if necessary):

Total municipal area in square miles

Total municipal population (2010 U.S. census)

MS4 service area within Urbanized Area in square miles

Municipal population within Urbanized Area (2010 U.S. census)

Additional information supporting an exemption under s. NR 216.023, Wis. Adm. Code

RECEIVED
JAN 26 2015

Note: Urbanized Area information is available from the USEPA at:

WT/3 - WY/3 - OGL/3

http://water.epa.gov/polwaste/npdes/stormwater/Urbanized-Area-Maps-for-NPDES-MS4-Phase-II-Stormwater-Permits.cfm

Section V: Summary of Municipal Storm Water Program Activities

Describe the programs or activities the municipality is doing or will do to comply with the requirements of the MS4 general permit. Attach additional pages if necessary.

A. Public Education and Outreach

Describe the public education and outreach program activities that the municipality will implement to comply with section 2.1 of the MS4 general permit.

See attachment

B. Public Involvement and Participation

Describe the public involvement and participation program activities that the municipality will promote to comply with section 2.2 of the MS4 general permit.

See attachment

C. Illicit Discharge Detection & Elimination

Describe the illicit discharge detection and elimination program authority and activities that the municipality will develop and implement to comply with section 2.3 of the MS4 general permit.

See attachment

D. Construction Site Pollution Control

Describe the construction site pollutant control program authority and activities that the municipality will develop and implement to comply with section 2.4 of the MS4 general permit.

See attachment

E. Post-Construction Site Storm Water Management

Describe the post-construction storm water management program authority and activities that the municipality will develop and implement to comply with section 2.5 of the MS4 general permit.

See attachment

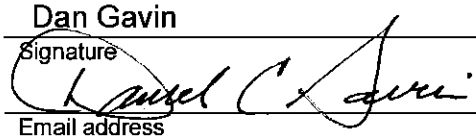
F. Pollution Prevention

Describe the pollution prevention program activities that the municipality will implement to comply with section 2.6 of the MS4 general permit.

See attachment

Section VI: Certification

I hereby certify that I am an authorized representative of the municipality that is the subject of this application for general permit coverage, and that the information provided is true and complete, to the best of my knowledge. I understand that Wisconsin law provides severe penalties for submitting false information.

Authorized Representative Name	Title	
Dan Gavin	Chairman	
Signature 		Date Signed 1-21-15
Email address chair@townofstjoseph.com		Phone Number (incl. area code) (715) 222-6235

Return this completed form to: Wisconsin Department of Natural Resources
Storm Water Program – WT/3
PO Box 7921
Madison, WI 53707-7921

Attachment - Notice of Intent to Apply for Coverage Under WPDES MS4 General Permit No. WI-S050181-1

Town of St. Joseph

Section V

A. Public Education and Outreach
    a. The Town will implement a Public Education and Outreach Program meeting the requirements of Section 2.1 of WPDES MS4 General Permit No. WI-S050181-1. At a minimum, the public education and outreach program will include (materials and activities disseminated through the semi-annual newsletter, website, Town Festival, Town Board meetings):
        i. Promote detection and elimination of illicit discharges
        ii. Inform and educate about proper management of materials that may cause storm water pollution
        iii. Promote beneficial onsite reuse of leaves and grass clippings and proper use of fertilizers and pesticides
        iv. Promote management of streambanks and shorelines by riparian landowners
        v. Promote infiltration of residential runoff
        vi. Education of those responsible for the design, installation and maintenance of construction site and storm water management facilities
        vii. Identify and educate businesses and activities that may pose a storm water contamination concern
        viii. Promote environmentally sensitive land development designs by developer and designers
B. Public Involvement and Participation
    a. The Town will implement a Public Involvement and Participation Program meeting the requirements of Section 2.2 of WPDES MS4 General Permit No. WI-S050181-1. At a minimum, the public involvement and participation program will include the notification of the public of permit activities and encourage input and participation in these activities. A yearly presentation at a Town Board meeting updating the public on the permit status and activities will be incorporated.
C. Illicit Discharge Detection and Elimination
    a. The Town will implement an Illicit Discharge Detection and Elimination Program meeting the requirements of Section 2.3 of WPDES MS4 General Permit No. WI-S050181-1. The program will include the following:
        i. An ordinance to prevent and eliminate illicit discharges and connections
        ii. Initial and ongoing field screening of all major outfalls during dry weather periods
        iii. Establishing procedures for responding to known or suspected illicit discharges
        iv. Removal of illicit discharges from the MS4 system.

D. Construction Site Pollution Control
    a. The Town has an existing Construction Site Pollution Control Program. The existing program includes a construction site erosion control ordinance and coordination with the St. Croix County's erosion control program. Town will revise the existing program to meet the requirements of Section 2.4 of WPDES MS4 General Permit No. WI-S050181-1. The program will include the following:
        i. Updating the ordinance to meet all erosion and sediment control requirements of NR151
        ii. Updating the procedures for construction site inspection and enforcement of erosion and sediment control measures as required
        iii. Updating the procedures for receipt and consideration of information submitted by the public as required
        iv. Updating the procedures for construction site plan review as required
        v. Updating the procedures for the administration of the construction site pollutant control program as required

E. Post-Construction Site Storm Water Management
    a. The Town has an existing Post-Construction Site Storm Water Management Program. The existing program includes a stormwater ordinance and coordination with St. Croix County's stormwater program. The Town will revise the existing program to meet the requirements of Section 2.5 of WPDES MS4 General Permit No. WI-S050181-1. The program will include the following:
        i. Updating the ordinance to meet all post-construction requirements of NR151
        ii. Updating the procedures to ensure the long-term maintenance of storm water management facilities as required
        iii. Updating procedures for the administration of the post-construction storm water management program as required

F. Pollution Prevention
    a. The Town will complete an inventory of municipally owned or operated structural storm water facilities (if any) within the urbanized area and develop and implement procedures for the routine inspection and maintenance of these facilities.
    b. The Town currently contracts street sweeping services on an as-needed basis. The existing program will be evaluated as part of the permit activities.
    c. Existing catch basins in the urbanized area (if any) will be cleaned on an as-needed basis.
    d. The Town's contractor disposes of street sweeping and catch basin cleaning debris in accordance with existing regulations.
    e. The Town currently contracts deicing services. The existing program will be evaluated as part of the permit activities.
    f. The Town has no municipal facilities within the urbanized area and does not operate a yard waste collection program.
    g. The Town will expand their staff/contractor education program to include procedures and policies developed as a part of this permit.

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Baldwin Service Center
890 Spruce Street
Baldwin, WI 54002

Scott Walker, Governor
Cathy Stepp, Secretary
Dan Baumann, Regional Director
Telephone (715) 684-2914
FAX (715) 684-5940
TDD ( ) -

February 26, 2015

IN REPLY REFER TO SITE NUMBER: 52317

Dan Gavin
St Joseph Town
1337 County Road V
Hudson WI 54016

FID: 656114360
DNR Region: West Central Region
County: St. Croix

Subject: Authorization of Coverage under Wisconsin Pollutant Discharge Elimination System (WPDES) Municipal Separate Storm Sewer System General Permit No. WI-S050181-01

Dear Permittee:

Pollutants carried in storm water runoff from municipal separate storm sewer systems (MS4s) threaten or degrade water quality in many areas of the state. Because of this problem, state and federal laws require that certain owners or operators of MS4s have coverage under a storm water discharge permit. The purpose of the storm water discharge permit is to identify conditions under which storm water can be discharged from an MS4 to help protect the quality of surface waters, wetlands and groundwater.

The Department of Natural Resources (Department) has reviewed the Notice of Intent (NOI) application submitted for the St Joseph Town and has determined that the discharge from the St Joseph Town's MS4 will be authorized and regulated in accordance with the WPDES MS4 General Permit No. WI-S050181-01. Discharges from the St Joseph Town's MS4 must comply with the terms and conditions of the general permit to lawfully discharge storm water to waters of the state.

It is important that you read and understand the terms and conditions of the general permit because it is enforceable under both state and federal law. Please obtain the general permit from the Department's website at: http://dnr.wi.gov/topic/stormwater/municipal/. This website contains additional information about the Department's MS4 storm water permit program.

The St Joseph Town's **Start Date** of coverage under general permit is the date of this letter. The schedule for meeting many of the requirements under the general permit is based on this **Start Date**. The Compliance Schedule is given on pages 21 to 25 of the general permit which lists certain activities to complete and when reports must be submitted to the Department.

Unless otherwise notified, all information that you submit to the Department in fulfillment of the general permit requirements should be mailed to the following address:

Attn: Matthew Jacobson

Department of Natural Resources
890 Spruce Street
Baldwin WI 54002

In accordance with s. 283.33(9), Wis. Stats. and s. NR 216.08, Wis. Adm. Code, the Department will assess an annual fee for coverage under the general permit. In late May or early June of each year, the St Joseph Town will receive separate instructions from the Department about this fee and how it should be paid.

If you have any questions about the general permit, please contact the regional DNR storm water staff person who handles your area: Matthew Jacobson at Matthew.Jacobson@wisconsin.gov or (715) 684-2914.

Sincerely,

Matthew Jacobson
Stormwater Specialist

cc: Jim Bertolacini –DNR Madison

Local government officials, departmental managers, and staff are encouraged to subscribe to the free GovDelivery notification service used to keep Wisconsin citizens informed about important activities of the Department. To sign up for the MS4 topic, go to dnr.wi.gov and click on the red envelop icon at the lower right corner of the webpage. Follow the instructions to sign up and check the box for "Municipal Separate Storm Sewer System (MS4)" under the "Water" topic. The Department will use the GovDelivery notification service to send out important notices and updates on the MS4 program including future outreach and training opportunities, webinars, guidance, and technical resources.

Notice of Appeal Rights

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30 day period for filing a petition for judicial review.

Town of St. Joseph MS4 Tasks and Schedule

December 2016

Required tasks to fulfill the MS4 Permit Requirements:	Due Date:
1. Public Education, Outreach, Involvement and Participation Plan	8/26/2016
2. Illicit Discharge Detection and Elimination	2/26/2017
3. Construction Site Pollutant Control	8/26/2016
4. Post Construction Site Stormwater Management	8/26/2016
5. Pollution Prevention Plan	2/26/2017
6. Storm Sewer System Map	2/26/2017
7. Stormwater Quality Management Plan	2/26/2017
8. TMDL Assessment	12/31/2017
9. Stormwater Quality Compliance Plan	2/26/2017

Status as of December 2016: Deliverables for tasks 1, 3 and 4 have been submitted to the DNR. Remaining tasks due in 2017 are in progress.

APPENDIX H: HOULTON - DEVELOPER INTERVIEWS MEMORANDUM

Memorandum

DATE: April 20, 2016

TO: St. Joseph Plan Commission

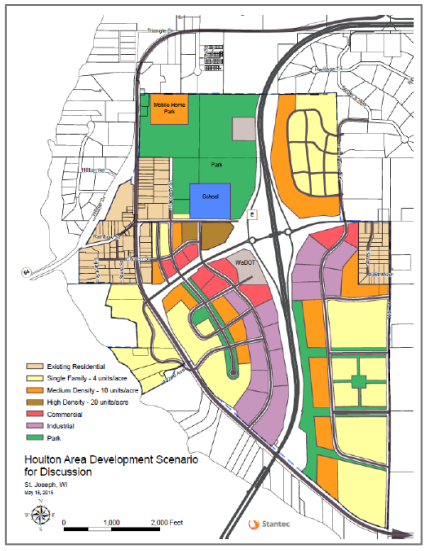
FROM: Phil Carlson, AICP;

RE: Houlton Mixed Use Village Concept – Developer Interviews

Introduction

As part of the Town's Comprehensive Plan update, there has been discussion of potential development of a portion of the Houlton area as a mixed use "village" served with municipal sanitary sewer and water. This has been the subject of previous memos and studies during this process, analyzing various scenarios, engineering issues and land uses for such a village.

Houlton Sanitary Sewer Study Area



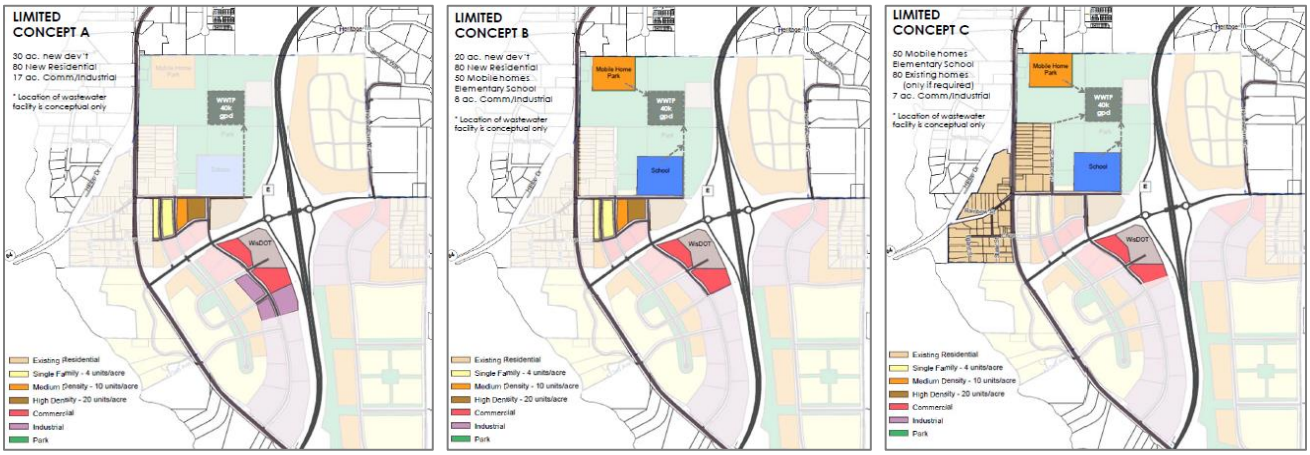
Part of the discussion has been the understanding that the Town is not in a position, financially or politically, to pay the cost for a new sewage treatment plant, even a very modest sized facility, and the assumption is that a developer would need to pay this up-front development cost in order to make it happen. To explore this issue further, Stantec conducted three interviews with experienced residential developers to discuss the feasibility and attractiveness of such a development in Houlton. The interviews were conducted off the record and are summarized below as Developers A, B, and C.

Two of the developers are local representatives of large national residential development companies, each with many years of experience in the Twin Cities area market and many projects in the ground. The third developer is a successful local Twin Cities developer known for innovation and creative communities, including projects not served by municipal sewer and water.

Each developer was given a brief explanation of the context of the discussion – that the Town was updating its Comprehensive Plan, that the previous 2006 Plan had identified the potential for a mixed use village or town center, and that the current community

Re: Houlton Mixed Use Village Concept – Developer Interviews

discussion was open to the idea of exploring the concept further and had developed more information and analysis related to the concept. The overall study area, land use concepts and basic conclusions of the sanitary sewer facility study were shared. The three generalized development concepts (below) were shared with the interviewees.



The question to each developer was, would a developer be likely to develop such a town center project and pay up front for a small sewage treatment plant, and would such a village in St. Joseph be attractive and feasible in the market?

Summary & Conclusions

Based on the interviews, the following general conclusions can be drawn:

1) It is laudable for the community to plan for the future, even if the development options are unlikely or unfeasible at the present time.

2) If such a development were to be feasible it would need to be in an outstanding setting with significant amenities or other attractions.

3) Such a development would likely need to be significantly larger than the current St. Joseph concept in order to justify the up-front cost. Other examples nationally of this kind of project involve thousands of residential units, not dozens as suggested for an initial phase in St. Joseph.

4) In the current market and under the current concept it is highly unlikely that a developer would pay for a sanitary sewage treatment plant as proposed – the costs would be too high to add to the risk of developing the project.

Re: Houlton Mixed Use Village Concept – Developer Interviews

5) In the current market, a Mixed Use Village concept would likely need to be significantly larger than the current St. Joseph concept in order to justify the up-front cost. Other examples nationally of this kind of project involve thousands of residential units, not dozens as suggested for an initial phase in St. Joseph.

6) If a village development were to be feasible it would need to be in an outstanding setting with significant amenities or other attractions.

7) St. Joseph needs to be seen in the context of the regional market – competitive projects in terms of location, availability and amenities. What are people looking for? Can they get equal or better elsewhere, and how many lots are available in other communities?

8) How would a new Houlton village compete in the market with Stillwater, Lake Elmo, West Lakeland Township, Hudson, Somerset, New Richmond, River Falls or other areas? What would people be looking for in driving to Wisconsin? St. Joseph and Houlton have good qualities and good location. Is there a market for folks who want to live there vs. in the wider open areas of St. Joseph, or rural Stillwater, Lake Elmo, Somerset, etc.?

Re: Houlton Mixed Use Village Concept – Developer Interviews

Interview Comments

Interviewees' specific comments are summarized below:

Developer A

- He wouldn't do it, too risky, "not our deal"
- Chicago area – this is common on the edges, but needs 1,000s of units
- In a hypothetical deal a developer would likely have 1,000 acres and sell to a wide array of buyers, assuming steady growth over many years
- It's all about the initial investment and how to get the return
- Good to plan – have information, analysis, and policies in place
- Town is wise not take on this investment
- Lots of variables – land prices, development costs, housing prices, housing costs
- Ideally, have a "premature" subdivision ordinance and policies in place – one per 40 acres and can't develop without infrastructure in place

Developer B

- Only if the location is a gorgeous site
- Price sensitive, low-mid $300ks, which translates to $75k lots
- The concept would need cheap lots
- A builder/developer might take this on
- A developer would look to see how many lots are currently available in New Richmond
- A Twin Cities developer bought up many lots in Wisconsin after the recession and sat on them for years
- River Falls is as close to much of the Twin Cities as St. Joseph
- Once there is a five-year inventory of lots or less, then there is a market
- conservation/cluster development (like Fields of St. Croix) might work, but the homeowners association needs to maintain it and that could be a problem
- Similar projects in Texas that he knows of are 3,000 to 8,000 acres

Developer C

- Could happen if the area has "charm". The river and bluffs are nearby
- A constructed wetland system is another method, but has its own complications. Either gravity or force main (requires maintenance). Develop it incrementally
- Look for unique concepts – urban farming? Create a community around farming in a village setting? Might appeal to millennials
- Would people drive to Wisconsin for half-acre lots? Most go to St. Joseph now for larger lots
- Land prices are key – if prices go up, the deal could be impossible

APPENDIX I: TOWN OF ST. JOSEPH NON-RESIDENTIAL DESIGN GUIDELINES MANUAL

TOWN OF ST. JOSEPH, WI

Non – Residential Design Guidelines Manual

Developed June 2010

St Joseph Plan Commission

TOWN OF ST. JOSEPH NON-RESIDENTIAL DESIGN GUIDELINES MANUAL

ARTICLE I
Introduction

§ A400-1. Statement of Philosophy

A. This manual establishes design guidelines for new construction and the adaptive reuse, alteration, expansion or modification of existing buildings in The Town of St. Joseph that fosters a blend of the best of traditional and contemporary design. Design should represent the best match between the needs of human users, the architectural heritage and character of the Town and surrounding areas, and the natural constraints of the land and existing architecture and engineering.

B. Site plans should reflect a comprehensive proposal integrating lighting, planting, parking, and site amenities such as fountains, sculpture and street furniture. Screening of utilities and services should be incorporated. Where architectural design is based upon a theme, site development schemes should relate to the theme and be consistent regarding materials and design elements.

C. Sensitivity to development demands, vehicular and pedestrian traffic patterns, and the needs of residents, merchants, visitors, owners and tourists alike have been considered in the development of these guidelines. The Plan Commission may use some discretion in the application of these guidelines on particular projects as they relate to unique circumstances.

D. Images are attached and made part of these guidelines for illustrative purposes only.

§ A400-2. Statement of Purpose

A. The purposes of these design guidelines are:

   (1) To provide guidelines for review by the Planning Commission, which is charged with the responsibility for design review in commercial districts and to minimize decisions based on individual tastes and preferences in the review and recommendation of plans;

   (2) To establish clear and easily understood design criteria to guide property owners and their architects and engineers in the appropriate design of new construction and building alterations in the commercial districts;

   (3) To promote a cohesive image of the community as a whole, preserve the town's rural characteristics while allowing for design innovation. It is not the intent of these guidelines to limit new construction or building alterations to one particular design style, but to create and enhance an aesthetic whole.

B. This manual mainly focuses on commercial developments in The Town of St. Joseph commercial districts or other potential commercial sites. It is imperative that developers consider the context for their developments and seek to use these guidelines to drive their designs. Developments should fit with the character of their surroundings.

C. For all commercial projects, an initial scoping meeting with the Planning Commission is suggested to familiarize developers, property owners, and other applicants with these guidelines. Failure to do so could result in delays and unnecessary design expenses.

ARTICLE II
Architectural Guidelines

§ A400-3. Purpose There is strong sentiment shared by the citizens of The Town of St. Joseph to preserve the rural character of the townscape. This poses a challenge in the commercial corridors along State Highway 35 and the intersection with the new bridge crossing where most of the land use is now identified for development. These architectural guidelines have been formulated to assist in reducing the potential for adverse impacts which may arise from the uncoordinated construction of development. Each recommendation strives to better integrate both new construction and alterations to existing buildings within the existing landscape and adjacent properties. The over-riding objective should be to maintain a sense of visual “quietude” with each new project such that it assumes its place in the townscape without

undue intrusiveness and to be harmonious with the natural surroundings while avoiding repetition and monotony.

§ A400-4. Existing Structures Where historic or architecturally significant structures exist on a project site (as identified in the Town Comprehensive Plan), modern or traditional design should respect traditional rhythms and the scale of other buildings in the area. Designs should also include architectural detailing which compliments the significant surrounding buildings and neighborhoods through quality materials, building details and craftsmanship. Additions to existing structures should take into account the entire building to create a cohesive building design that enhances the most significant architectural features of the building. When altering an existing building, replacements (windows, doors, cladding, etc.) should match, to the greatest extent practical, original details with respect to size, style and configuration.

Recommended: Updating, renovation and expansion of existing buildings in a manner compatible with the subject building's architectural style.

Not Recommended: Alterations to existing structures which are inappropriate to the age and style of the building, or incompatible with the designs of surrounding buildings.

§ A400-5. New Building Features Quiet buildings that blend into the landscape, preserve rural character and do not stand out are recommended.

Recommended: Quiet Buildings that blend into the landscape and preserve rural character

Not Recommended: Buildings that do not blend into the landscape and do not preserve rural character.

A. Use of large blank areas of wall facing the street is not recommended or preferable. Instead, they should be reserved for the side or rear of the building and away from pedestrian areas. When a building has more than one business, the front façades should be broken up and incorporate varying setbacks to add visual diversity. Building "addresses" should be clearly visible from the public right-of-way.

§ A400-6. Materials & Colors The following addresses the treatment of façade and roof, materials and colors, as they comprise a significant part of the visual impact of a building.

A. Buildings should be constructed and clad with materials that are durable, economically maintained, and of a quality that will retain their appearance over time. The architectural treatment of the front building façade should be continued in its major features, around all sides visible from the primary street, including areas subject to public view/ circulation on the site, such as driveways and parking lots. Building façades should be composed of only two materials. One primary material which comprises the building in its entirety, and one minor material used as accent or trim. Building façades should only have two colors, one primary color which comprises the building in its entirety, and one minor color used as accent or trim. Additionally, façade colors should be low reflectance and subtle.

The use of very light hues or high intensity colors should be limited, and bright metallic or fluorescent colors are discouraged..

B. Use of exposed neon tubing is discouraged..

C. Recommended materials are: brick, natural stone, stucco, wood, and other long-term durable materials.

§ A400-7. Roof

A. The Town of St. Joseph prefers the use of sloped roof designs, which reinforces its rural character.

B. The color of the roof should coordinate, and/or compliment the color of the building façade.

C. It is recognized that larger buildings may not be conducive to the installation of sloped roofs, and that a combination of sloped and flat roof elements can create a pleasing 'roof-scape' that can convey the image of small scale “rural buildings." Buildings of this nature may have flat roofs, where in this case, green roofs are strongly encouraged (by saving energy and runoff).

§ A400-8. Service & Utility Area

A. Commercial businesses often require out-buildings (auxiliary structures) for storage of company vehicles and equipment. Additionally, buildings require mechanical equipment (plumbing vent stacks, transformers, fans and cooling towers, etc.) and service areas (loading docks, exterior storage areas, dumpsters, etc.) which can be unsightly and noisy. The following guidelines address the treatment of these service and utility areas in order to reduce their negative visual impact.

(1) When site conditions allow, buildings which require large, bulky components such as warehouses or multi-bay garages should place these structures as a separate mass in the back behind the main "front-office" building. The main "front-office" building, even if it is smaller, will help to shield it from view.

(2) When site conditions allow, parking lots, garage doors, and drive-thru facilities should be screened, making them out of sight from the street.

(3) When site conditions allow, all service and utility areas should be located away from the street and concealed from building entrances, pedestrian areas, and adjacent residential buildings.

(4) Service areas and related mechanical equipment should be screened (100%) with materials to match the primary exterior materials, or fenced and landscaped with a dense evergreen planting.

(5) Trash compactors and dumpsters should be located adjacent to truck loading areas and screened (100%) with the primary exterior materials, or fenced and landscaped with a dense evergreen planting.

(6) Where dumpsters are not fully screened by the overall building envelope, the following guidelines should be applied:

(a) To the extent possible, dumpsters should be screened on all sides, with the operable side facing away from street view or adjacent residential areas.

(b) Dumpster enclosures should be compatible in design with the architectural style of the primary building in terms of its scale, exterior materials used and color.

(c) Dumpster enclosures should not violate the building setback and parking requirements of any applicable ordinances in which the enclosure is located.

(7) All above grade utility connections, vents, and other projections should be located along exterior walls away from high visibility areas, such as front façades or pedestrian areas. These vents also include, but are not limited to, air conditioning units, air exchangers and underground utility vaults.

(8) Rooftop mechanical equipment on buildings should be screened (100%) from public view, as measured from grade elevation, or from a minimum distance of 500 feet from the building.

B. The screening should be of a permanent, durable, building material which provides visual masking of the equipment. Each plan (including remodeling existing buildings) should be reviewed individually based on location, finished grade elevation and the surrounding terrain to determine the view of rooftop mechanical equipment.

Recommended: Proper dumpster screening.

§ A400-9. Prototypical Design

C. Standardized or prototypical corporate designs for buildings should be modified to conform to the above guidelines in order to establish a more coherent sense of design in the commercial corridors over the long term.

ARTICLE III
Site Organization Guidelines

§ A400-10. Purpose The purpose of the Site Organization section of this Manual is to give developers, property owners, and other applicants an idea of what is a preferred layout for commercial projects in the Town of St. Joseph. There are three important factors for consideration: setbacks, landscaping and parking lots.

§ A400-11 Setback This subsection provides guidelines for the setback of both smaller and larger parcels as well as an understanding of how to lay out developments with multiple buildings.

A. Development Size - The setbacks for "larger commercial developments" should be at least 200 feet from the roadway. "Larger commercial developments" are defined as developments on lands that are greater than 10 acres. For smaller commercial developments, setbacks should be at least 100 feet. Topography, lot configuration and other factors may cause the Plan Commission to exercise some discretion with this guideline.

Recommended: Setbacks for large commercial developments should be at least 200 feet from the main roadway.

B. Multiple Structures - Multiple structures on the same site should be clustered to form an enclosure of exterior space, thereby creating a greater "sense of place" within the development. Parking lots would then be set inside the space or in the rear of the buildings. Common sitting areas and sidewalks would also be available inside the established space. The purpose of this guideline is to avoid the linear appearance portrayed by some strip malls.

Recommended: Multiple structures on the same site should be clustered to form an enclosure of exterior space.

§ A400-12. Landscaping This subsection provides applicants with a general idea of what the Town of St. Joseph sees as the principles that should be followed in developing a landscaping plan for commercial development projects. Plant materials such as invasive species are discouraged. Native vegetation is recommended.

The goals are: to develop a landscaping plan that enhances the overall aesthetics of the project, to retain as much natural landscaping as possible, to preserve the rural characteristics of the town and, when developing and creating new landscaped areas, to cognize the impact of adjacent neighbors and the view from the roadway. Special emphasis should be placed on landscaping that reinforces viewscaping along the highway and brings about consistency along the roadways in the town's primary business districts.

A. **Landscaping Site Design -** All site design plans should attempt to preserve and retain the natural landscape (topography, soil, trees, and plant life) on the site. Site designs should minimize vegetation clearing at the edges of the roadway and include adequate tree installation to improve visual aesthetics of the corridor as well as the generation of shade. Remnant patches of existing landscape areas should not be indiscriminately paved to avoid maintenance; rather those areas should utilize the spreading of low maintenance landscaping materials such as mulch. The development of former farm fields, devoid of trees and shrubs, should include trees and large shrubs in its sketch plan as part of the review process.

   (1) **New Landscape -** Planting of trees or hedges between road and development or road and sidewalk to provide natural screening of commercial buildings is recommended. For retail establishments, roadway view of the business is encouraged. Native and salt resistant plants and materials are encouraged.

Recommended: Planting of trees or hedges between road and development or road and sidewalk to provide natural screening of commercial buildings.

(2) **Non-Retail Businesses -** Businesses such as Wholesale or Distribution Centers, not dependant on public view of the facility, should utilize berms and natural or landscaped screening. Developers should consider all DEC regulations related to storm water issues and concerns when creating berms.

(3) **Buffers -** Buffer zones should be maintained or created to separate commercial from residential land sites. An arrangement of trees, shrubs, appropriate fencing, and other landscaping should constitute a visual screen and/or buffer between project sites and adjoining properties.

(4) **Screening -** Employee parking, service delivery areas and loading docks, and HVAC equipment should be reasonably fenced, landscaped, and screened from adjoining property owners to sufficiently obscure objectionable aspects from their view.

(5) **Tree Lawns -** Tree lawns are strips of land between the road and the sidewalks inside a development. Tree lawns should be included on all new developments and be a minimum of 10

feet. Grass should be established continuously for the full length of a tree lawn with mulch rings or planting beds around new and existing plants or trees. Tree-lined roads provide an attractive neighborhood setting.

(6) **Stormwater detention ponds** – Stormwater detention ponds are encouraged. They should be treated as an amenity with landscaping enhancements such as rocks, plantings, and fountains when applicable. Rain gardens are also recommended to manage stormwater runoff.

§ A400-13. Parking Lot The primary purpose of off street parking and loading guidelines is to reduce traffic congestion and minimize hazards by providing for adequate and sufficient parking, loading, and unloading of motor vehicles outside public rights of way. The secondary purpose is to minimize development problems with neighboring uses.

A. **Parking Lots** –Large expanses of paved parking is highly discouraged. Applicants should break up larger parking area into smaller blocks defined by landscape islands and where feasible, place parking behind the building. A minimum of 20% of the parking areas should be landscaped, and include a one shade tree per 30 feet of road frontage. Such newly planted trees should be 2 1/2 " caliper at breast height. These areas should be landscaped around the periphery of the lot to buffer the visual impact of the parking lot from the roadway and adjacent properties. Landscaping areas in parking lots should consider storm water management techniques (use of curbs, drainage areas to collect water above ground). Drainage areas should be located behind or to the side of structures whenever possible. For some parking lots, landscaped islands are appropriate. The site plan of the development should include area for additional parking spaces for further development, this area should be landscaped.

B. **Initial Construction Phase -** Landscaping features should be included in all site designs and planting of large trees and shrubs should be the first step in the construction plan excluding landscaping contained inside the construction envelope. A landscaping plan with a planting schedule is also recommended for any site plan.

C. **Ongoing Maintenance -** This scheduling of ongoing maintenance should be part of any terms and conditions of any site design proposal. Any landscaping or fencing presented to the Plan Commission as part of the landscaping plan should be maintained in good order to achieve the objectives of this section.

D. **General Design Requirements -** Parking areas should provide safe, convenient and efficient access. Parking areas should be distributed around large buildings in order to shorten the distance to other buildings and public sidewalks and to reduce the overall scale of the paved surface. Employee and public parking areas should be separated. New development and redevelopments should strive to minimize total paved surface. Surfaces should be dust free. Proper drainage should be provided. When possible, paved surface areas should be constructed in phases to meet existing and future expansion requirements.

Not Recommended: Excess parking without generous and extensive landscaping.

Recommended: Parking with generous and extensive landscaping.

Recommended: Large parking lots should include adequately sized landscaped islands utilizing a mix of trees, shrubs, and ground cover to screen car parking from view.

E. **Size and Number -** New development and redevelopments should provide adequate parking, sufficient to serve the commercial and office uses within each development parcel, but should strive to minimize the total paved surface. Uses that may require additional parking in the future should plan and provide for sufficient area for necessary parking expansion.

F. **Location and Access –** Recommend locating parking lots behind, below or between structures and away from highways. Shared and interconnected parking lots are encouraged.

G. Recommend limiting entrances, encourage communal access roads and in larger lots provide pedestrian paths and sidewalks to separate vehicle and pedestrian movement.

H. Parking is discouraged on access roads. Drive-through businesses such as banks or restaurants should have car stacking areas limited to the rear and sides of the building, and avoid layouts which cause the crossing of traffic patterns between car stacking, and parking areas and driveway entrances. Clear signage and striping should be provided for safe and efficient traffic movement.

I. Landscape Buffer - Where parking is visible from highways and abutting properties landscape buffer of trees, hedges, walls and/or berms is encouraged.

J. Lighting - Parking lots should be uniformly lighted in accordance with the Lighting Guidelines. For more detail, see the Lighting Guidelines section of this manual.

K. Maintenance - Parking lots and access roads should be properly maintained and repaired on an as needed basis. Surfaces should to be kept free of snow, ice, dust, debris and potholes.

L. Loading Areas - Loading requirements vary with the specific uses proposed. Loading requirements should ensure, to the extent feasible, that a vehicle can unload cargo in a manner that does not interfere with pedestrian and automobile traffic. Requirements for the number and location of loading facilities should be established during site plan review based upon:

(1) The expected maximum number of vehicles using the loading facilities at times of peak usage.

(2) The type of business, size of the structure, and size of vehicles to be servicing the structure.

(3) The need to ensure pedestrian and automobile safety by separating loading operations from pedestrian and automobile circulation.

(4) The need to screen vehicles and loading facilities from publicly accessible areas as well as from abutting properties, including the need for vegetative screening, buffers, and/or fencing.

(5) The desirability of service roads or alleys to achieve the purposes of this section.

(6) Applicable planning and engineering standards, adapted to meet the needs of the particular business use proposed.

(7) Other relevant operational characteristics of the business or physical characteristics of the site.

ARTICLE IV
Lighting Guidelines

§ A400-14. Purpose The purpose of this section is to ensure high quality, energy efficient and appropriate outdoor lighting while avoiding its undesirable side effects including: glare, sky glow, and light trespass onto adjacent properties.

§ A400-15. Guidelines Outdoor lighting is used to illuminate roadways, parking lots, yards, sidewalks, public meeting areas, signs, work sites, and buildings. It increases safety by providing for better vehicular and pedestrian visibility, and promotes a sense of security. Outdoor lighting also presents an opportunity to accent and enhance architectural features, façades, landscaping, and surrounding areas.

A. The lighting fixtures chosen can add to the character of the building, improve the business image, and enliven the street. The fixtures chosen and their illumination qualities should complement and enhance the architectural character of the building and district. "Good lighting", as described by the New England Light Pollution Advisory Group and the International Dark-Sky Association, has four distinct characteristics:

   (1) It provides adequate light for the intended task but never over-lights.

   (2) It uses "fully-shielded" lighting fixtures (i.e. fixtures that control the light output in order to keep the light in the intended area).

   (3) It is carefully located to create uniform lighting on the targeted property and to avoid or minimize glare and light trespass on neighboring properties and roads.

   (4) It uses fixtures with high-efficiency lamps while still considering the color and quality as essential design criteria.

B. The following guidelines apply to all types of new and existing buildings, except single and multiple family residential homes and active farms:

   (1) A lighting plan should be part of a submission to the Plan Commission.

   (2) Full cutoff luminaries or recessed lighting fixtures should be used and the source of illumination should not be visible.

   (3) Luminaries should be aimed away from, and/or include shields that prevent the light source from being visible from, adjacent properties or roadways.

   (4) The luminance on any surface should strive to meet average levels for uniformity.

   (5) All wiring for new site lighting should be underground.

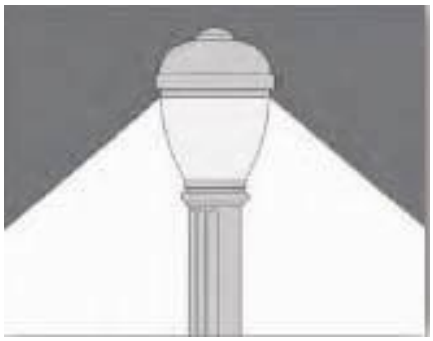
   (6) Each outside lighting installation and each illuminated sign should be controlled by a 24-hour timer by Intermatic or equivalent.

   (7) The mounting heights for luminaries installed on poles or on buildings should be consistent with the size and scale of the development.

   (8) Luminaries are discouraged in buffer areas between adjacent properties and in buffer areas adjacent to roads.

   (9) Floodlights and spotlights are also discouraged for general lighting purposes.

Recommended: Lighting fixtures that control the light output in order to keep light in the intended area. Preferred lamp style casts light downward only.



C. **Parking Lot Lighting -** Parking lots should be uniformly lighted and avoid interference with adjoining neighbors.

Recommended: Period style lamps.

D. **Street Lighting -** Levels of luminance should be consistent with guidelines published by the Illuminating Engineering Society of North America (IESNA) in order to maintain the town's rural characteristics

E. **Gasoline Station & Convenience Store Apron Lighting**

(1) Areas around the pump island and under canopies should be uniformly illuminated.

(2) Exterior gas station canopy lights should be recessed within their housing so as to focus their illumination directly downward.

(3) Lamp styles which allow the canopy lights to illuminate the surroundings beyond the pumping area are discouraged.

(4) Light sources or luminaries should not be mounted on the top or sides (fascias) of the canopy, and the sides (fascias) of the canopy should not be illuminated.

Not Recommended: Harsh or excessively bright lighting, inconsistent with lighting levels along the street and sidewalks and in the public parks; or site or building lights that spill light into adjacent sites; spotlighting, "hot" or "dark" spots in site lighting.

F. **Security Lighting –**

(1) Security lights intended to illuminate a perimeter such as a fence line should include a motion sensor designed with lights to be off unless triggered by an intruder located within 5 feet of the perimeter.

(2) All perimeter security lighting should be shielded and aimed so that illumination is directed only to the designated area and not cast on other areas or adjacent properties or roads.

(3) For illuminating building façades, full cutoff luminaries attached to the building or recessed lighting in roof overhangs are recommended**.** Luminaries should not be located in buffer areas between adjacent properties or in buffer areas adjacent to roads.

G. **Landscape Lighting -** Landscape lighting should use minimum power lamps to achieve architectural objectives, and should neither cause glare or light trespass, nor create excessive sky glow.

H. **Illuminated Signs –**

(1) Lighting fixtures that illuminate externally lighted signs should be located, aimed and shielded so that light is directed only onto the surface of the sign. The light source should not be visible from adjacent roads or properties.

(2) Internally illuminated signs are discouraged. Where used, such signs should have characteristics consistent with guidelines published by IESNA and should have an opaque background to allow for better contrast with signage information.

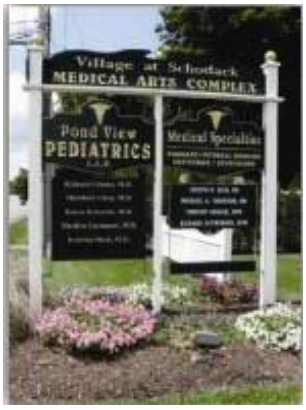
(3) Flashing signs are highly discouraged; however, time and temperature signs should,provide the rate of change of this information and be sufficiently slow so as to not distract drivers, and create a hazard to the traveling public.

ARTICLE V
Signage Guidelines

§ A400-16. Purpose The purpose of these guidelines regulating commercial signs is to promote and protect the public health, safety and welfare by regulating existing and proposed outdoor signs, window advertising signs, and outdoor signs of all types. It is intended to protect property values, create a more attractive economic and business climate, enhance and protect the physical appearance of the town, preserve the scenic and natural beauty and provide a more enjoyable and pleasing community. It is further intended to reduce and/or control sign or advertising distractions and obstructions that may be used by signs overhanging or projecting over public right of ways, by moving or flashing signs or by excessive or disproportionate signage. It is also intended to provide more visual open space, and curb the deterioration of the town's appearance and attractiveness.

§ A400-17. General Guidelines Signs should be designed to be compatible with their surroundings and should be appropriate to the architectural character of the buildings on which they are located. Sign panels and graphics should relate with and not cover architectural features or details and should be in proportion to them. Signs should be appropriate to the activities they represent. Layout of all signs should be orderly and graphics concise. A minimum number of typefaces should be used on any one sign or group of signs indicating one message. The number of colors used should be the minimum consistent with the design of all signs. Illumination should be appropriate to the character of the sign and its surroundings. Groups of related signs or multiple signs located on the same premises should express uniformity and create a sense of harmonious appearance. A signage plan is recommended as part of a submission to the Plan Commission for site plan review.

Recommended:



Not Recommended:

ARTICLE VI
Transportation & Pedestrian Guidelines

§ A400-18. Purpose This section is intended to give applicants a sense of what they should to consider within their proposals related to: roadways, sidewalks, alleys, and other common landscaped areas in a commercial development.

§ A400-19. Guidelines

A. Use setbacks, controlled curb cuts, landscaping and signage controls to raise the visual quality of the town and provide safe and efficient traffic movement.

B. Provide cross-access between properties and joint access to roads to minimize disruption of highway traffic, especially where land uses are similar or compatible.

C. Use roadways, sidewalks, and landscaping to control and separate vehicle and pedestrian movements.

D. Replicate the Town's traditional rural settlement pattern in new site layouts. This can be accomplished by having developments adjacent to the villages, hamlets, or areas of denser residences follow the scale, density, and pattern of development in that area. Where not feasible, or where development is proposed in areas that are not adjacent to villages, hamlets or existing residential areas, site layout and/or site modifications should minimize the visual presence of new construction from public roadways and lands.

E. Use old roads and lanes where feasible. Where new roads and sidewalks are necessary, their design should promote traditional and rural characteristics. Create a sense of community by providing pedestrian, bicycle, and vehicular links from the corridor to nearby neighborhoods, parks, schools, and other public destinations.

F. **Roads -** Recommend interconnecting roads and providing for walkable blocks wherever possible. Use of cul-de-sacs or dead end roads should be limited and discouraged. Provide proper roads/easements between adjacent lots whenever feasible.

Not Recommended: Poor connectivity - Many cul-de-sacs and dead end roads (A).

Recommended: Few, if any, cul-de-sacs and dead end roads (B).

Reflects not recommended and recommended in same picture

G. **Driveways -** Limit the number of access points along the corridor, create a safe vehicular and pedestrian circulation system, and provide clearly defined points of entry and exit into a site.

(1) Parking lots and driveways for adjacent parcels/ developments should be shared whenever possible. Heavy duty, reinforced concrete sidewalks should continue through driveways uninterrupted.

(2) The number of access drives per parcel should preferably be limited to one (1) and is subject to review by the Plan Commission through Site Plan Review.

(3) The exception to this may occur for gas stations or if a parcel has physical limitations requiring two points of access/egress.

(4) Large undistinguished curb cuts should be discouraged. Ingress/egress drives should be located to maximize the distance to the nearest street intersection.

H. **Sidewalks -** Developers should include a comprehensive pedestrian pathway system within a site and between adjacent sites, linking all buildings, parking areas and green spaces. This network should also connect to any nearby pedestrian pathways when applicable.

(1) Sidewalks should be constructed of concrete or other durable surface materials such as pavers, bricks, etcetera.

(2) Sidewalk material should be consistent throughout the development.

(3) Sidewalks should also feature adjoining landscaped areas no less than (3) feet in width that include trees, grass, shrubs, benches, flower beds, ground covers, or other such materials for no less than 50% of their length.

(4) Sidewalks no less than eight (8) feet in width, should be provided along any façade featuring a customer entrance, and any façade abutting public parking areas. Such walkways should be located at least six (6) feet from the façade of the building to provide planting beds for foundation landscaping, except where features such as arcades or entryways are part of the façade.

(5) New sidewalks should link smoothly into existing walks when necessary.

I. **Bike paths and pedestrian walkways** – Bike paths and pedestrian walkways are recommended to connect buildings, parking lots, entrances/exits to adjacent developments and existing/future bikeways, paths or trails. Pathways that provide dual usage for bikes and pedestrians are encouraged where applicable.

Recommended: Sidewalks should provide a comprehensive pedestrian pathway system within a site and between adjacent sites, linking all buildings, parking areas and green spaces.

ARTICLE VII
Existing Commercial Developments

§ A400-20. Purpose This section of the Manual describes how these guidelines relate to existing developments. Developments created prior to the creation of this manual do not need to conform to these guidelines. However, if significant changes are to be made to these developments, new &/or expanded improvements should conform to these guidelines. The following will serve as general examples of what is meant by “significant changes.”

§ A400-21. Guidelines For Architectural Features - If a new building is constructed on a parcel to expand the business’s capacity, the building should conform to these architectural guidelines. If an existing building is increased in size by more than 40% of the entire building’s square footage, the building should conform to the appropriate guidelines. In this example we are referring to color and other appropriate features, not setback.

A. **Parking Lots** - If a business seeks to expand its lot by more than ten parking spaces it must comply with the current ordinances for parking spot size, and other relevant provisions.

B. **Lighting -** If normal repairs are being made to existing lighting fixtures, guideline modifications are not necessary. If an additional section of parking for more than 10 cars is created, new lighting that is added should conform to the lighting guidelines. In any case, where new fixtures are added, the new guidelines should also apply.

C. **Landscaping -** If additional adjoining property is added to a business parcel, any additional parking lots, buildings, screening, landscaping, etc. should be subject to these new guidelines.

D. **Initial Design Meetings -** When contemplating a building or business expansion, applicants should discuss with Town officials and Plan Commission members the applicability of these guidelines to their site plan expansion. An initial scoping meeting will prove helpful before the design is fully developed in assuring the review process is expedited.

APPENDIX J: TOWN OF ST. JOSEPH NATURAL RESOURCES INVENTORY

Town of St. Joseph, Wisconsin
Natural Areas Inventory/
Land Cover Mapping Draft
September 2016

Prepared for:
Town of St. Joseph, Wisconsin

Prepared by:
Stantec Consulting Services Inc.

Table of Contents

LIST OF APPENDICES

Executive Summary

The Town of St. Joseph is a vibrant semi-rural town located on the eastern border of the greater Twin Cities Metropolitan area. The Town borders the scenic St. Croix River in St. Croix County, Wisconsin. The Town has enjoyed a relatively low but steady pace of growth for many years and its residents enjoy the pastoral beauty of the area landscape and small town lifestyle. The pending completion of the new St. Croix River crossing bridge in 2017 will bring new development pressure to the Town. In an effort to plan effectively for natural resources, the town requires accurate information about the type and quality of open space and natural areas within the town.

National Park Service (NPS) staff completed Minnesota Land Cover Classification System (MLCCS) mapping of the area between top of bluff and the St. Croix River, using aerial photos and a very limited field review. In 2015 the Town retained Stantec to conduct land cover mapping and natural resources inventory for portions of the Town that fall within previously identified natural resource corridor areas and have potential for development. Owners of parcels in the MLCCS/NRI area thought to support natural areas were contacted by the Town in late summer 2015 with field natural areas inventory work occurring in October/November 2015.

The field inventory documented a variety of distinct natural community types including forest, woodland, shrubland, herbaceous wetlands, and grasslands, as well as areas of open water (lakes and ponds). The most common upland cover type is oak woodland/brushland, while the most common lowland cover type is cattail marsh. The most unique plant communities identified during the NRI include several rich fens site and two oak savannas (an ecosystem type that is considered imperiled).

A total of 174 natural areas received quality ranks. Of these, 13 (7.5%) were considered to be Exceptional (highest quality rank possible). A total of 24 (13.8%) sites were given a High quality rank. Moderate quality sites totaled 113 (64.9%) – the majority of these were Oak Woodland-brushland sites. A total of 24 (13.8%) were mapped as Low quality – these areas typically exhibited significant signs of human disturbance and/or invasive plants.

Natural areas tend to be concentrated in the previously mapped natural resources corridors. Other natural areas can be found around the lakes, along the rivers, and in scattered locations. The NRI provides some general guidelines and information for management of natural areas.

Quality Rank	**Number of Sites***
Exceptional (341)	13
High (342)	24
Moderate (343)	113
Low (344)	24

1.0 INTRODUCTION

The Town of St. Joseph is a vibrant semi-rural community located along the scenic St. Croix River Valley, just 20 minutes east of downtown St. Paul. The Town and surrounding area host a range of desirable natural features, including the St. Croix River, Willow River State Park, and Bass Lake as well as, quality natural communities, and unique natural features on public and private land in the community. Natural features are a significant part of the quality of life for residents for their inherent beauty, the sense of place they provide and the contribution to the rural character St. Joseph currently has.

The Town of St. Joseph has been experiencing some development in past decades. The pace of development is anticipated to increase substantially after completion of the new St. Croix River crossing bridge and easier commuting to the Twin Cities. The expected increase in development will place pressure on natural resources and impact the overall feel and aesthetic of the community.

This Natural Resources Inventory (NRI) has been undertaken as part of the Comprehensive Plan update project in progress to proactively understand existing resources and conduct planning that will reflect the communities will with regard to balancing future growth with impacts to natural resources and the rural character residents find desirable.

1.1 GOALS AND OBJECTIVES OF THE NRI

The Goals and Objectives for this project were to:

- Identify and inventory significant natural areas in natural resource corridors and areas deemed to have high potential for development
- Gather on-the-ground data, where access was granted by landowners.
- Use a proven natural community classification and qualitative ranking methodology to evaluate natural communities.
- Field verify the existing land cover mapping of natural areas based on the US National Vegetation Classification System (USNVCS)
- Locate and complete a field evaluation of Natural areas
- Identify:
    - Open space with public value
    - Natural areas with restoration potential
    - Potential/suitable greenway corridors
    - Rank and prioritize sites for possible public acquisition, conservation easements, land banking, or similar measures.
- Guide policy development
- Enable protection, connection and restoration of important natural areas
- Provide information for parks, open space, trails, and greenway planning

Introduction

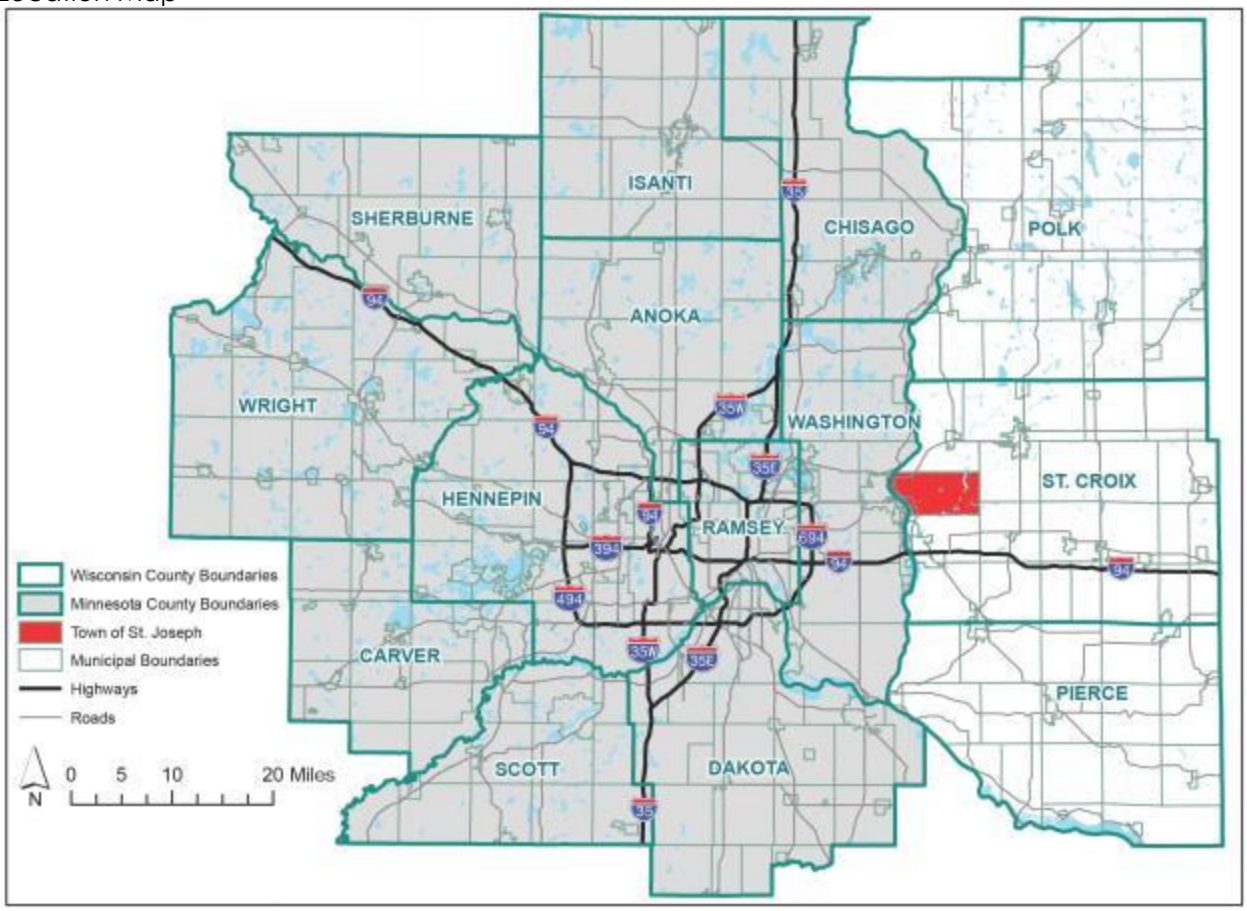
Within most communities there is a strong interest on the part of citizens to maintain a high quality of life. The preservation of natural communities and open spaces is an important component of this goal. Such areas provide opportunities for active and passive recreation, wildlife habitat, scenic vistas and buffers between developed areas, and can serve as landmarks or distinguishing features for the local community. In a community like St. Joseph, rooted in agriculture, having farms that practice viable working lands conservation can be a critical component for retaining the desirable rural character of a community. When practiced wisely, working lands conservation is compatible and indeed often necessary for sustaining quality natural areas.

Conservation of natural areas is also important for property values which are shown to increase in the closer a particular parcel is to natural open spaces.

Growth is important to the well-being of many communities. However, where growth occurs in environmentally sensitive areas, the potential to negatively impact wildlife, forest, soils and water resources is high. This NRI is available for the community to utilize as a tool to effectively manage and protect natural resources while allowing growth to occur, and will help the Town prioritize where to make investments in parks, trails and open spaces. This NRI also has the ability to help the Town if they pursue grants and other funds for management and protection of natural resources –grants look favorably on projects that have been based on community-wide inventory and prioritization of natural areas.

Introduction

Location Map



2.0 A BRIEF LOOK AT THE NATURAL HISTORY OF THE STUDY AREA

The particular resource elements present in any area and their patterns in the landscape are the result of historical processes, including climate, hydrology, plant and animal migrations and interactions, and human decisions and activities. This section very briefly describes the role these interactions have played in determining the present day composition of natural communities and landscapes in the area.

2.1 BEDROCK GEOLOGY AND GLACIAL LANDSCAPES

The majority of the region is mantled by debris left by glaciers and glacial rivers; beneath this, the bedrock that is closest to the surface in Study area is of the Cambrian System, which is some 500-600 million years old. The topography of the area was most heavily influenced by the last period of glaciation (the "Wisconsin Stage"), which ended in the area about 10,000 years ago. During this event, glaciers sculpted the landscape and left behind a variety of deposits, including drift/till and outwash composed of sand and gravel, and windblown deposits of very fine sands.

During the last glaciation, the Superior Lobe ice sheet advanced into the region from the north, and finally retreated about 20,000 years ago. Deposits from the Superior Lobe were later covered by those of the Grantsburg sublobe of the Des Moines Lobe glacier. The Des Moines Lobe entered the area from the northwest, giving rise to the Grantsburg Sublobe that moved to the northeast, through the Twin Cities and into western Wisconsin. The Grantsburg Sublobe left a variety of deposits, including rugged terrain from till, outwash, and more subtle terrain from lake deposited sands. (See map on the following page)

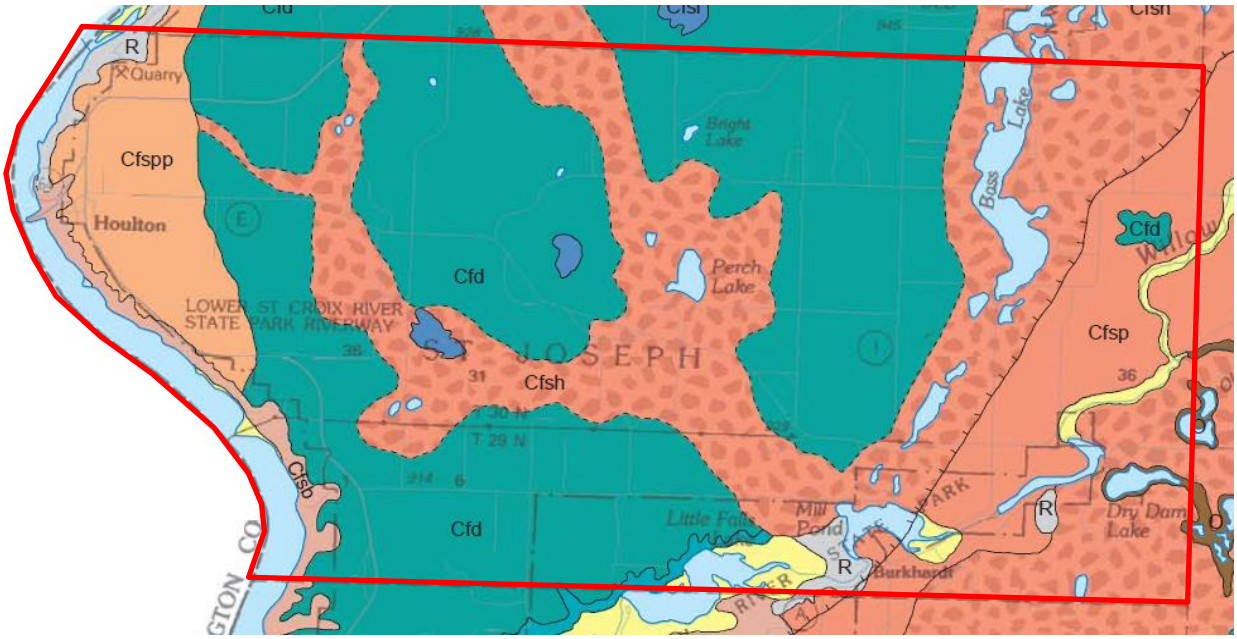
With each advance and retreat, the melting ice sheet deposited immense piles of sand and gravel along its margins, and massive rivers of glacial meltwater carried additional sand and sediment across the area. These riverine, or fluvial, deposits cover much of the area.

2.2 AFTER THE GLACIERS

After the glaciers melted, spruce trees and tundra colonized the periglacial environment. This was later followed by pine barrens and mixed boreal forests with a bracken fern-dominated ground layer. As the climate of the region warmed dramatically about 9,000 years ago, pines began to decline, and prairie expanded into the region, along with elm and oak forests. The climate remained in this warm period until about 7,000 years ago, when mid-grass prairie reached its maximum extent in the upper Midwest, including the area that is now St. Joseph.

A Brief Look at the Natural History of the Study Area

Surficial geology of the Town of St. Joseph (glacial landforms) *Adapted from: Preliminary Quaternary Geologic Map of St. Croix County, Wisconsin. S.J. Kostka, H.J. Hinke, D.M. Mickelson, and R.W. Baker. 2004*.



A Brief Look at the Natural History of the Study Area

EXPLANATION

O — **Postglacial organic sediment** Peat and muck generally found in low areas of the landscape, near lakes, rivers and other depressions; underlain by deposits of streams, glaciers, or lakes.

R — **Rock** Bedrock or very shallow (generally less than 1.5 meters) bedrock, commonly exposed on steep slopes.

A — **Postglacial sand and silt** Commonly a mixture of sand, silt and clay with various amounts of organic matter; found mostly along edges of modern streams and rivers as flood plain and low fluvial terraces; boundaries between this unit and postglacial organic sediment have been drawn arbitrarily in many places.

COPPER FALLS FORMATION

Cfd, Cfdb — **Copper Falls diamicton** Reddish-brown, unsorted or poorly sorted, non-stratified, slightly-cohesive, variable in grain-size distribution, lacks significant amounts of silt and clay; commonly contains areas of bedded sand and gravel; interpreted as melt-out and flow till, often overlain by less than one meter of loess, commonly displays high relief hummocky topography in some areas, dominant lithologies are red-brown sandstones and mafic rocks derived from the Lake Superior basin. Unit **Cfdb**: steep hill slopes in areas of deeply dissected drainage.

Cfsp, Cfspp, Cfsh, Cfsb — **Copper Falls sand and gravel in outwash deposits** Sorted and bedded deposits of sand and gravel; often overlain by less than one meter of loess; dominant lithologies are red-brown sandstones and mafic rocks derived from the Lake Superior basin, includes river terraces of Pleistocene age. **Cfsp**: less than 20 percent of original stream bed interrupted by depressions formed by melting ice blocks, (kettles). Unit **Cfspp**: more than 20 but less than 50 percent collapsed surface. Unit **Cfsh**: more than 50 percent collapsed surface. Unit **Cfsb**: steep hill slopes in areas of deeply dissected drainage.

Cfsl — **Copper Falls silt and sand** Found in glacial lake deposits; most is in former ice walled lake plains.

RIVER FALLS FORMATION

Rfd — **River Falls diamicton** Reddish-brown, unsorted or poorly sorted, non-stratified, slightly-cohesive, variable in grain-size distribution, lacks significant amount of silt and clay; commonly contains areas of bedded sand and gravel; often overlain by less than one meter of loess, same appearance and grain-size distribution as Copper Falls Formation but lacks glacial landforms and hummocky topography, has a generally rolling surface topography with few kettles, deposits of variable thickness on hill tops, local shallow bedrock exists.

Rfs — **River Falls sand and gravel in outwash deposits** Sorted and bedded deposits of sand and gravel; often overlain by less than one meter of loess; dominant lithologies are red-brown sandstones and mafic rocks derived from the Lake Superior basin.

PIERCE FORMATION

He — **Hersey diamicton** Gray-dark gray clayey, compact, cohesive, interpreted as basal till or as colluvium in valleys, massive and structure-less, commonly contains limestone and organic matter, may be locally overlain by varved lake sediments of the Kinnickinic Member.

SYMBOLS

Geologic contact. Dashed where uncertain; solid where position shown on map is judged to be generally within 0.1 km of actual position; dashed where the position shown may be more than 0.1 km from actual position.

Ice-margin position. Interpreted position of maximum extent of readvance of ice or position of ice margin stabililty where ice-contact face or end moraine is missing.

Indefinite ice-margin position. Interpreted position of ice margin must exist, but is obscured by erosion or buried by more recent deposits.

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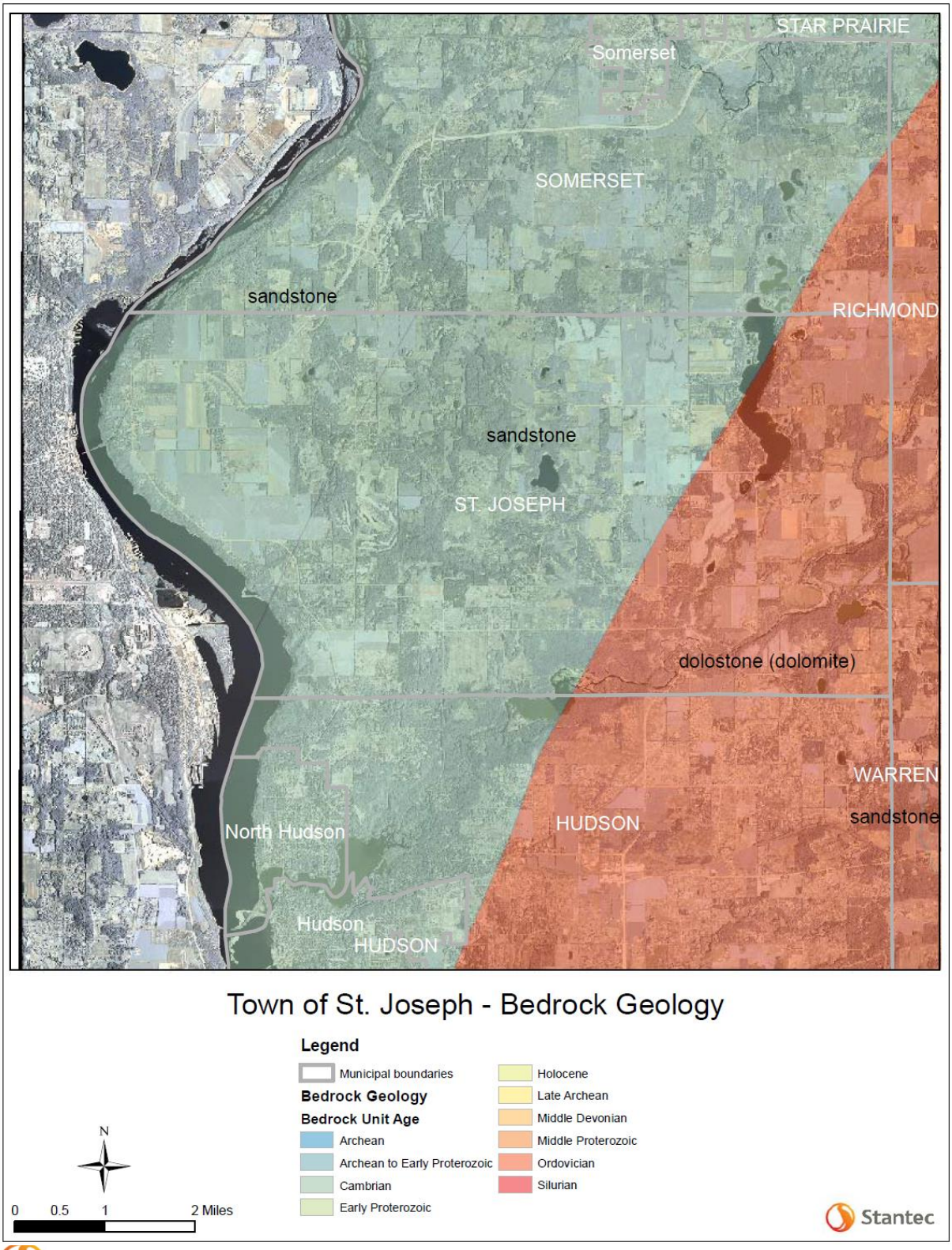
A Brief Look at the Natural History of the Study Area



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A Brief Look at the Natural History of the Study Area

Prairie, oak woodlands and brushlands, and oak savanna-- consisting of scattered trees with a prairie-like ground cover--dominated the region until about 4,000 years ago, when the climate gradually became cooler and moister. Oak thickets spread, and oak woodlands came to dominate some upland areas, interspersed with tall grass and wet prairies. White pines also migrated to the area as the climate cooled.

About 300 years ago, the climate became especially moist and cool, and fires became less frequent. As a result, extensive forests of elm, sugar maple, and basswood developed. With this, the major patterns of vegetation in the area at the time of European settlement were in place.

2.3 INFLUENCE OF LANDFORM AND CLIMATE ON VEGETATION TYPES

Plant communities that exist in any given area are the result of numerous biological and physical factors. These work in concert to influence plant communities in subtle ways, and sometimes in dramatic and immediate ways such as drought, or a tornado. Biological factors include such varied things as the presence or absence of pollinators, burrowing activities, herbivory, or over utilization of an area by a single species or number of species.

Of the physical factors, two have a consistently strong influence in the shaping of plant communities. These are climate and landform. The climate in the area is considered to be continental and subhumid, with long, cold winters and relatively brief, warm summers. Wide fluctuations in temperature and precipitation strongly influence the plant communities present in the region and cause plants to be adapted to extremes, rather than averages.

Landforms also have a profound impact on the type of plant communities found in an area. As discussed, the landforms of the area are primarily glacial in origin. Direct glacial modification of the landscape, such as the deposition of till and moraine, and the influence of periglacial processes such as outwash, have formed the vast majority of the landforms in the area. Most of the deposited materials associated directly with glaciers (e.g. till and moraine) are unsorted. These consist of mixed materials which range in size from clay and fine sand to large boulders. Overall, the materials deposited in the area tend to form well-drained to very well-drained landscapes with sands and gravels common.

In addition to the influences of climate and landform, landscape position also has a profound impact on the type of plant communities supported. Slope steepness, position, and aspect (direction a slope faces) all strongly influence the plant species that can occur in an area. Slope and aspect plays a significant role since it can exaggerate the influence of the sun; the amount of water plants lose through their leaves on south- and southwest-facing slopes makes these areas more hospitable to prairie or dry oak communities. North-facing slopes tend to be moister and have a tendency to be occupied by woodlands/forests.

2.4 PRE-HISTORIC INFLUENCE OF HUMANS ON THE LANDSCAPE

Ideas about the history of Native Americans and their influence on the local landscape are still evolving. Native Americans have probably inhabited and hunted in the area for close to 10,000 years. While their impacts were not as great as those of European settlers, Native Americans used a wide variety of plants and animals for food, and altered vegetation patterns for cultivation and by setting fire to broad expanses of landscape. Native Americans (and European fur traders) used fire to hunt game; create desired habitat; clear the landscape for travel, communication and defense; and obtain firewood. While some fires in the region would have occurred naturally, the activities of Native Americans undoubtedly accounted for the vast majority of fires. Prairies, savannas, and oak forests are fire-dependent plant communities, and would most likely not have been present in the area at the time of European settlement without these fires.

2.5 VEGETATION AT THE TIME OF LAND SURVEY

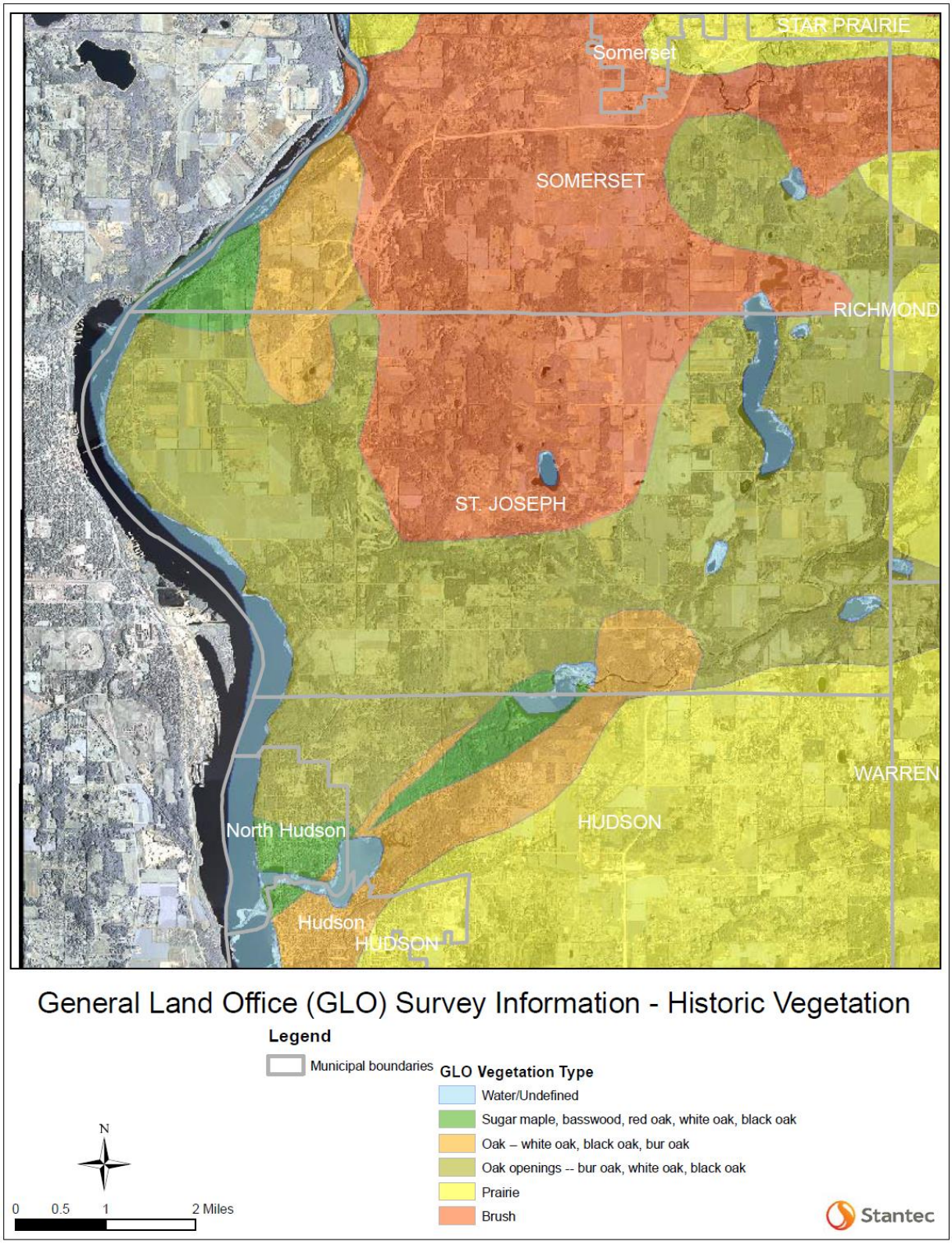
According to the original land survey notes (compiled close to or before the time an area was opened for settlement), the vegetation around the time of settlement in St. Joseph was comprised of oak savanna and oak woodland (brushland), and a small portion of forest in the northeast corner of the Town. There were areas of floodplain forest along the St. Croix and Willow Rivers, but savanna and open woodland would have been dominant in most of the upland areas. Scattered areas of wet prairie and open wet meadows/wetlands were also occasionally encountered in the area. A map illustrating the vegetation at the time of European settlement is shown on the following page.

2.6 POST-SETTLEMENT INFLUENCES ON THE LANDSCAPE

As the development occurs, increasingly intense human activities change the landscape and natural communities. In St. Joseph today, approximately a significant majority of the original natural areas have been substantially impacted by or lost to human activities. Examples of changes since Euro-American settlement include:

- Roads and the railroads began to fragment forests and other communities.
- Agriculture affected hydrology by draining wetlands and altering creeks.
- Vegetation was altered through clearing, plowing, cessation of regular fires, and grazing. These effects are evident in the reduction of native vegetation diversity in meadow and forest understory and planting of low diversity vegetation dominated (non-native plants.
- Soil erosion increased where native cover is removed, adding sediments to creeks, wetlands and lakes.

A Brief Look at the Natural History of the Study Area



3.0 PROJECT METHODOLOGY

This Land Cover Classification and Natural Resources Inventory project was conducted for all natural and semi-natural areas within select areas of the Town of St. Joseph deemed by officials to have likelihood of development. These included parcels greater than 10 acres in size that occurred inside or whose parcel boundaries intersected with the previously mapped natural resource corridors. A brief summary of the methodology is provided below.

3.1 GATHER AND REVIEW BACKGROUND INFORMATION

To provide a more detailed understanding of the study area, ecologists working on the project collected and reviewed available information on natural resources. This included information about vegetation at the time of Euro-American settlement, prairie remnant maps from WI DNR, National Wetlands Inventory (NWI), St. Croix County Soil Survey and others.

3.1.1 Previously mapped natural resource areas and ecological landscapes

Natural heritage data surrounding previously documented remnant prairies, as well as records for rare/state-listed plants and animals was reviewed for the Town of St. Joseph and the immediately surrounding area. While the reviewable data did not provide the exact location to ecologists for previous records, it did provide a broader understanding of the types of unique resources present within and immediately surrounding the Town. The Town of St. Joe occurs on the "Western Prairie" ecological landscape, as mapped by the WI DNR. A full download of the Western Prairie landscape description can be found at:
http://dnr.wi.gov/topic/Landscapes/documents/1805Ch23.pdf#view=Fit

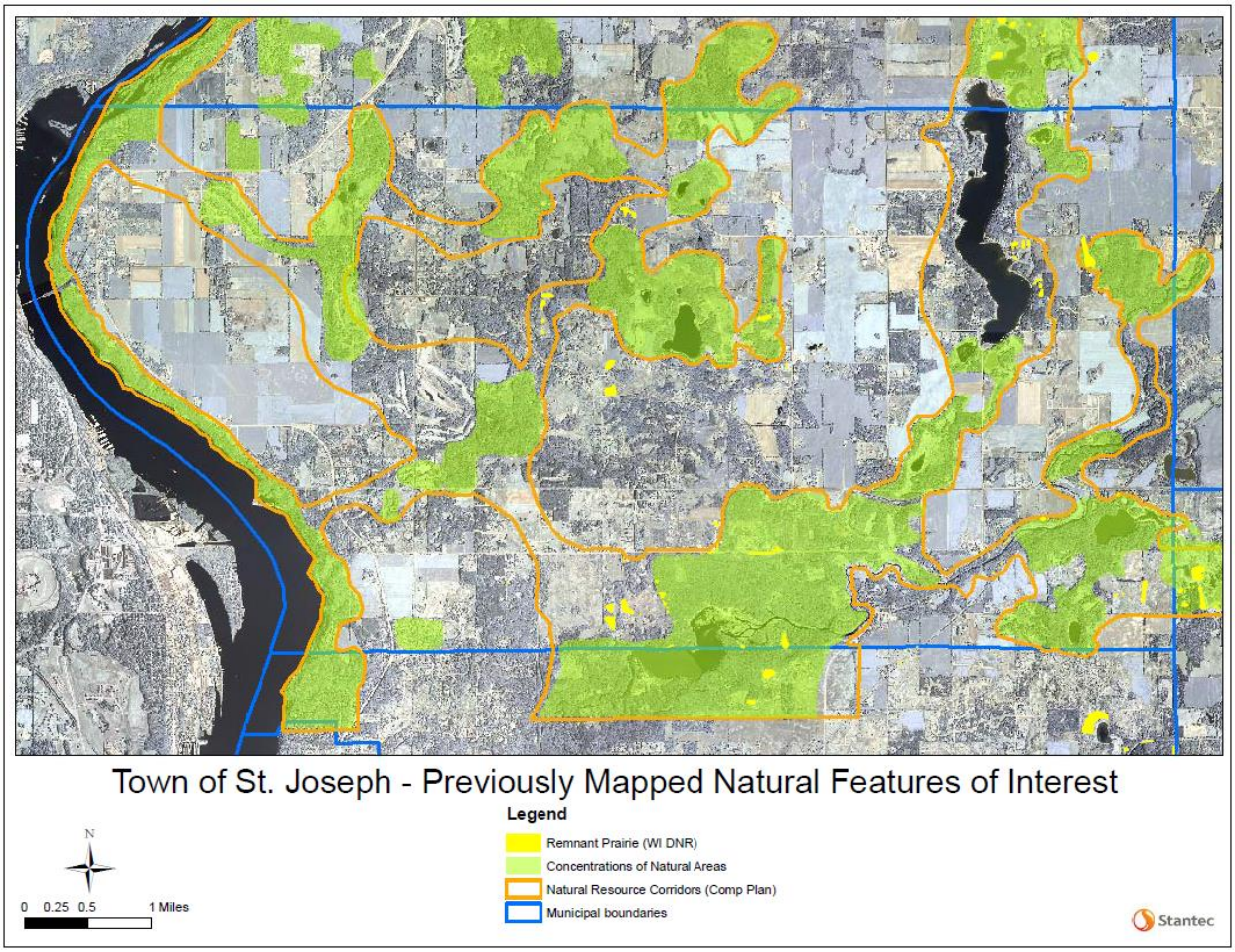
3.1.2 Minnesota Land Cover Classification System (MLCCS) Data

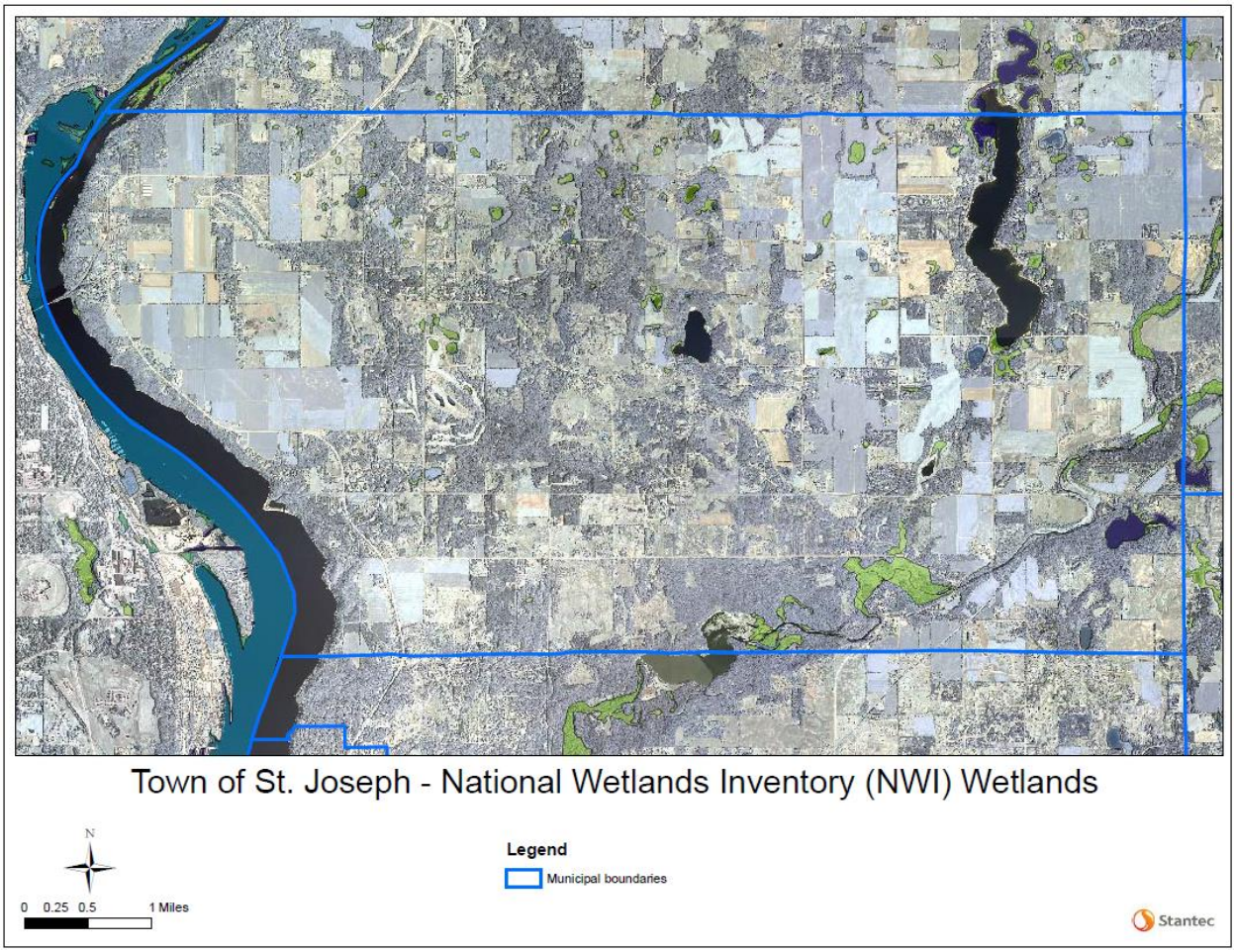
Ecologists reviewed the existing MLCCS data completed by National Park Service along the St. Croix River (extending up to and in some cases a little east of the river bluff top. The purpose of this review was to evaluate the detail and quality of the data to determine whether some of these previously mapped areas needed reevaluation or whether existing data would be adequate for Town planning. Natural and semi-natural areas within the MLCCS layer were compared to aerial photos for a preliminary verification of cover type, and were then plotted on the base maps for field inventory.

3.1.2.1 National Wetlands Inventory

Information from the National Wetland Inventory (NWI) was also reviewed and compared to the MLCCS information. In general, wetlands below the minimum mapping standard (1.25 acres for natural communities and 2.5 acres for semi-natural communities) were not mapped separately.

However, unique and/or Exceptional quality wetlands were mapped separately if they were encountered during the field inventory portion or the project.




Town of St. Joseph - National Wetlands Inventory (NWI) Wetlands
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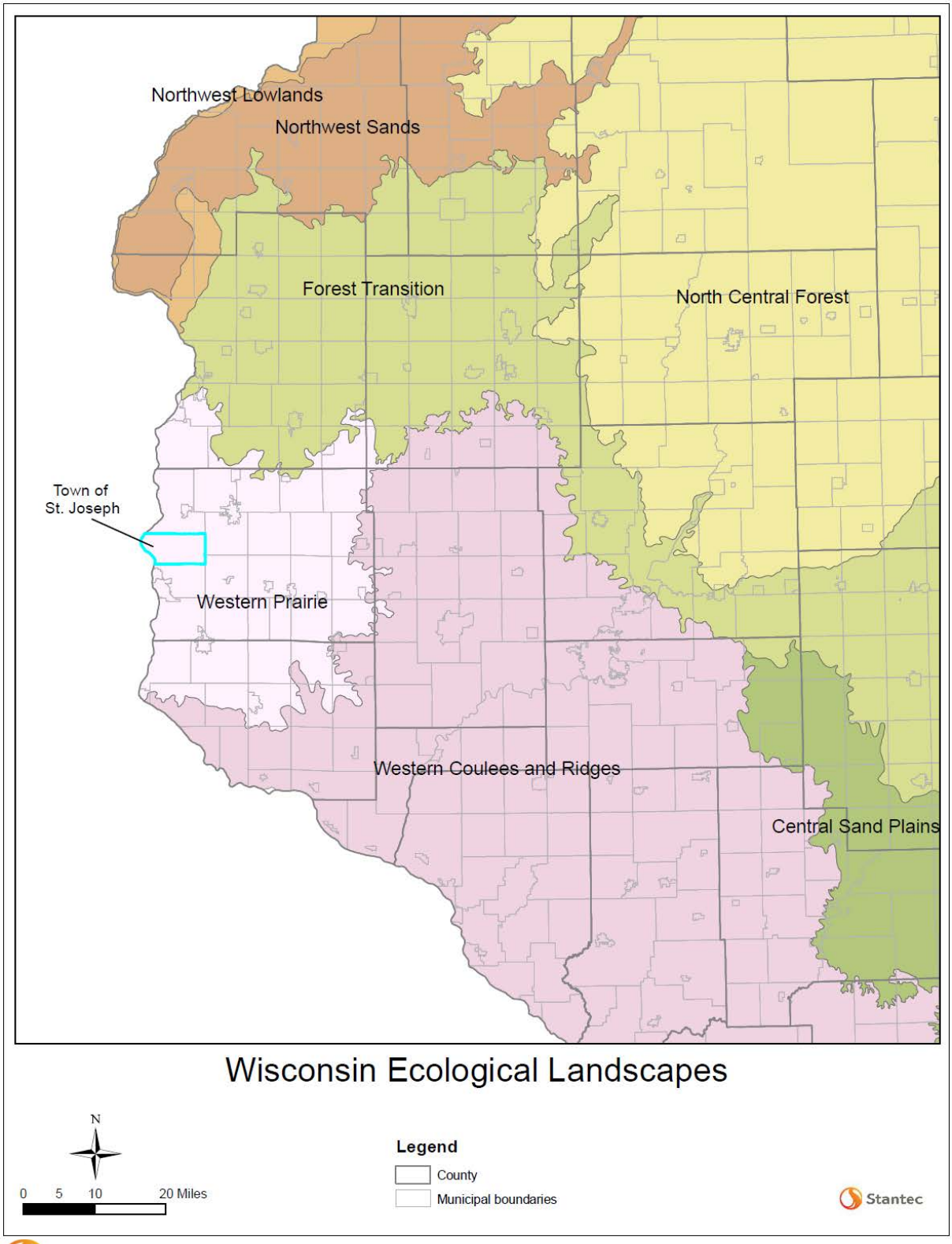
Northwest Lowlands
Northwest Sands
Forest Transition
North Central Forest
Town of
St. Joseph
Western Prairie
Western Coulees and Ridges
Central Sand Plains
Wisconsin Ecological Landscapes
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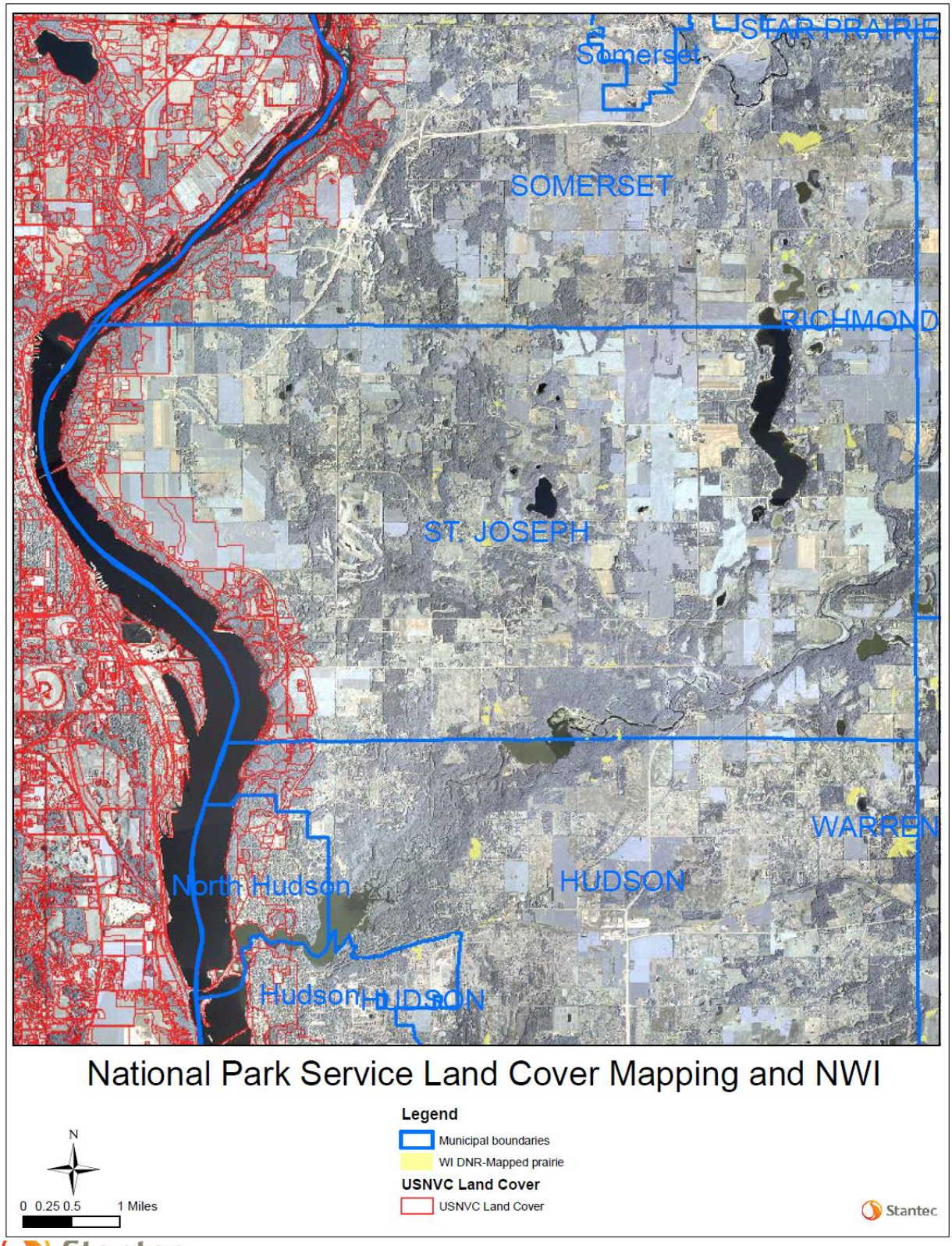
project methodology



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3.2 PREPARATION OF FIELD BASE MAPS

After review of the MLCCS and NWI information, project ecologists plotted 2005 Farm Services Administration (FSA) true-color low altitude aerial photographs for each section (square mile). These were printed at a scale of 1"= 200'. Available electronic data layers such as the National Wetlands Inventory, the St. Croix County Soil Survey, geopolitical boundaries, parcel boundaries, transportation information, and DNR Natural Heritage (MCBS) data were also printed on these plotted photos to assist in the field review. MLCCS data for natural and semi-natural areas, as well as information from the wetland inventory, was also included on the base maps.

3.3 NRI PARCEL IDENTIFICATION & LANDOWNER NOTIFICATION

Information about the location of natural areas was used to identify parcels where field review by a plant ecologist was appropriate. These included parcels greater than 10 acres in size that occurred inside or whose parcel boundaries intersected with the previously mapped greenway corridors (please refer to figure on the following page).

Town staff sent each of these landowners a letter in the summer 2015 to provide information about the NRI project. Landowners were informed that they should contact the Town if they did not want their parcel to be visited by an ecologist for the purposes of gathering basic data about vegetation/land cover on their property.

3.4 FIELD INVENTORY

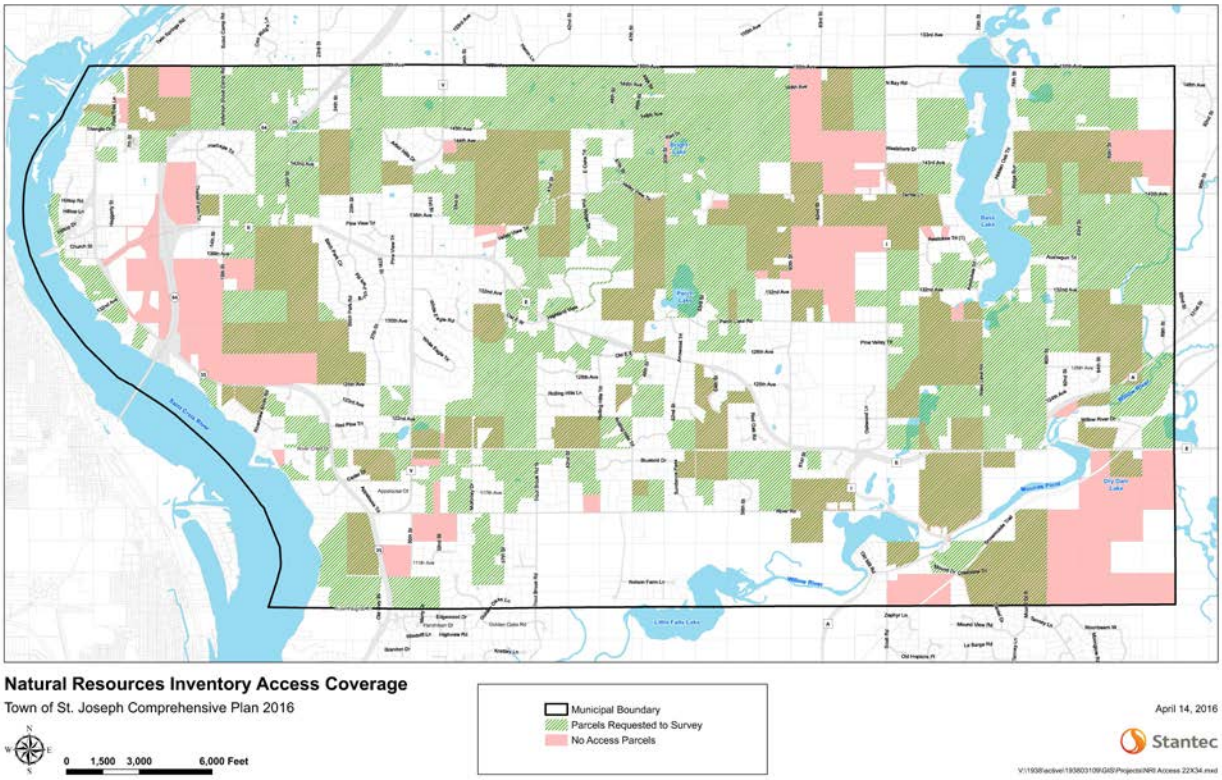
Town officials approved initiation of NRI field work in September 2015 and on-the-ground field inventory land cover classification took place in October/November 2015. Where property access was not available, sites were viewed from nearby roads or adjacent properties where access was permitted. In many cases, natural communities crossed multiple properties and partial access to a site could still be obtained. In others, no access was available, and terrain or other factors prevented viewing the site – those areas were mapped from aerial photos and the appropriate field visit code assigned to polygons in the GIS shapefile attribute table.

During the field review, a 5-digit MLCCS code was assigned to the natural and semi-natural areas. Other pertinent data was also recorded including notations using MLCCS Modifiers and Field Check Levels (see below).

The field survey also included identification of dominant plant species in quality natural communities. Field inventory level of effort for any particular site was related to its overall quality. In general, good quality natural communities were more thoroughly inventoried and more

information gathered. The field inventory emphasized gathering data on the composition, structure and function of natural communities, including disturbance indicators such as exotic species and erosion. This information provides a solid starting point for assessing the current condition of the community and can be used to develop management recommendations.

Parcels included in NRI (green shaded) and those where access was denied (red shading)



3.5 LAND COVER CLASSIFICATION

3.5.1 MLCCS Background

The Minnesota Land Cover Classification System Version 5.4 was used to classify land cover within the Town. This methodology is a local adaptation of the US National Vegetation Classification System (USNVCS) and widely utilized across the United States. Pre-existing MLCCS data from the National Park Service gave additional weight for the idea of utilizing MLCCS as the methodology for the St. Joseph NRI.

A brief explanation of the method and its application to this project is provided below. The complete 273 page MLCCS Manual can be viewed and/or downloaded on the MN DNR web site at the following address: http://www.dnr.state.mn.us/mlccs/index.html .

MLCCS has a five-level hierarchical system of land cover codes to describe natural, semi-natural, and cultural land cover types. Natural land cover types include areas such as forests, prairies, wetlands, shrublands, and other similar areas. Semi-natural areas are those dominated by nonnative plant species, but are not actively planted/maintained by humans through activities such as mowing/cutting. Cultural land cover types are areas that can be thought of as developed or substantially impacted by humans. These typically include paved (impervious) areas, agricultural fields, pastures and frequently manipulated grasslands, quarries, and others. The St. Joseph NRI focused on natural and semi-natural areas for land cover mapping.

Progression through each of the five levels of the system represents an increased level of detail in land cover classification. In this framework, Level 1 is the least detailed and Level 5 is the most detailed. For the purposes of this project, all natural and semi-natural areas within the Town were classified to the greatest level of detail practical (typically, Level 4 or Level 5).

3.5.1.1 MLCCS Modifier Codes

Several 'classes' of MLCCS modifiers were assessed in the field while conducting the land cover classification of the project area. These modifiers were assessed based on the methodology and definitions provided in the MLCCS training manual. Once assessed, the modifier values were entered into the GIS database for each land cover polygon. Below is a brief summary of the most commonly used MLCCS modifiers for this project.

3.5.1.1.1 Natural Community Quality Modifier (M_34x)

The M_34x modifier was developed as part of MLCCS methodology as a cursory method to assess the general natural quality of natural community and semi-natural land cover types. This modifier has four general categories. The assessment method is based on general ecological

variables, and is applied in the same manner for all natural community types. The following is the description of the M_34x modifier from the MLCCS training manual:

34X - Modifiers for natural community quality ranking
The natural plant community sites can be given a natural quality ranking, based on the DNR's Natural Heritage's Element Occurrence Ranking Guidelines* (EOR). See "Natural Community Modifiers" for a discussion of the Element Occurrence Ranking Guidelines.

Refer to the EOR Guidelines to evaluate the specific natural communities. Non-native, altered and disturbed communities should only be given a non-native ranking (NN or NA). Valid codes and general definitions for modifier m_34X are:

- ***A = highest quality natural community***, no disturbances and natural processes intact. Site must be visited entirely or partially to accurately assess its natural quality at this level (field check_level = 3 or 4). Modifier code = 341
- ***B = good quality natural community***. Has its natural processes intact, but shows signs of past human impacts. Low levels of exotics. Site must be visited entirely or partially to accurately assess its natural quality at this level (fld_level = 3 or 4). Modifier code = 342
- ***C = moderate condition natural community*** with obvious past disturbance but is still clearly recognizable as a native community. Not dominated by weedy species in any layer. Minimally, the site must be visited from the edge to accurately assess its natural quality at this level (fld_level = 2, 3 or 4). Modifier code = 343
- ***D = poor condition of a natural community***. Includes some natives, but is dominated by non-natives and/or is widely disturbed and altered. Herbaceous communities may be assessed with this ranking from a distance (fld_level = 1) if large masses of invasive species are present and the entire community is visible. Modifier code = 344
- ***NA = Native species present in an altered / non-native plant community***. This NA ranking can only be used if the site is field checked from the edge or to a greater degree (fld_level 2, 3, or 4), thus confirming the presence of native species within a non-native community. Modifier code = 345
- ***NN = Altered / non-native plant community***. These semi-natural communities do not qualify for natural quality ranking. Using NN signifies the site has been field checked and confirms it is a semi-natural community. Modifier code = 346

3.5.1.1.2 Invasive Species Modifiers (M_4xx)

The M_4xx modifiers represent invasive plant species occurring within land cover polygons. For the purpose of this project, the percent cover of each species of interest was estimated. These species are important to have information about due to their invasive nature and potential

* http://files.dnr.state.mn.us/ecological_services/nhnrp/eoranks2001.pdfp/eoranks2001.pdf

threats to native plant communities and biological diversity of native habitats. The cover classes used to assess invasive species aerial cover (i.e. as viewed from above) is a follows:

Cover Class/Estimated Percent Cover for Invasive Species

Cover Class	Description
0	Unknown, or if field checked, plants not observed
1	Observed, unknown quantity
2	1 – 5% Coverage
3	6 – 25% Coverage
4	26 – 50% Coverage
5	51 – 75% Coverage
6	76 – 100% Coverage

The following is a list of invasive plant species modifier numbers. Where these may have been encountered and of value for understanding any particular area, they may have been recorded for aerial coverage within land cover polygons:

402 - Purple loosestrife
403 – Eurasion watermilfoil
404 – Curly-leafed pondweed
405 – Flowering rush
406 - Narrow-leaf cattail
407 - Crown vetch
408 – Common and glossy buckthorn
409 - Leafy spurge
410 - Tartarian honeysuckle
411 - Garlic mustard
412 - Reed canary grass
413 - Smooth brome
414 - Spotted knapweed
415 – Exotic thistle
416 - Siberian elm
417 – Phragmites
418 – Grecian foxglove
419 - Amur maple
420 - Black locust
421 - Absinthe sage
422 - Dames rocket
499 - Other

3.5.1.1.3 Field-Check Level

A field-check level modifier was assigned to appropriate areas. The field-check level indicates the degree to which an individual polygon was checked in the field during the land cover assessment. Where access was permitted, most of the natural area polygons within this project were visited wholly/partially or viewed from edge. The following is a list of field check modifier values and their associated description:

- **0 = site not visited**
- **1 = viewed the site from a distance**. Unable to walk the site, but was able to discern the dominant vegetation. Masses of invasive species may be visible, and thus were recorded (buckthorn, reed canary grass, crown vetch, etc). Depending on the perceived quantity of invasive species, a natural quality ranking of D may or may not be discernable.
- **2 = visited the edge of the site**. Walked or drove to the edge of the site, and was able to inventory some invasive species and speculate on its natural quality. Depending on the perceived quantity of invasive species, a natural quality ranking of C or D may or may not be discernable.
- **3 = visited part of the site**. Walked into the site and was able to confidently inventory most invasive species present and assess its natural quality - A, B, C or D. Wetlands that are inventoried from the edges in several places should be given this field check level.
- **4 = visited the entire site**. Was able to inventory all invasive species present and assess the site's natural quality - A, B, C or D.

3.5.1.1.4 Other Modifier Codes that were applied, if appropriate:

- 247 – Trails
- 275 – Pasture
- 276 - Hayfield
- 6XX series – Forestry modifiers
- 72X series - Water modifiers, Built features
- 73X series - Water modifiers, Wetland features
- 74X series - Water modifiers, Stream features
- 75X series - Water modifiers, Spring feature

3.5.1.2 Rare Plant Species

Where natural areas occur, particularly those of better quality, there is the potential for the occurrence of rare species. Recognizing this, the plant ecologists who conducted field inventory work made an effort to search habitats estimated to have a high likelihood of supporting rare plants.

It is also important to note that although plant ecologists searched areas that appeared likely to host rare plants, limited property access, one-time visit to the natural areas, and the fact that the field inventory work could not be conducted at an ideal time/season means that rare plant populations are almost certainly present in some natural areas but not visible at the time of field

inventory work (which occurred in October/November). Therefore, this NRI cannot be considered a rare plant search.

4.0 NRI/LAND COVER CLASSIFICATION RESULTS

The NRI/Land Cover mapping effort resulted in mapping of 637 polygons, totaling 7,921 acres. This included areas previously mapped by National Park Service staff (all land cover types along the St. Croix River), as well as natural and semi-natural land cover in additional selected parcels.

- There were 528 natural and semi-natural cover type polygons mapped, totaling 6,709 acres.
- Semi-natural cover types included 290 polygons, totaling 2,651 acres.

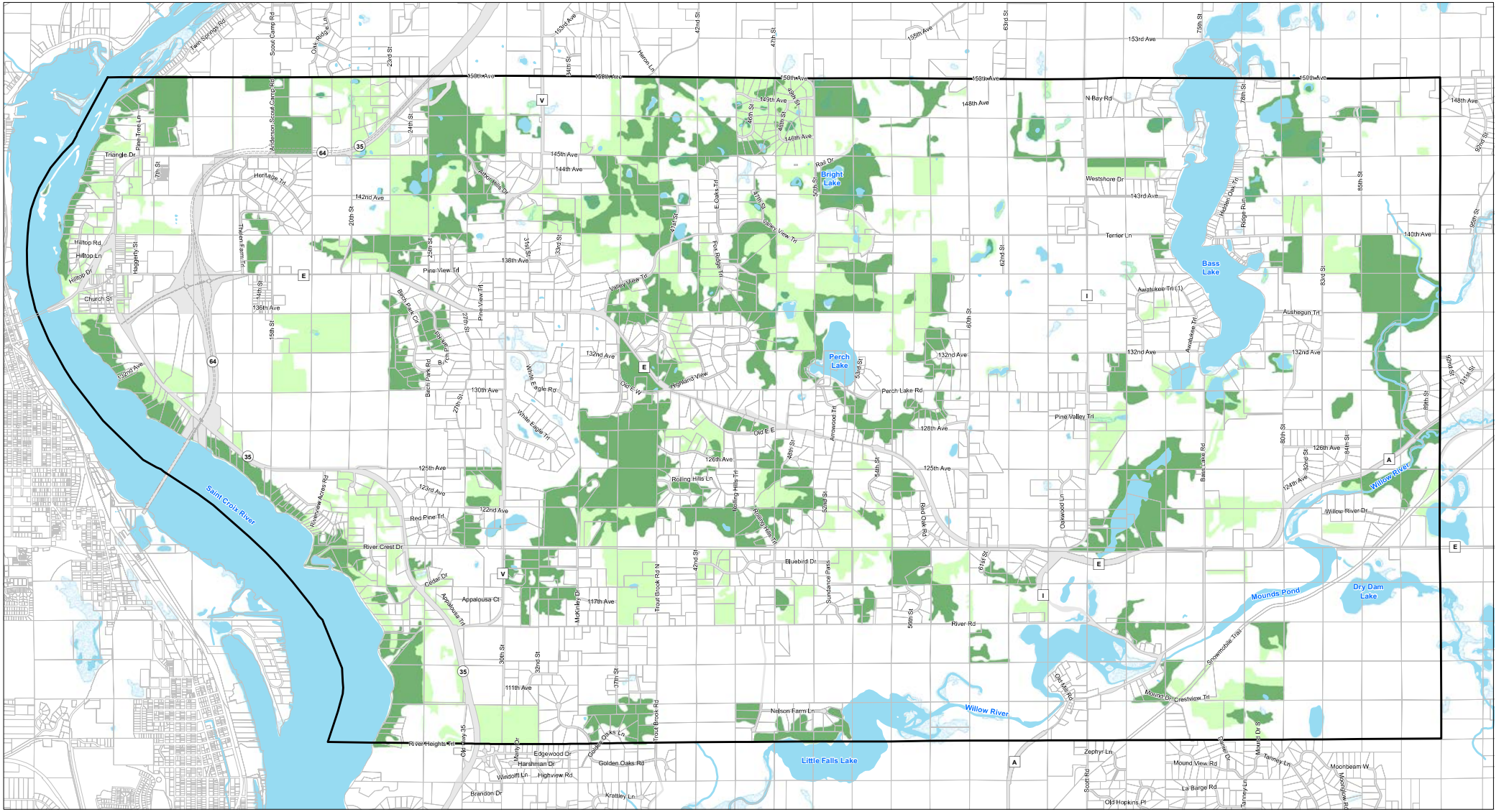
Natural areas (those most resembling native plant communities that occurred historically on the landscape in this area) included 238 polygons totaling 4,058 acres. Remnant natural area cover types represent a variety of distinct natural community types including forest, woodland, shrubland, herbaceous wetlands, and grasslands, as well as areas of open water (lakes and ponds).

The following pages include a summary of the major natural community types encountered in the Town, with general descriptions. It is important to note that there are numerous other natural community types that occur less frequently in the town. Descriptions for these community types are from the MLCCS User Manual. Note that both common and scientific names are provided for the first reference to a species. Subsequent references list only one name.

4.1 QUALITY NATURAL AREAS

The map accompanying this report illustrates the natural areas identified during the inventory, mapped according to site quality. It is important to note that due to lack of access to some areas within the town, not all high quality sites may be listed here. We recommend that appropriate field work be conducted prior to any development to determine the quality/composition of any larger natural areas not visited during this project. A figure summarizing the location of upland natural areas identified can be found on the plotted map that accompanies this report. Site-specific field descriptions of natural areas shown on the large map can be found in Appendix D. A summary of findings for site quality is provided below.

Quality Rank	Number of Sites*
Exceptional (341)	13
High (342)	24
Moderate (343)	113
Low (344)	24



Natural Resources Inventory Natural and Semi-Natural Areas

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Stantec

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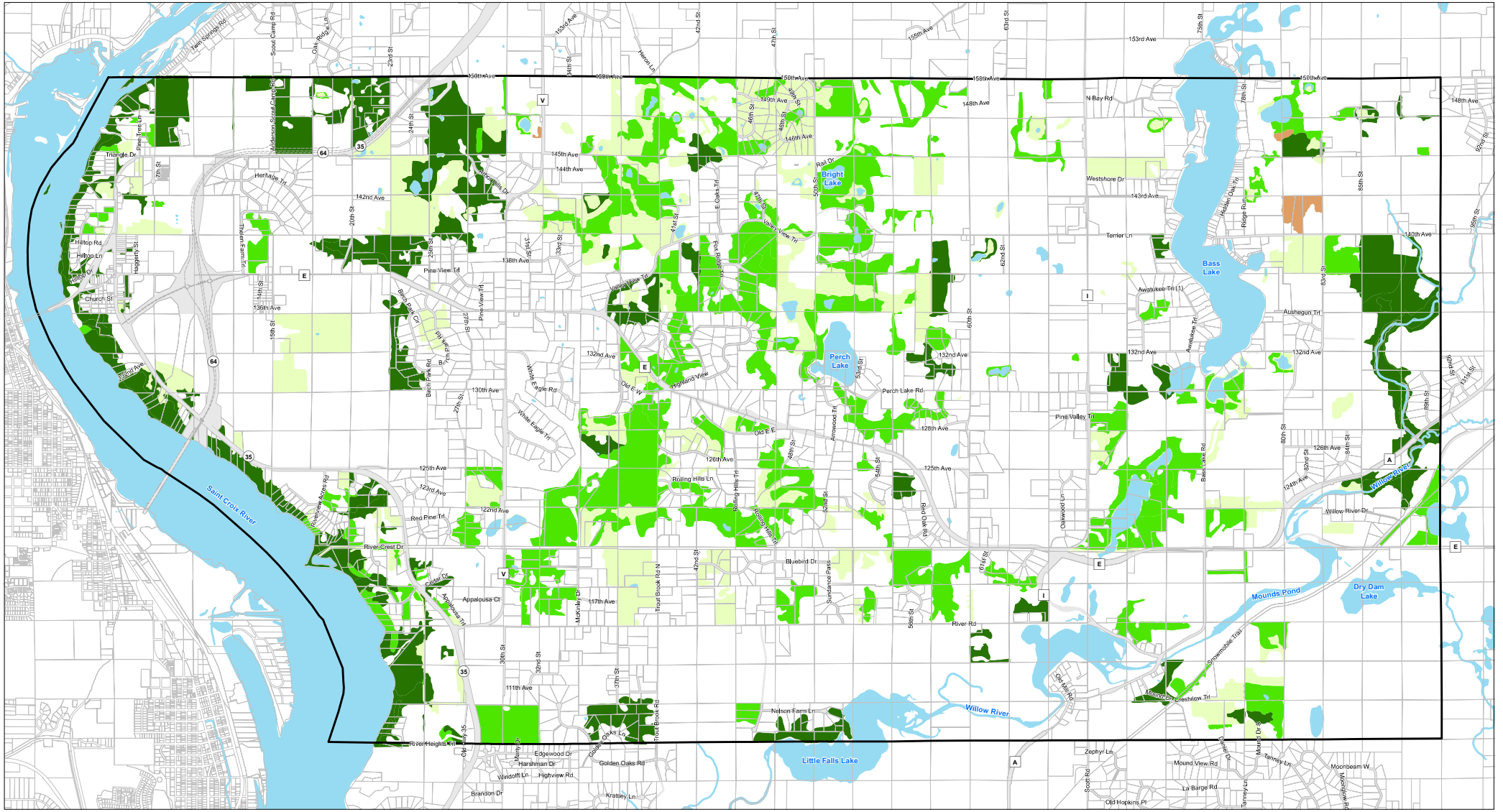

Natural Resources Inventory

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Stantec

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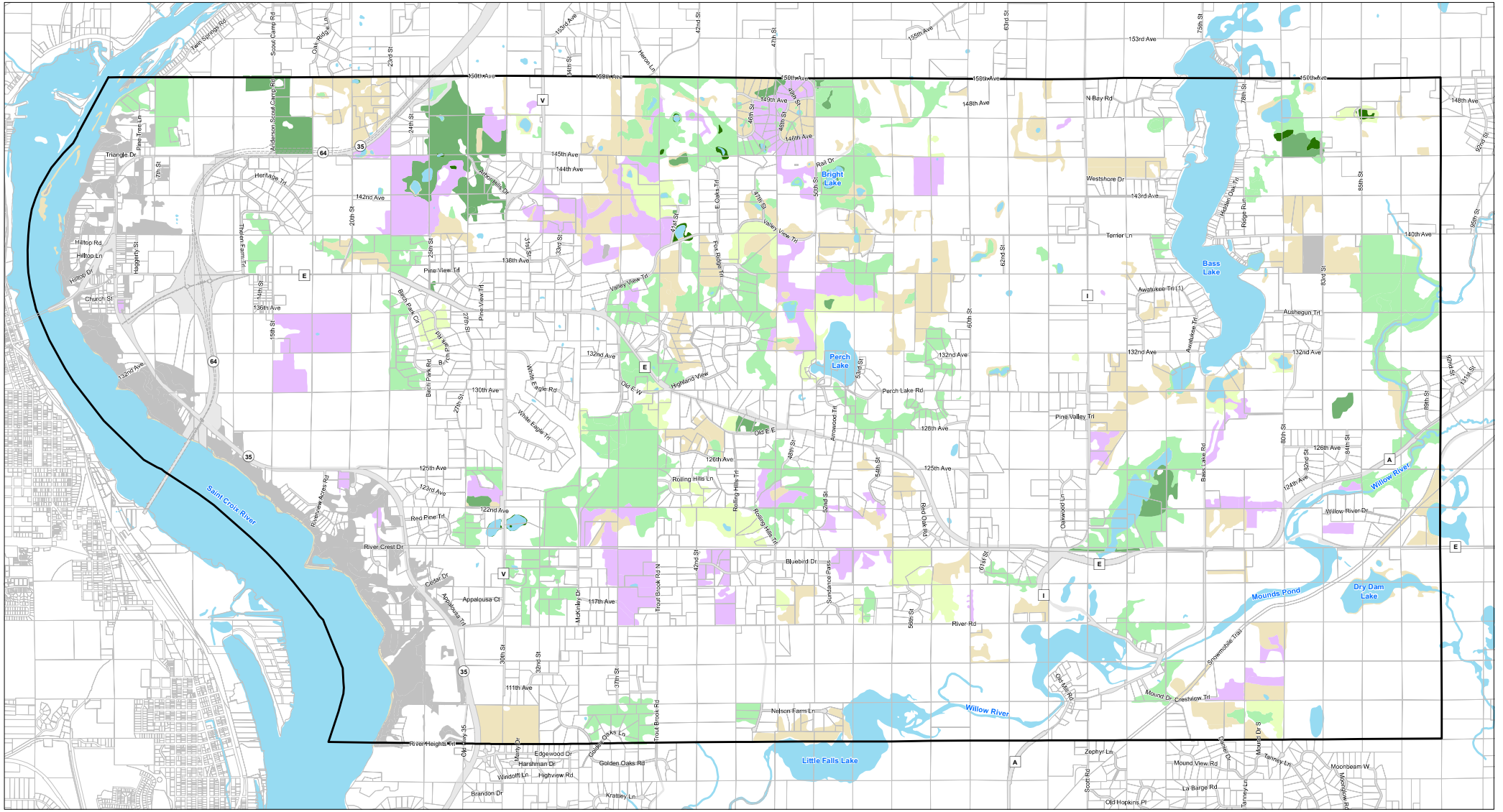

Natural Resources Inventory Community Qualities

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Stantec

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4.2 NATURAL AREA COVER TYPES

4.2.1 Forest (Upland)

Oak Forest (All subtypes) (MLCCS Code 32110, 32111, 32112, 32113 /857 Total Acres)
36 oak forest remnants were documented totaling 857 acres. This includes oak forest of unspecified subtype, oak-red maple forest, mesic oak forest, and dry oak forest.

Northern red oaks (Quercus rubra), white oaks (Quercus alba), or bur oaks (Quercus macrocarpa) dominate mesic stands of oak forest. These stands occur on sites that had fewer severe fires before European settlement than the sites on which dry mixed oak forest occurs. Mesic stands most likely were always forest, rather than woodland or savanna. They have tall (> 20 meters), straight, single-stemmed trees that lack spreading lower branches. Commonly, mesic fire-sensitive tree species are present with the oaks in these stands, especially in the understory. These species include basswood (Tilia americana), green ash (Fraxinus americana), bitternut hickory (Carya cordiformis) big-toothed aspen (Populus grandidentata), and butternut (Juglans cinerea).

Dry oak forest tends to have pin oak (Quercus ellipsoidalis), bur oak (Q. macrocarpa), and white oak (Q. alba) more common as canopy trees. As well, the subcanopy of dry oak forests increasingly support red maple (Acer rubrum.)

Example of mesic oak forest (St. Croix Valley, Minnesota side)

The shrub layer in mesic stands is sparser than in dry stands and, correspondingly, the forb layer is denser and more diverse and there are more graminoid species. Like the drier stands, however, there is little oak regeneration, and most mesic oak forests appear to be succeeding to maple-basswood forest. Heavy selective logging of the oaks in mesic stands may accelerate this trend, producing young stands of maple-basswood forest. The mesic stands often grade into drier stands of maple-basswood forest, but differ from them by having a somewhat denser shrub layer and the herbs woodrush (Luzula acuminata) and pointed-leaved tick-trefoil (Desmodium glutinosum) in their understory.

Natural stands of mesic oak forest are rare in the St. Croix River Valley. In much of this region drier stands are more common, in part because relative to the mesic forests they occur on sites with soils less suitable for cultivation.

High quality oak forest in St. Joseph.

Maple Basswood Forest (MLCCS Code 32150 / 190 Total Acres)
Ten maple-basswood forest areas totaling 190 acres were documented. The sizes of the maple-basswood remnants ranged from 1.6 acre to 67 acres in size.

The tree canopy of Maple-basswood forests is dominated mostly by basswoods (Tilia americana), sugar maples (Acer saccharum), and (formerly) American elms (Ulmus americana). Other mesic trees, such as slippery elms (Ulmus rubra), northern red oaks (Quercus ellipsoidalis), bur oaks (Quercus macrocarpa), green ash (Fraxinus pennsylvanicum), and white ashe (Fraxinus americanum) are sometimes dominant locally. The canopy is very dense, with tall, straight, relatively narrow-crowned trees. The understory is multi-layered and patchy. It is composed of saplings and seedlings of the canopy species (especially sugar maple), along with American hornbeam, ironwood, bitternut hickory, pagoda dogwood, and leatherwood.

Maple-basswood forest in spring time, Chaska, MN

Because the tree canopy permits so little light to reach the forest floor during the summer, Maple-basswood forests have a suite of forb species that bloom, produce seeds, and die back in May and early June before tree leaves are fully developed. These species--the spring ephemerals and the winter annuals--include spring beauties (Claytonia sp.), Dutchman's breeches (Dicentra cucullaria), trout-lilies (Erythronium spp.), and

cleavers (Galium aparine). Other herbs, such as the sedge Carex pedunculata, bottlebrush grass (Hystrix patula), and bearded short-husk (Brachyelytrum erectum), are commonly present in the ground-layer but usually not abundant.

Maple-basswood forest occurs on protected sites, where catastrophic forest crown fires were rare, historically. Across most of its range, the community develops most commonly on well-drained loamy soils that lack mottling or other evidence of water-table levels within the tree-rooting zone. In north-central Minnesota, maple-basswood forests develop on soils with fine-textured subsurface layers that slow the downward movement of water and nutrients.

Maple-basswood forest is a late-successional community, tending to succeed mixed oak forest (and other forest types) on mesic sites. It is self-perpetuating in the absence of catastrophic disturbance and climate change because the dominant tree species readily reproduce by gap-phase replacement. The very shade-tolerant sugar maple seedlings and saplings, especially, may exist in a suppressed state in the understory for many years until the death of a mature tree when one or a few grow rapidly into the canopy gap. Maple-basswood forests often develop into old-growth forests, because catastrophic disturbances are rare in the community and because the dominant tree species are long-lived (> 250 years). The trend in most stands of maple-basswood forest is toward greater dominance by sugar maple.

Maple-basswood forest grades into oak forest where the frequency of fire increases in the landscape. It grades into lowland hardwood forest in low areas where elms and ashes become more abundant and where the water table is at least seasonally within the tree rooting zone. Conifers are absent or uncommon in most of the range of maple-basswood forest, but grow with sugar maple, basswood, and other mesic species.

Undisturbed stands of maple-basswood forest are rare. The soils of these forests were highly suitable for cultivation, and as a result much of these presettlement communities had been cleared for cropland. Remaining stands have often been grazed or selectively cut for lumber or fuel wood. Heavy grazing causes compaction of the soils and the almost complete destruction of the understory, resulting in even-aged woodlots with large mature trees in the canopy, little reproduction, and few native shrubs and herbs.

Selective logging of the less shade-tolerant species (northern red oak, white oak, bitternut hickory, and walnut) has been common since European settlement, and has hastened dominance by sugar maple and basswood in many stands. The composition of the community has also been altered throughout its range by Dutch elm disease, which has killed most of the mature elm trees, and in many stands by the loss of interior ground layer species following forest fragmentation. Common buckthorn (Rhamnus cathartica) and Tartarian honeysuckle (Lonicera tatarica) sometimes invade stands of maple-basswood forest, but rarely attain the high densities they may have in oak forest. Maple-sugaring is one human activity associated with maple-basswood forests that appears to have little impact on the structure and composition of the

community, as some of the best remaining tracts of maple-basswood forest have long histories of maple sugar production.

4.2.2 Forests (Lowland)

Floodplain Forests (MLCCS Codes 32210, 32211 / 77 Total Acres)
11 floodplain forests totaling 77 acres were documented within the NRI study area.

Floodplain forest is a seasonally wet forest community that occurs throughout the region on the active floodplains of major rivers and their tributary streams. The canopy of the community is dominated by deciduous tree species tolerant of inundation, abrasion, and other disturbances associated with flooding. The canopy is variable in composition, either composed of a mixture of tree species or strongly dominated by a single tree species.

The species composition of floodplain forests varies both geographically and in relation to such features as substrate type or flood cycles. In southern Minnesota, silver maples (Acer saccharinum), black willows (Salix nigra), and cottonwoods (Populus deltoides) are common canopy dominants. They occur either in nearly pure stands or in mixed stands. Scattered individuals or patches of river birch, American elm, slippery elm, green ash, and swamp white oak (Quercus bicolor) are also common in stands in southern Minnesota.

Floodplain forest example (Buffalo, WI)

The tree canopy cover is highly variable within floodplain forests. The canopy is continuous in some stands while other stands have open areas caused by repeated erosion, ice-scouring, and soil and debris deposition, all of which prevent the growth of trees and shrubs.

In recent decades, Dutch elm disease has also caused significant canopy openings in floodplain forests in which mature American elm trees were abundant in the canopy. Areas beneath tree-canopy openings in the forests are either dominated by short-lived herbaceous plants or, where erosion and disturbance from flooding tend to be repeated and severe, remain unvegetated.

Lowland Hardwood Forest (MLCCS Code 32220 / 35 Total Acres)
One 35-acre lowland hardwood forests was documented in the NRI.

Lowland hardwood forest is a wet-mesic forest that is present throughout the region. It is transitional between the terrestrial and palustrine systems, occurring on sites with seasonally high water tables (within the tree-rooting zone) but do not flood regularly and have mineral rather than peat soils. In accordance with the poorly drained sites on which the Lowland hardwood forests occur, species tolerant of periodic soil saturation dominate the tree canopy. American elms and black ashes are common canopy dominants, but most stands are mixed, with slippery elms, rock elms, basswoods, bur oaks, hackberries, yellow birches, green ashes, black ashes, quaking aspens, balsam poplars, and paper birches as important species. The tall-shrub layer is usually discontinuous and is composed of a mixture of upland and lowland shrubs. The ground layer is composed mostly of upland herbs that do not root to the water-table.

Lowland hardwood forest usually occurs in fire-protected areas, although even in unprotected areas the community burns infrequently because the woody vegetation is usually hydrated, especially in the spring. Lowland Hardwood Forest soils differ from Hardwood Swamp Forest soils by being mineral rather than peaty and from the mineral soils of other mesic upland forest types by being seasonally saturated (at depths greater than 0.5 meters).

Lowland hardwood forest is often composed of late-successional species, but few stands in Minnesota have old canopy trees, presumably because of wind throw and infrequent episodes of killing floods. Lowland hardwood forest is topographically transitional between upland forests and forested peatlands and is best developed on flat terrain where such transition zones are broad (e.g., on river terraces above normal flood levels, on loamy ground moraine, and on drumlin fields).

4.2.3 Woodlands

Oak Woodland/Brushland (MLCCS Code 42120 / 1,526 Total Acres)
Fifty-two occurrences of oak woodland/brushland totaling 349 acres were documented within the NRI area. These were generally moderate quality, with some concerns related to encroachment by brush, the absence of periodic fires, nonnative pasture grasses and other factors.

Oak woodland-brushland occurs on dry to mesic sites throughout the deciduous forest-woodland zone and locally in the prairie zone near the ecotone between the prairie zone and the deciduous forest-woodland zone. Oak woodland is floristically and

Oak Woodland-brushland in winter

structurally intermediate between oak savanna and oak forest, with a patchy tree canopy and an understory dominated by shrubs and tree saplings.

The principal species in the tree canopy are bur oak, northern pin oak, white oak, and northern red oak. Aspens may form up to 70% of the tree canopy cover. The brush layer ranges in density from sparse (with 10-30% cover), to an impenetrable thicket. It is often especially dense in openings between clumps or groves of trees. Most of the floristic diversity in the community exists in the brush layer, which most commonly is composed of blackberries and raspberries (Rubus spp.), gooseberries (Ribes spp.), dogwoods (Cornus spp.), cherries (Prunus spp.), hazelnuts (Corylus spp.), prickly ash (Zanthoxylum americanum), and sprouts of oak (Quercus spp.) and quaking aspen. Prairie vegetation, if present, occurs only in small openings in the tree or shrub canopy. Except in these scattered prairie openings, the herbaceous layer is sparse and floristically poor. It is usually composed of woodland species capable of surviving in the dense shade beneath the brush layer.

Oak woodland-brushland is a fire-maintained community. It is most common on rich sites where trees and shrubs grow well but where recurrent fires historically prevented the formation of true forest. Historically, Oak Woodland-Brushland (along with savanna) was probably one of the most extensive community types in the region, comprising much of the vegetation described as oak barrens, brushland, and thickets by the early surveyors. The fires that maintained oak woodland-brushland usually started on nearby prairies. Grazing was also important and, with the long-term decline in grazing since the mid-1900s, has resulted in accelerated brush encroachment into these former savanna areas. Following the conversion of these prairies to agricultural land, oak woodland-brushland burned less frequently and rapidly succeeded to oak forest. Oak woodland-brushland is defined broadly enough here to also include communities in which the predominant cover is oak brush or oak-aspen brush (that originated following fire or limited human disturbance) instead of a well-developed tree canopy. There are four geographic sections of oak woodland-brushland in the region. These sections may be modified in the future as more information becomes available.

In the St. Croix River Valley, oak woodland-brushland is often present on southwest-facing slopes on the blufflands and on glacial outwash terraces. It generally occurs on more gentle slopes than bluff prairie or on lower slopes below bluff prairies. Bur oaks are common canopy dominants and northern red oaks are common associates. Northern pin oaks, basswoods, and black cherries may also occur in the canopy. White oaks are rare and aspens typically are absent. Chokecherries are common in the shrub layer, with shrub cover averaging 30-50%. On droughty sites with thin soils or steep slopes these woodlands may persist even in the absence of fire.

Oak woodlands are dominated by white oak and pin oak in areas with coarse-textured soils, such as on kames or eskers, or in areas prone to occasional fires. Oak woodlands with heavier-

textured soils are often dominated by bur oak. Natural woodlands are now extremely rare i because of logging, grazing (both overgrazing and lack of grazing), and fire suppression.

Mesic Oak Savanna (MLCCS Code 62130 / 6 Total Acres)

There one 5.5-acre example of mesic savanna documented in the Town of St. Joseph. It occur as an opening in an overgrown pastures and mapped as Oak Woodland-brushland. These areas were undoubtedly quality mesic savannas as recently as two to four decades ago.

Mesic savanna was historically common and important in the study area. However, they are exceptionally rare and considered to be an imperiled ecosystem.

Oak savanna restoration at Belwin Foundation, Bayport,

The characteristic trees of mesic oak savanna are bur oaks and to a lesser extent northern pin oaks. Northward, quaking aspens were probably common in moister parts of mesic oak savannas. The stature and spacing of the oaks in the community probably varied considerably, primarily with differences in fire history, which were themselves related to differences in soils, landforms, and climate. Grubs and small, gnarly, open-grown trees were probably also common.

The distribution of trees ranged from widely spaced to strongly clumped. Shrub cover, likewise, was probably quite variable. The shrub layer included chokecherries (Prunus virginiana), low juneberries (Amelanchier humilis), gray-bark dogwoods (Cornus racemosa), wolfberries (Symphoricarpos occidentalis), and on lighter soils, prairie willows (Salix humilis), New Jersey tea (Ceanothus americanus), and American hazelnuts (Corylus americana). Leadplant (Amorpha canescens) was always present. The herbaceous vegetation was dominated by species typical of mesic prairie, but herbs typical of oak woodland and oak forest were probably present as well, especially beneath tree or shrub canopies.

Mesic oak savanna is rare throughout the region. Historically, it occurred in the prairie and deciduous forest-woodland zones. Mesic oak savanna occurred on dry-mesic to mesic, gently

undulating to moderately sloping sites. These sites were on glacial till or outwash, with soil texture ranging from clay loam to sandy loam. Mesic Oak Savanna generally occurred on sites where fire was frequent enough to prevent trees and shrubs from forming closed canopies, thereby permitting heliophilous sun-loving prairie herbs to dominate the ground layer. However, fire frequencies were lower than in prairies on similar topography and soils.

Native grazing and browsing animals may also have helped maintain the open character of mesic oak savanna. Within the deciduous forest-woodland zone, where landscape character reduced fire frequency on a large scale, mesic oak savanna often covered larger areas. With settlement and the suppression of prairie fires, savannas in the deciduous forest-woodland zone that escaped clearing and cultivation quickly succeeded to woodland unless heavily and continuously grazed. One remnant mesic savanna were documented in the study area.

Rare mesic oak savanna in Town of St. Joseph

Dry Oak Savanna – (MLCCS Codes 62120, 62122 / 9 Total Acres)
One 9-acre dry oak savanna was documented during the NRI.

Dry oak savanna occurs on the same kinds of landforms as Dry Prairie, except for bedrock bluffs. The barrens subtype of dry savanna occurs on the same kinds of sand deposits as the Barrens Subtype of Dry Prairie. On dune blankets it tends to be favored over prairie in areas of sharper relief. Bur oaks are generally the prevalent trees, but northern pin oaks are also common.

Small, gnarly, open-grown trees are most common, although in moister spots, or in heavier soils, larger trees are sometimes more common. Trees range in spacing from sparse and evenly spaced to strongly clumped. The shrub layer is usually sparse; the most common species in the shrub layer are oaks (in the form of grubs), chokecherry, American hazel, smooth sumac, prairie willow, bush juniper (Juniperus communis) and New Jersey tea (Ceanothus americanus) are usually present. The herbaceous vegetation present in open areas is similar to that of the Barrens Subtype of Dry Prairie.

Grazing and browsing animals may also have had a role in the maintenance of Dry Oak Savanna. Because Dry Oak Savanna occurs on sites that are not as suitable for cultivation as Mesic Savanna sites, and because succession in the absence of fire is not as rapid, more examples remain of Dry Oak Savanna than of Mesic Oak Savanna.

Rare dry oak savanna in Town of St. Joseph

4.2.4 Shrublands

Wet Meadow - multiple subtypes (MLCCS Code 52420, 61320, 61420, 61540, 61641 / 56 Total Acres)

Eighteen wet meadows totaling 56 acres were documented. It is important to note that there were numerous small wet meadows that occur as inclusions in other cover types (especially forest), but were below the minimum size for mapping. These wet meadow inclusions are important as wildlife habitat and very sensitive to excessive nutrient inputs that result from in-watershed land use changes such as development or conversion of natural cover types to row crop agriculture.

This wet shrub meadow type is found in the northern prairie-forest border area of Wisconsin and Minnesota. Stands may occur along stream courses or adjacent to lakes or in upland depressions. Soils are wet mineral, muck, or shallow peat (<0.5 m). Standing water is present in the spring and after heavy rains, but the water table draws down by mid-summer. Seepage areas may also occur. Shrub cover is at least 25 percent but does not become thick. Dominant species include red-osier dogwood (Cornus sericea), Bebb's willow (Salix bebbiana), pussy willow (Salix discolor), slender willows(Salix petiolaris), and meadowsweet (Spiraea alba). Herbaceous species are typical of wet herbaceous meadows, and include several species of sedges (Carex aquatilis, C. atherodes, C. haydenii, C. lacustris, C. lanuginosa, C. rostrata, and C. stricta), or grasses such as Canada blue joint (Calamagrostis canadensis) and reedgrass (Calamagrostis stricta). Forbs include swamp milkweed (Asclepias incarnata), lance-leaved aster (Aster lanceolatus), New England aster (A. novae-angliae), swamp aster (A. puniceus), turtlehead (Chelone glabra), joe-pye weed (Eupatorium maculatum), and common mint (Mentha arvensis).

Wet meadow shrub subtype is a wetland community comprised of 50-70% cover by tall shrubs where peat is <0.5m deep and gaps are not dominated by emergent species >1m tall. The leaves of typical grasses and sedges within this community are >3mm wide (such as Canada blue joint (Calamagrostis canadensis), lake sedge (Carex lacustris), and tussock sedge (C. stricta)).

Sedge-dominated wet meadow in forested rolling topography in St. Joseph.

Willow Swamp (MLCCS Code 52430 / 1.5 Acres)
One occurrences of willow swamp was documented in the NRI study area.

Willow swamp is a minerotrophic wetland with a canopy of medium to tall (>1m) shrubs dominated by willows (especially pussy willow, slender willow, and Bebb's willow) and red-osier dogwood. Other shrubs, such as speckled alder (Alnus rugosa) , bog birch, poison sumac (Rhus vernix) , and alder buckthorn (Rhamnus alnifolia) may be common in the tall shrub layer, although speckled alder is never the most abundant species present. Herbaceous species (especially graminoids) characteristic of wet meadow/fen communities are common in the more open occurrences of the community. However, in willow swamps, unlike wet meadow/fen communities, these graminoid-dominated patches are poorly separated from clumps of shrubs. The most common herbs are tussock sedge (Carex stricta), prairie sedge (Carex prairea), lake-bank sedge (Carex lacustris), broad-leaved cattail (Typha latifolia), Canada blue-joint grass, northern marsh fern (Thelypteris palustris), and jewel-weed (Impatiens capensis).

Willow swamps dominated by bog birch are closely related to the shrub subtype of rich fen but have more minerotrophic indicator species [such as speckled alder, holly (Ilex verticillata), jewel-weed, and horehound (Lycopus uniflorus)] than are present in Rich Fens. Following fire in conifer swamps or in the shrub subtype of rich fens there may be initially a dense cover of willows

(usually balsam willow and bog willow), but these stands are best classified as successional stages of conifer swamp or rich fen rather than as willow swamp. The dense groves of sand-bar willow or juvenile black willow that occur on sand bars along rivers are not considered shrub swamp communities but instead river beach communities, as they occur on mineral rather than peat or muck substrates.

Willow swamp occurs on seasonally flooded soils with <30% tree cover and >50% cover by tall shrubs (not dwarf-shrubs), where <50% of the shrubs are alders and gaps are dominated by emergent species >1m tall.

4.2.5 Herbaceous Wetlands

Cattail Marsh (MLCCS Codes 61340, 61510, 61610, 61710, 61810 / 31 Total Acres)
Thirteen cattail marshes totaling 31 acres were documented in the study area.

For the purposes of this project, cattail marshes do not include monotypic (i.e. single species) stands of the nonnative narrow-leaf cattail with very low species diversity. Wetlands within Study area comprised primarily of narrow-leaf cattail (Typha angustifolia) and reed canary grass (Phalaris arundinacea) were considered non-native dominated herbaceous wetlands (MLCCS codes 61330, 61480, 61530, and 61630). Several large cattail/reed canary grass monotypes were observed, as well as numerous medium to small disturbed basins containing a monotype or combination of invasive species.

Cattail marsh

Cattail marsh is an emergent marsh dominated by cattails including broad leaved cattail Typha latifolia and less frequently narrow leaved cattail, and very often their hybrids (T. glauca). Cattail marshes occur most commonly along lake margins and in shallow basins, although they are sometimes also present in river backwaters. Lacustrine cattail marshes typically have a muck-bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots do not contact the bottom but instead the plants grow suspended in a buoyant peaty mat. Associated species vary widely, but some of the most common ones are sedges of the genus Carex (Water sedge (C. aquatilis), beaked sedge (C. rostrata), and wooly sedge (C. lanuginosa), bulrushes (American bulrush (Scirpus americanus,) hardstem bulrush (S. acutus), and slender bulrush (S. heterochaetus)), and broad-leaved herbs such as northern marsh fern (Thelypteris palustris), swamp milkweed, jewel-weed, broad-leaved

arrowhead (Sagittaria latifolia), mad-dog skullcap (Scutellaria lateriflora), marsh skullcap (Scutellaria galericulata), and blue vervain (Verbena hastata).

Birch bog, spiraea shrubland – seasonally flooded (MLCCS Code 52450)
One high quality Birch bog, Spiraea shrubland – seasonally flooded (3.4-acre) was also observed.

This vegetation grows on seasonally flooded soils with <30% tree cover and >50% shrub cover, dominated by bog birch (*Betula pumila*), meadowsweet (*Spiraea alba*), or steeplebush (*Spiraea tomentosa*). This type has not yet been completely described.

Poor fen (MLCCS Codes 61450 & others)
Poor fen plant communities were observed in St. Joseph as inclusions in floating mat rich fens. For the purposes of community and stormwater planning, it should be noted that poor fens are highly sensitive to excess nutrients (typically associated with watershed disturbances including development, poor logging practices, conversion of natural vegetation to row crop agriculture.

Poor fen

Poor Fen is most common in the conifer-hardwood forest zone, with scattered occurrences in the deciduous forest-woodland zone. The ground cover of the community is typically dominated by wiregrass sedge (Carex lasiocarpa) or few-seeded sedge (C. oligosperma). Mud sedge (C. limosa), creeping sedge (C. chordorrhiza), beaked-sedge (Rhynchospora alba), tufted club-rush (Scirpus cespitosus), scheuchzeria (Scheuchzeria palustris), and ericaceous shrubs are present in most Poor Fens as associates of the dominant sedges. Poor Fens have at least 50% cover by sphagnum mosses, and up to 70% cover by shrubs and small trees, most commonly bog birches and stunted tamaracks.

Poor Fen occurs on deep peat (>1.0m) that receives minimal nutrient-rich run-off from surrounding uplands. In our region, Poor Fen often occurs in the interiors of small basins that are relatively isolated from runoff. The surface water of Poor Fen is slightly acidic (pH 4.1 - 5.9) and nutrient poor ([Ca2+] <13 mg/l). Poor Fen is transitional between Rich Fen and Open Bog and commonly grades into these communities on the landscape.

There are four subtypes of Poor Fen, a Sedge Subtype, a Shrub Subtype, a Scrub Tamarack Subtype, and a Patterned Subtype.

Key-based definition: A saturated wetland on peat >0.5m deep where grasses and sedges, such as Carex lasiocarpa and C. chordorrhiza, are mostly <3mm wide and there is <50% cover by shrubs, including dwarf-shrubs. The community does not occur on the floating mat at the edge of a shallow lake and lacks the complex patterned topography of strings and flarks. The following species are NOT common: livid sedge (Carex livida), Buxbaum's sedge (C. buxbaumii), swamp lousewort (Pedicularis lanceolata), flat stem spikerush (Eleocharis compressa), spiked muhly grass (Muhlenbergia glomerata), and Kalm's lobelia (Lobelia kalmii.)

The National Vegetation Classification System description of a more narrowly defined community is given here as well: This graminoid poor fen community is found in the Great Lakes region of the United States and Canada, as well as elsewhere in central Canada, ranging from Ontario to Manitoba, south to Iowa, and east to Illinois. Stands are found in peatlands with low exposure to mineral-rich groundwater, including basin fens, shores above the level of seasonal flooding and larger peatlands. Water hydrology is saturated, and surface water is slightly acidic and nutrient poor. The vegetation is dominated by graminoids, with up to 25 percent shrub cover, and scattered trees. The dominant graminoid is Carex lasiocarpa, and typical associates include Carex chordorrhiza, Carex limosa (mud sedge), Carex oligosperma (few-seeded sedge), Rhynchospora alba, Scirpus cespitosus, and Scheuchzeria palustris. Forbs include Dragon-mouth (Arethusa bulbosa), northern bog aster (Aster borealis), grass pink (Calopogon tuberosus), rose pogonia (Pogonia ophioglossoides), pitcher plant (Sarracenia purpurea), and bog goldenrod (Solidago uliginosa). The low-shrub layer contains bog rosemary (Andromeda polifolia), bog birch (Betula pumila), leatherleaf (Chamaedaphne calyculata), Larix laricina, Salix discolor, Salix pedicellaris, and dwarf cranberry (Vaccinium oxycoccos). The moss layer is virtually continuous, and is dominated by species of sphagnum mosses including Sphagnum capillifolium, Sphagnum fuscum, and Sphagnum magellanicum. Diagnostic features include the dominance of graminoids, particularly Carex lasiocarpa, the almost continuous layer of Sphagnum peat, and few minerotrophic indicators.

Rich Fen (MLCCS Code 61460, 61461, and 61462 / 23 Total Acres documented during the NRI)

Six rich fens were documented during the NRI, totaling 23 acres.

The ground layer of rich fens is dominated by wiregrass sedge (Carex lasiocarpa), brown sedge (Carex buxbaumii), livid sedge (Carex livida), bluejoint grass (Calamagrostis neglecta), or bog reed-grass (Calamagrostis inexpansa). Although generally open communities, rich fens may have up to 70% cover of woody shrubs, especially bog birches, sage-leaved willows, and shrubby cinquefoils. Mosses range from scarce to abundant in the community. Where mosses are abundant, the dominant species are species other than sphagnum mosses (Sphagnum spp.).

Surface waters within the community are slightly acidic to circumneutral (pH 5.8 - 7.8) with moderate nutrient levels. Rich fen may grade into poor fen but is distinguishable from poor fen by its higher species diversity and by the more frequent occurrence and greater abundance of minerotrophic indicator species, including livid sedge (Carex livida), brown sedge (C. buxbaumii), swamp lousewort (Pedicularis lanceolata), spike-rush (Eleocharis compressa), marsh muhly (Muhlenbergia glomerata), and Kalm's lobelia (Lobelia kalmii).

Rich fen occurs in the conifer-hardwood forest and deciduous forest-woodland zones. There are two geographic sections of rich fen, a Transition Section and a Boreal Section. In the Boreal Section areas of northern Wisconsin and Minnesota, rich fen usually occurs on deep peat and contains characteristically northern species such as bog-rosemary (Andromeda glaucophylla) and other ericaceous shrubs, the bulrush Scirpus hudsonianus, and pitcher-plant (Sarracenia purpurea).

The sedge subtype rich fen does not occur on the floating mat at the edge of a shallow lake and lacks the complex patterned topography of strings and flarks. Rich fen – floating-mat subtype occurs on the floating mat at the edge of a shallow lake, In both community types there is no discharge of calcareous groundwater, and the following species are often common: Carex livida, C. buxbaumii, Pedicularis lanceolata, Eleocharis compressa, Muhlenbergia glomerata, and Lobelia kalmii.

Mixed Emergent Marsh (MLCCS Code 61520, 61620 / 10 Total Acres)
Eight mixed emergent marshes totaling 10 acres were documented within the study area.

Within most of the mixed emergent marsh remnants in the study area, the nonnative, invasive reed canary grass (Phalaris arundinacea) was at least present or in some cases common. This is especially true adjacent to agricultural lands that have high sediment and nutrient load in their runoff.

Mixed emergent marsh is a broad community type, encompassing all marshes dominated by species other than cattails. Bulrushes are the most common dominants, especially hard-stemmed bulrush (Scirpus acutus), river bulrush (Scirpus fluviatilis), softstem bulrush (Scirpus validus), Scirpus americanus, and Scirpus heterochaetus. Common reed grass (Phragmites australis), spike rushes (Eleocharis spp.), and (in some river backwaters) prairie cord grass (Spartina pectinata) are less common dominants.

In general, mixed emergent marsh tends to occur on harder pond, lake, or river bottoms than cattail marsh and is less likely to contain the forbs that grow on the floating peat mats present in many cattail marshes. Broad-leaved arrowhead (Sagittaria latifolia) and aquatic macrophytes are the most common non-graminoid associates. Many mixed emergent marsh species are sensitive to fertilizer run-off and other artificial disturbances, and disturbed mixed emergent marshes (especially in the Prairie Zone) tend to convert to cattail marshes or become strongly

dominated by reed canary grass (Phalaris arundinacea) or common reed grass (Phragmites australis), species that increase in abundance with disturbance.

4.2.6 Upland Grasslands

Upland Prairie
Upland prairie occurs primarily in the prairie zone, with scattered occurrences in the deciduous forest-woodland zone. It is dominated by grasses. The tall grasses, big bluestem (Andropogon gerardii) and Indiangrass (Sorghastrum nutans), are the major dominants on moist sites. Prairie dropseed (Sporobolus heterolepis) is common on both dry and moist sites. Forbs typically are abundant (but subdominant to the grasses) and may have high local diversity. Forb species composition varies with site moisture, although some forb species occur on almost all sites, moist or dry. Several low shrub or sub-shrub species are common on Upland prairie; the most characteristic is leadplant (Amorpha canescens). Taller brush and trees are absent or scattered, however brush or woodland areas may be interspersed with prairie, usually in association with topographic and aquatic features that provide protection from fire.

The most important cause of variation in species composition in prairie communities is variation in soil moisture. The local soil moisture regime is determined by slope, aspect, proximity to the water table, and soil texture. On a regional scale, variation in species composition is primarily caused by climatic variation (i.e., the westward decline in precipitation and northward decline in temperature).

Upland prairies occur on a range of landforms in the prairie zone, from nearly flat glacial lake plains to steep morainic slopes. In the deciduous forest-woodland zone, prairies occur on droughty, level outwash areas and steep south- and west-facing slopes. The pre-European settlement distribution of prairie was related to the interaction of local fire frequency with growth rates of woody species: where conditions were favorable for rapid growth, more frequent fires were necessary to maintain prairie over savanna, woodland, or forest. Fragmentation of upland prairie since European settlement has reduced fire frequency throughout the prairie and deciduous forest-woodland zones, and most prairie remnants have more brush and trees than were present in the past.

It is important to note that plantings of prairie species, typically referred to as "prairie restorations" are invariably less species rich than native prairie remnants, mimic only a small fraction of the function of a remnant prairie, and are often fraught with exotic weed species such as smooth brome (Bromus inermis) and Kentucky blue grass (Poa pratensis) among others. These prairie plantings are typically dominated by a handful of native grasses, including big bluestem (Andropogon gerardii), switchgrass (Panicum virgatum), and Indian grass (Sorghastrum nutans), with little blue stem (Schizachyrium scoparium) seldom used.

Mesic Prairie (MLCCS Code 61110 / 101 Total acres)

Nine mesic prairies and/or prairie plantings totaling 101 acres were documented.

Mesic Prairie planting (not remnant)

Mesic prairie is a dry-mesic to wet-mesic grassland that occurs mainly in the prairie zone in southern and western Wisconsin and sporadically in the deciduous forest-woodland zone. Mesic prairie is dominated by grasses. Big bluestem (Andropogon gerardii), Indiangrass (Sorghastrum nutans), and prairie dropseed (Sporobolus heterolepis) are the major native species on most sites, with little bluestem (Schizachyrium scoparium) and porcupine grass (Stipa spartea) important on drier sites, and switchgrass (Panicum virgatum) and prairie cordgrass (Spartina pectinata) common on wetter sites. The introduced grass Kentucky bluegrass (Poa pratensis) is present at most sites; it is a function of the site's disturbance history.

Forbs are abundant (but usually subdominant to grasses) and have high local diversity. Forb species-composition also varies locally with soil moisture. There is greater regional variation among forbs than among grasses. Common forb species include purple prairie-clover (Petalostemon purpureum), white prairie-clover (P. candidum), ground-plum (Astragalus crassicarpus), prairie-turnip (Psoralea esculenta), rough blazing-star (Liatris aspera), Canada goldenrod (Solidago canadensis), stiff goldenrod (S. rigida), Missouri goldenrod (S. missouriensis), prairie thistle (Cirsium flodmani), smooth aster (Aster laevis), stiff sunflower (Helianthus rigidus), Maximilian sunflower (H. maximiliani), smooth rattlesnake-root (Prenanthes racemosa), white sage (Artemisia ludoviciana), wood lily (Lilium philadelphicum), white camas (Zigadenus elegans), heart-leaved alexanders (Zizia aptera), prairie larkspur (Delphinium virescens), downy phlox (Phlox pilosa), hoary puccoon (Lithospermum canescens), tall cinquefoil (Potentilla arguta), alum-root (Heuchera richardsonii), wood-betony (Pedicularis canadensis), northern bedstraw (Galium boreale), prairie bird-foot violet (Viola pedatifida), oval-leaved milkweed (Asclepias ovalifolia), and showy milkweed (A. speciosa). Purple coneflower (Echinacea angustifolia) is common on drier sites in the western part of the community's range. Leadplant, prairie rose, sand cherry, wolfberry, and prairie willow are common low-shrub or sub-shrub species. Fragrant false indigo is common on moister sites. Trees and taller brush often occur along the margins of wetlands adjacent to mesic prairies.

Mesic prairie is a fire-dependent community. In the absence of fire, mesic prairies are often susceptible to invasion by brush and trees. In the prairie zone, mesic prairie occurs on nearly

level glacio-lacustrine and glacio-fluvial deposits, and on flat or gently rolling morainic landforms. In southeastern and, to a lesser extent, southwestern Minnesota, the glacial deposits are overlain by loess. Bedrock subtypes of mesic prairie exist in a few areas where bedrock is within about one-and-one-quarter meters of the ground surface and there are numerous small patches of exposed rock. Within the deciduous forest-woodland zone, mesic prairie usually occurs on level outwash areas or on broad, sandy river terraces.

The soils in mesic prairie are predominantly mollisols with thick, dark mineral surface layers that have high base saturation and dominantly bivalent cations. They range in texture and drainage from silty and somewhat poorly drained to sandy and somewhat excessively drained, with moderately well-drained to well-drained, loamy soils being most common. Mesic prairie grades into wet prairie on moister sites and into the hill and sand-gravel subtypes of dry prairie on drier sites. Separation of mesic prairie from other prairie types is based primarily on landform or substrate characteristics rather than on species composition, as floristic boundaries between mesic prairie and other prairie types are not well defined.

Dry Prairie – (MLCCS Code 61210, 61211, 61213 / 48 Total Acres)
Thirteen dry prairies totaling 48 acres documented.

Dry Prairie is a type of Upland Prairie, which occurs primarily in the prairie zone, with scattered occurrences in the deciduous forest-woodland zone. They are dominated by grasses. The tall grasses, big bluestem (Andropogon gerardii) and Indian grass (Sorghastrum nutans), are the major dominants on moist sites. Prairie dropseed (Sporobolus heterolepis) is common on both dry and moist sites. Forbs typically are abundant (but subdominant to the grasses) and may have high local diversity. Forb species composition varies with site moisture, although some forb species occur on almost all sites, moist or dry. Several low shrub or sub-shrub species are common on Upland Prairie; the most characteristic is leadplant (Amorpha canescens). Taller brush and trees are absent or scattered, however brush or woodland areas may be interspersed with prairie, usually in association with topographic and aquatic features that provide protection from fire.

Dry Prairie is a dry to dry-mesic herbaceous community dominated by grasses and sedges. It occurs throughout the prairie zone and sporadically in the deciduous forest-woodland zone. Dry Prairie has considerable variation in species composition, reflecting interactions among geography (namely climate), soils, and topography. In general, Dry Prairies have a greater component of Great Plains species than Mesic Prairies, especially the driest examples. Big bluestem (Andropogon gerardii) is always present in the community and usually important, but it does not achieve the dominance it typically has in Mesic Prairie. Indian grass (Sorghastrum nutans) is more limited in occurrence, generally appearing only where conditions approach mesic. Mid-height and short grasses and sedges are usually dominant in Dry Prairie. Among the more common are porcupine grass (Stipa spartea), little bluestem (Schizachyrium scoparium),

sideoats grama (Bouteloua curtipendula), prairie June-grass (Koeleria macrantha), and sun-loving sedge (Carex heliophila).

Dry prairie remnant in the Town of St. Joseph

Forb variation within the community is more pronounced. Some widespread, characteristic species are dotted blazing star (Liatris punctata), pasque flower (Pulsatilla nuttalliana), prairie golden-aster (Heterotheca villosa), stiff sunflower (Helianthus rigidus), silky aster (Aster sericeus), green milkweed (Asclepias viridiflora), stiff goldenrod (Solidago rigida), gray goldenrod (Solidago nemoralis), Missouri goldenrod (Solidago missouriensis), and narrow-leaved puccoon (Lithospermum incisum). Dry Prairies share many forb species with Mesic Prairies, including rough blazing star (Liatris aspera), buffalo-bean (Astragalus crassicarpus), tooth-leaved evening primrose (Calylophus serrulatus), silverleaf scurfpea (Psoralea argophylla), thimbleweed (Anemone cylindrica), Louisiana sagewort (Artemisia ludoviciana), prairie larkspur (Delphinium virescens), heart-leaved alexanders (Zizia aptera), purple prairie-clover (Petalostemon purpureum), hoary puccoon (Lithospermum canescens), prairie smoke (Geum triflorum), and wood lily (Lilium philadelphicum).

Three sub-shrubs--leadplant (Amorpha canescens), prairie rose (Rosa arkansana), and wolfberry (Symphoricarpos occidentalis)--typical in Mesic Prairies are also generally present in Dry Prairie. Soil-encrusting lichens and the fern-ally rock-spikemoss (Selaginella rupestris) are often common in Dry Prairie. Brush, and sometimes trees, may be present in hollows and draws. Bur oak (Quercus macrocarpa), chokecherry (Prunus virginiana), wild plum (Prunus americana), and smooth sumac (Rhus glabra) are the most widespread woody species. Other woody species more limited in distribution in the community are northern pin oak (Quercus ellipsoidalis), black oak (Quercus velutina), and hazel (Corylus americana).

Dry Prairies are maintained by fire but require less frequent fires than mesic and wet prairies because the droughty conditions within Dry Prairies slow or prevent the growth of woody species. Dry Prairie occurs on a variety of landforms, including sand dune blankets of mid-Holocene origin, glacial lake beach ridges, outwash deposits, ice-contact features (kames, eskers), morainic hills, erosional slopes in glacial drift, and bedrock-cored bluffs. Soils range from nearly pure sand with little profile development, to mollisols, although the latter have a much thinner organic-rich surface horizon than the soils of Mesic Prairie. All overlie deep glacial drift except for those of the bedrock-cored bluffs, which are formed in a thin layer of loess or residuum. Soils are well drained to excessively drained. Depending upon the degree of slope, the slope aspect, and the soil composition, Dry Prairie intergrades with Mesic Prairie.

4.2.7 Open water wetlands

Water Lily Open Marsh – (MLCCS Codes: 64111, 64113 / 15 acres)

A total of five water lily open marsh areas were documented in the inventory area.

This rooted aquatic or open marsh community occupies shallow water depressions, oxbow ponds, backwater sloughs of river floodplains, slow moving streams, ponds, and small lakes throughout the central and eastern United States, extending from Maine to Ontario and Minnesota, south to Oklahoma and east to Georgia.. It is dominated by rooted, floating-leaved aquatic species, with both submergent and emergent aquatics also present. *Nuphar lutea ssp. advena* and *Nymphaea odorata* are dominants. Other species present may include *Brasenia schreberi*, various *Potamogeton spp.*, *Polygonum amphibium*, and *Polygonum coccineum*. Submerged aquatics that are more common in the southern part of the range include *Cabomba caroliniana*, *Ceratophyllum demersum*, and *Heteranthera dubia*.

Water lily-dominated wetland in St. Joseph.

Midwest pondweed submerged aquatic wetland – (MLCCS Code 64120 / 18 acres)

There was one occurrence of Midwest pondweed/submerged aquatic wetland in the study area.

This broadly defined submerged aquatic or open marsh type is found throughout the midwestern region of the United States and adjacent Canada. Based on information in the northern parts of the Midwest, several vegetation subgroups can be recognized that may be separate associations. Subgroup A is a shallow (<50 cm), sparsely vegetated, open water marsh found on sand, or organic and mineral material trapped in rocky bottoms. Stands are often exposed to wave action and found in oligotrophic lakes. Dominant plants often have basal rosettes that are resistant to wave action. Typical species include *Elatine minima, Eriocaulon aquaticum, Gratiola aurea, Isoetes echinospora, Isoetes macrospora, Juncus pelocarpus*, and *Lobelia dortmanna*. Subgroup B is a shallow (<50 cm) open water marsh with emergent cover <25 percent and floating-leaved aquatics >25 percent. Substrate is a mineral soil (often sand), boulders, or a mixture of sedimentary peat and fine mineral soil. Stands can be exposed to waves or are in stream channels. Stands may often be dominated by a single species. Typical dominants include *Eleocharis acicularis, Myriophyllum spp., Potamogeton amplifolius,*

Potamogeton gramineus, Potamogeton praelongus, Potamogeton robbinsii, Sparganium fluctuans, and *Utricularia vulgaris*. Subgroup C includes open water marsh with emergent cover <25 percent and floating leaved aquatics >25 percent. Substrate is sedimentary peat and stands are often found in sheltered bays of lakes and streams which do not have high wave energy. Stands may often be dominated by a single species. Typical dominants include *Ceratophyllum demersum, Lemna spp. Myriophyllum sibiricum, Myriophyllum verticillatum, Potamogeton natans, Potamogeton pectinatus, Potamogeton richardsonii, Potamogeton zosteriformis, Ranunculus aquatilis, Utricularia vulgaris*, and *Vallisneria americana*.

4.2.8 Other Plant Assemblages (MLCCS Semi-natural Community Types)

There are a number of plant assemblages in the study area that do not have sufficient species composition, three-dimensional structure, or overall function to be considered natural communities as described in Minnesota's Native Vegetation: A Key to Natural Communities (MN DNR 1993). These communities were assigned community names according to the protocols of the Minnesota Land Cover Classification System. These were included in the inventory as a way of creating a more complete picture for the permanent habitats within the study area. Although they are not natural areas by definition, they possess one or several characteristics that contribute to overall function of natural areas at a landscape-level due to proximity to other natural areas, good restoration potential back to natural area, or they may represent the only large block of habitat in the area, or others.

The names assigned to these MLCCS communities are standardized, descriptive in nature, and give an indication of the structure of an area, as well as the hydrologic regime. Some examples of common semi-natural MLCCS community type names included in this report are:

Altered/Nonnative Deciduous Forest (MLCCS Code 32170/ 275 Total Acres)

There are 46 non-native forests totaling 275 acres in study area.

This upland deciduous forest classification is reserved for sites which do not meet the definition of other, native community types. In other words, oaks, aspens, balsam poplars (Populus balsamifera), paper birches, yellow birches (Betula allegheniensis), sugar maples, or basswoods are not dominant, and, if present, are only minor components of the community. Instead, boxelder (Acer negundo), green ash, and cottonwood (Populus deltoides) are typical canopy dominants, sometimes together and sometimes singly. Elms are common associates. Hackberries, aspens, oaks, and basswoods may also be present. The shrub layer is often dominated by buckthorn and Tartarian honeysuckle (Lonicera tatarica), but gooseberries (Ribes spp.) and elderberries (Sambucus spp.) can also be common. The ground layer is also

dominated by species tolerant of disturbances, including white snakeroot (Eupatorium rugosum), motherwort (Leonuris cardiaca) and garlic mustard (Alliaria petiolata). Occasionally, when higher quality forests are nearby, the understory can be more diverse.

Disturbed Deciduous Woodland (MLCCS Code 42130 and 43110 / 581 Total Acres)

There are 79 disturbed/altered woodlands totalling 581 acres in study area.

These upland areas have 10-70% tree cover. Aspens comprise <70% of tree cover, and oaks comprise <30%. Herbaceous species comprise <30% of the non-tree cover. Boxelder, green ash, and cottonwood are typical canopy dominants, sometimes together and sometimes singly. Elms are common associates. Hackberries, aspens, oaks, and basswoods may also be present. The shrub layer is often dominated by buckthorn and Tartarian honeysuckle, but sumacs, gooseberries and elderberries can also be common. The ground layer is also dominated by species tolerant of disturbances, including white snakeroot, motherwort, and garlic mustard. Occasionally, when higher quality forests are nearby, the understory can be more diverse.

Tall or Medium tall non-native grassland, with or without sparse trees (MLCCS Codes 61120, 61220, 62140, and 62220 / 411 total Acres)

There were 34 non-native grasslands totaling 411 acres documented in study area.

These are often plantings of smooth brome grass like those planted for the Conservation Reserve Program in the 1980's, or some other nonnative pasture grass. This upland grassland is generally <1m tall, with <25% tree cover and <50% shrub cover, and is dominated by non-native species, such as brome, Kentucky bluegrass, reed canary grass (Phalaris arundinacea), and spotted knapweed (Centaurea maculosa).

Saturated to Seasonally flooded nonnative dominated wetland vegetation (MLCCS Codes 32240, 52220, 52330, 52440, 61330, 61480, 61530, 61630 / 43 Acres)

There are 19 areas of non-native dominated wetland totaling 43 acres in study area.

These wetland areas are typically disturbed by one of several human activities such as draining and/or planting of nonnative grasses, as well as grazing. These areas typically occur in the same settings that native wetland communities occur (see descriptions, above) and tend to be dominated by non-natives including reed canary grass, giant reed grass, European buckthorn, narrow leaved cattail, and/or purple loosestrife, or the native, disturbance adapted species such as boxelder.

Grassland with sparse deciduous trees – nonnative dominated (MLCCS Codes 62140 / 776 Acres)

There are 57 areas of non-native dominated grassland with sparse deciduous trees totaling 776 acres.

These areas may occur in former oak savannas where the ground cover was planted to nonnative pasture grasses, be former agricultural fields planted to perennial nonnative grasses and later colonized by pioneer tree species, or dormant pasture/hay ground with scattered trees.

This upland vegetation has 10-70% cover by trees (of which <25% is conifer), where >30% of non-tree cover is herbaceous and dominated by non-native species. The ground layer is often dominated by brome or Kentucky bluegrass. Common shrubs include sumac and Tartarian honeysuckle. Almost any tree species can be found here, but elms, cottonwoods, green ashes, boxelders, and bur oaks are common.

It is important to note that while these plant assemblages do not meet the criteria to commonly be classified as remnant natural communities, however, they can still provide valuable habitat for wildlife. They can also be important in the landscape, providing buffers from developed and intensively farmed areas. In some cases, such as in some "Grassland with sparse deciduous trees" areas (which may be oaks over non-native grasslands), there may be opportunity to easily restore a natural community such as Mesic Oak Savanna that is exceptionally rare in the upper Midwest. Additional information about these and other communities is available in the MLCCS Manual.

5.0 RECOMMENDATIONS

Many of the following recommendations in this natural resource inventory report are designed to maintain or improve ecological function in the landscape; several important, inter-related ecological concepts help to guide these recommendations. To help provide a context for the recommendations, these concepts are defined below.

"Connectivity" refers to the physical proximity between natural or semi-natural area and other natural or semi-natural areas-- the degree to which natural and semi-natural areas are connected to each other, versus isolated on the landscape. The connections between areas provide often critical opportunities for wildlife movement, allowing wildlife access to and movement through sites for foraging, hunting, nesting, and shelter. Wildlife are important for dispersing seed and pollinating plants, and thus connectivity also can improve the stability of native plant species populations as well. Corridor plans, for example, are an attempt to improve connectivity.

"Fragmentation" describes the degree to which a particular natural land cover type is broken into smaller patches interspersed with other land cover types. For example, a forest can be broken in numerous smaller units by the presence of natural features such as prairie, or by built features such as driveways, lawns, or parking lots. As the distance between areas of similar habitat increase, these intervening areas can become barriers to animal movement and can also serve to isolate native plant and animal populations. These isolated populations can be more vulnerable to local extinction, and may suffer from genetic isolation if populations are too far apart to facilitate movement or, in the case of plants, cross pollination. This can be of significant concern on prairie remnants, which are often isolated by great distances from each other. Fragmentation is also important to consider for those wildlife species which require larger expanses of habitat, and which will not use small areas. As natural areas are fragmented into smaller units, these species also become vulnerable to loss and/or extinction.

"Edge effect" refers to the differences in habitat quality and environmental conditions that occur around the perimeter of a natural area versus the interior of the site. Edge habitat is much more susceptible to invasion by exotic species, and, in forest habitats, is typically both warmer and drier than the interior of the site. When natural areas become fragmented (such as by development), the amount of edge habitat increases and the amount of interior habitat decreases. As the amount of fragmentation increases, this creates more habitat for wildlife and plant species that prefer the edge conditions, and decreases the amount of habitat available for species that require interior conditions. Conservation development/cluster development and natural resource overlay districts are examples of strategies that attempt to minimize the impacts of fragmentation and the edge effect.

5.1 STRATEGIES FOR CONSERVATION

5.1.1 Conceptual Greenways/Open Space Corridors

For the purpose of this report, a greenway is defined as privately or publicly owned corridors of open space which often follow natural land or water features and which are identified by ecologists as having characteristics that can maintain or enhance the function of natural resources. However, greenways can, and often do, incorporate active or passive recreational trails, active recreational spaces (such as athletic fields or golf courses), and other public open spaces that may provide rudimentary ecological functions and values.

As a part of this project, ecologists at Stantec reviewed the 2006 Town of St. Joseph Greenways Corridors map and refined it within the context of the data from the Natural Resources Inventory. This updated conceptual greenway corridor map was developed with the following guiding elements, in rough order of priority:

- High and Moderate quality natural areas
- Semi-natural areas that occur immediately adjacent to natural areas
- Bodies of water and large wetland complexes
- Natural corridors with natural/semi-natural areas (e.g. streams, drainageways, ridges)
- Areas that would serve as logical links between natural and semi-natural areas, particularly those that have potential to be restored to native vegetation
- Existing development areas were eliminated from the existing corridor

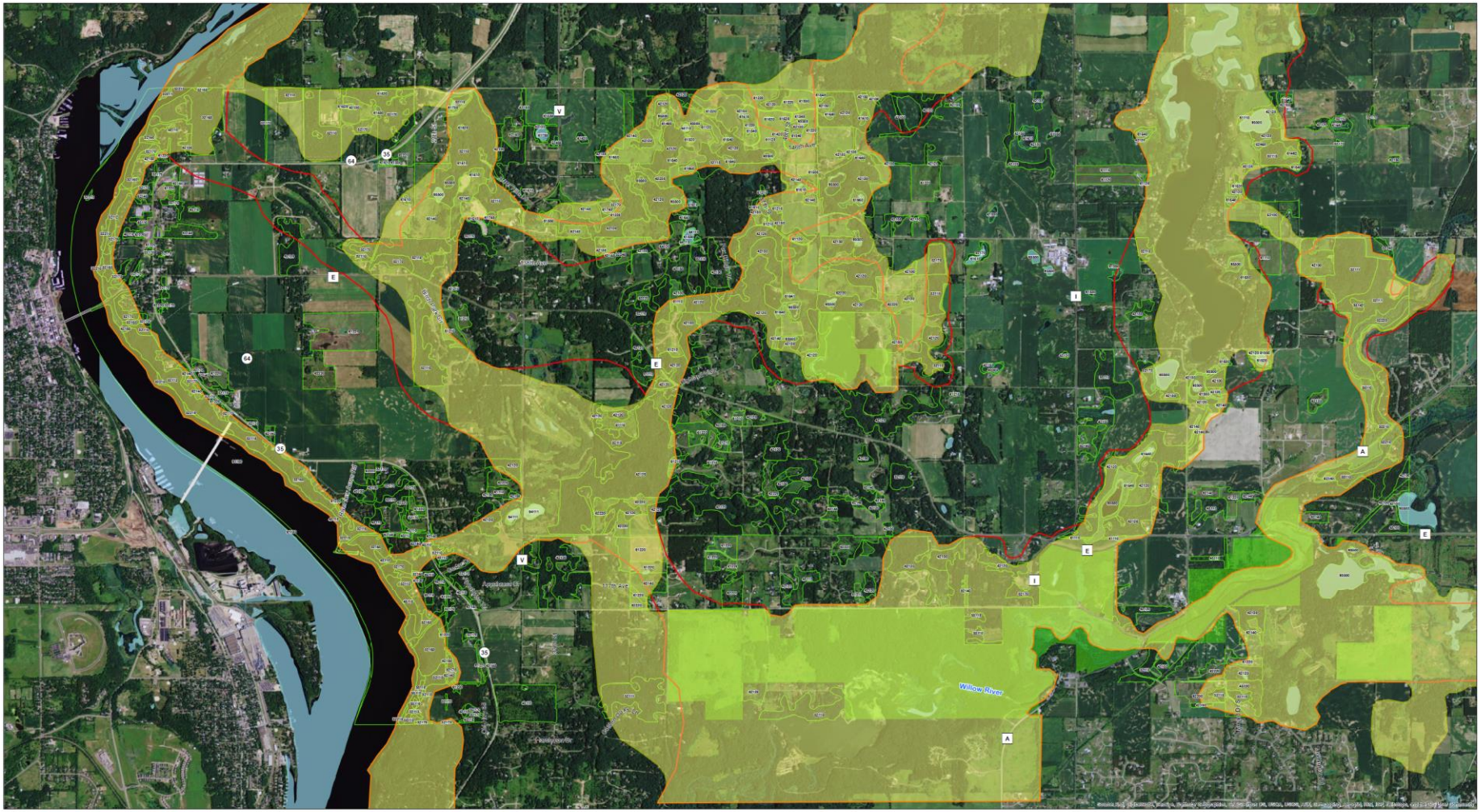
The greenways/corridors shown on the accompanying map are conceptual and broad stroke in nature. Therefore, we encourage the Town staff, along with its citizen committees and other important stakeholders to undertake a more comprehensive process of defining and locating potential greenways/corridors. Such a process will allow for public input, along with technical guidance from experienced staff in the natural resources field, ensuring long-term acceptance of a final product. During a greenway/corridor planning process, we suggest that the Town consider at a minimum the following elements:

- Public ownership – where possible, use corridors to connect large publicly owned open spaces
- Remnant natural areas – provide connectivity between natural areas, especially those of high quality and/or potential for hosting rare species.
- Incorporate semi-natural communities --into the greenway system as corridors to connect and/or buffer the highest quality remaining natural areas within the study area.
- Restore/reconstruct natural areas --to provide connectivity between natural or semi-natural areas (especially good quality sites) suitable for inclusion with greenways.

- Incorporate water resources and large permanent wetland systems within the corridor (directly or indirectly). Wetlands, lakes, and streams provide beneficial wildlife habitat and are not likely suitable for development.
- Consider opportunities for recreation and pedestrian movement through the greenway system. Co-aligning natural and recreation features should be done in a manner that minimizes negative impacts to sensitive natural areas.
- Consider educational and interpretive opportunities—High quality natural areas, unique features, and other amenities can provide an excellent resource for teaching and research, and can provide a forum for the public to develop an understanding of the local resources.

There are many opportunities to develop a viable greenways system as the Town grows over the next few decades. Water features provide significant wildlife habitat and opportunities for recreation including the St. Croix River, the Willow River, area lakes, and other features. These represent another opportunity to connect and buffer higher quality natural resources and wildlife habitat corridors within the town.

Recommendations



Natural Resources Corridors

Town of St. Joseph Comprehensive Plan 2016

0 1,500 3,000 6,000 Feet

2016 NRI Corridors
2006 Corridor
Municipal Boundary
Land Parcel Outline
Survey Included Parcels
Open Water
NWI Wetland
Parks

April 14, 2016

Draft

Stantec

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Stantec

5.1.2 Zoning and Subdivision Ordinance Review

NOTE: this section of the report will be updated based on discussion with stakeholders and review of potential options/tools.

5.1.2.1 Overview

The Natural Resources Inventory provides the Town with extensive data related to the location and quality of natural resources in the town. The Town can use this information as a basis for updating its current environmental ordinances, or for developing new approaches for protecting and enhancing its natural resources. The Town's current subdivision ordinance in the Fall of 2016 has no requirements for preserving natural resources – this is a topic for future discussion.

Future growth, changes in land use, and development of infrastructure can impact the health and function of natural communities and natural systems. The Town could use its subdivision controls to avoid or minimize these impacts, and provide incentives for developers and landowners to protect or restore natural resources.

Some potential recommendations may include topics such as the following:

5.1.2.2 Include Natural Resource Data in Preliminary Plat

5.1.2.3 Include Dedication of Natural Resources Areas as Parkland

5.1.2.4 Environmental Protection Overlay Zone

5.1.2.5 Ordinances

5.1.2.6 Use Low Impact Development Strategies

5.2 GENERAL MANAGEMENT CONCEPTS FOR ALL NATURAL AREAS

5.2.1 Maintain and Link Together Larger Tracts of Significant Natural Areas

Connectivity and size are both important factors affecting the function of natural areas. As a general rule, the larger an area is, the greater the diversity of plants and animals present. Larger natural areas are also more stable and able to withstand the impacts of naturally occurring events such as drought, insects and disease, and windstorms. For these reasons, the largest high quality natural areas should be given the highest priority for protection and management. Smaller patches of natural communities and sites with good restoration potential should then be

used to link larger areas together. Linkages should consider corridors and natural areas outside the Town as well as features within the Town.

5.2.2 Maintain Undisturbed Vegetative Buffers Around Natural Areas

A buffer of undisturbed vegetation can provide a variety of benefits. The buffer should consist of a mixture of trees, shrubs, grasses and forbs, with the mixture dependent on the specific site. Buffers reduce the impacts of surrounding land uses by stabilizing soil to prevent erosion, filtering pollutants, providing habitat areas and cover for animals, and reduce problems related to human activities by blocking noise, glare from lights and reducing disturbance. Even relatively narrow buffers of undisturbed vegetation can provide some benefits, but wider buffers will provide additional screening, water quality, and habitat benefits. Buffers will be most effective if most or all of the landowners around a natural area cooperate to make a continuous buffer. Landowners should avoid cutting vegetation, dumping grass clippings or other debris, and trampling vegetation within buffers. If a path is desired through the buffer, it should be mown or cut only as wide as is necessary for walking, and located so that it does not encourage erosion. Likewise, Town trail systems should not be located where they defeat the purpose of natural buffers.

5.2.3 Encourage the Use of Plant Species Native to the Area.

Native trees, shrubs, grasses and forbs can be planted in buffer areas or in degraded portions of natural areas. Species planted should be indigenous to the region (species lists are available from the Minnesota DNR). Plant species should be chosen based on the specific characteristics of the site including soils, slope, aspect and adjacent natural community types and quality. If possible, restore the site to the original natural community type that existed before conversion (i.e., prairie, oak forest).

5.2.4 Control Invasive Exotic Species

A number of nonnative species (sometimes called "exotics") are either currently a problem or have potential to be a problem. These include European buckthorn (Rhamnus cathartica), Tartarian honeysuckle (Lonicera tartarica), Siberian elm (Ulmus pumila), reed canary grass (Phalaris arundinacea), smooth brome (Bromus inermis), leafy spurge (Euphorbia esula), giant reed grass (Phragmites australis), Absinthe sage (Artemesia absinthium) and purple loosestrife (Lythrum salicaria), among others. For a complete list of species considered invasive by the Mn DNR, see http://www.dnr.state.mn.us/invasives/index.html

These plants invade native plant communities and can take over rapidly, eliminating native plants and leading to a loss of plant diversity and wildlife habitat. Often, disturbances from new road or home site construction serve as a pathway for introduction of these species to a natural community not yet invaded by exotic species. To control invasion by exotics, minimize

disturbance to natural areas and surrounding buffer areas as much as possible, and avoid planting or providing openings for exotics to invade. Small populations of exotics may be controlled by hand removal or through direct application of appropriate herbicides.

5.2.5 Maintain and Place Habitat Structures, Where Appropriate

Natural areas provide important habitat for many species of wildlife. Adding wood duck nest boxes and other types of nesting structures can augment habitat. Retaining or adding stones, logs, and dead trees in natural areas and buffers provides habitat for many species of reptiles, amphibians, birds and mammals. While some tree removal may be necessary for safety or for disease control (e.g., Dutch Elm disease or Oak Wilt), dead trees, both standing and down provide habitat for many animals. The books *Lakescaping for Wildlife and Water Quality* and *Landscaping for Wildlife* by Carroll Henderson are useful guides for improving habitat with plantings and structures.

5.2.6 Management Recommendations, by Community Type

Following are general management strategies for prairie, savanna, wetland and forest communities. These management strategies are intended to be generic; therefore more specific management recommendations may be necessary for individual natural communities and sites.

5.2.6.1 Prairie and Savanna Management

Prior to European settlement the health of prairie and savanna plant communities were maintained by grazing and fires, both of which probably occurred annually to every few years on most sites. Some fires occurred naturally, while most were set by Native Americans. Fires maintained the open structure of prairies by controlling the growth and spread of trees and shrubs, removing accumulated plant litter, warming the soil in spring, and returning nutrients to the soil. With the spread of agriculture and urban development, fires have been suppressed, leading to the spread of shrubs, trees, and exotic plants in prairie and savanna communities, and loss of diversity of native grasses and forbs. The activities of large and small mammals and insects also helped to maintain prairie communities by spreading seeds, burrowing to loosen soils, and pollinating prairie grasses and forbs.

In addition to the suppression of fires, prairies and savannas have been degraded by inappropriate levels of grazing, which reduces forb diversity and encourages the dominance of clonal plants (such as Canada golden rod) that are unpalatable to livestock. Other factors responsible for the decline of prairie and savanna communities include development, ill-advised tree planting, plowing, and mowing too frequently.

Less than one percent of the prairie and savanna landscapes that once existed in the Western Prairie (Star Prairie) landscape of western Wisconsin remain. The goal for managing the remaining remnants should be to maintain or restore as much of the original diversity as possible,

through re-establishing or mimicking the processes that helped to maintain these plant communities.

Prairie and savanna management should consider the following actions, as appropriate for each site:

- Remove exotic species with appropriate methods. Cutting and herbicide treatment are often most appropriate for tree and shrub species such as black locust, sumac, and buckthorn. Repeated herbicide treatments or biological controls may be needed for other exotic species such as leafy spurge and reed canary grass.

- Remedy excessive disturbance issues such as erosion or overgrazing.

- Use prescribed burns to control cool season grasses and other exotics, remove accumulated plant litter, encourage recruitment of prairie plants from the seed bed, and to maintain the health of the prairie for the long term. Burns may be scheduled annually at first, and reduced to every 3-4 years, depending on amount of litter available to successfully support a burn. Vary the burn regime over the long-term to include both fall and spring burns, and manage the timing of the burns to minimize negative impacts to ground-nesting birds. Burn only a portion of a prairie at any one time to conserve insect diversity.

- If elimination of exotics and prescribed burns over several seasons fails to restore desired diversity, consider plant community restoration through supplemental seeding of cut and burned area. Reconstructed prairies and savannas will require maintenance through infrequent mowing or prescribed burn regimes (burning is preferred over mowing when possible). Plantings should use native seed from local sources.

- Average burn frequency for the dry prairies and savannas in Study area is approximately 2-5 years, with a range of 1-10+ years. In addition, burn frequency should be greater during the first couple of years of management to control nonnative species brush.

Seasonal timing can have a profound effect on species composition. Current research information indicates that spring fires, conducted prior to April 15, tend to favor cool season grasses and summer-blooming forbs. Late spring fires (April 15 – June 1) tend to favor warm season (usually native) grasses and usually negatively affect forbs and tree/shrub species. Summer burns would mimic lightning set fires, and although these did occur, they appear to have been less of an influence on the presettlement landscape than human-set fires. Current information indicates that fall fires (after September 15) are most effective at maintaining a balance between grass and forb species and for controlling brush. There is also reason to believe, based on historical records that frequent fall burns most closely mimic the presettlement burning pattern used by Native Americans in the tallgrass prairie region of the Upper Midwest.

Mowing can also be used on sites with adequate accessibility and low risk for site disturbance. Mowing somewhat mimics the effect of grazing and can give many of the effects that prescribed burning can. Proper timing and techniques in mowing can be used to maintain a healthy balance between grasses and forbs.

Management of native communities, especially prairie, must also consider effects on the animal populations that are dependent on the community. The influence of management activities (i.e. burning) are not completely understood on animals such as butterflies and other invertebrates. To minimize the potential for devastating impacts on community obligate species and/or fire sensitive species, management should be carried out so as not to influence the entire area upon which these species depend on. An example would be not burning an entire prairie at once; this would leave refugia for the species of concern and allow for potential recolonization of burned areas.

Monitor the effectiveness of management activities, and any changes in plant and animal species in managed areas. Adjust activities as-needed based on monitoring results. This is a very important part of sound natural resource management.

5.2.6.2 Wetland Management

Wetland plant communities are frequently altered or degraded by changes in hydrologic regimes associated with agricultural or development. Farming and urban development increase the quantity and reduce the quality of runoff water entering wetlands by increasing sediments and nutrients, and by draining, filling and ditching wetlands. Agriculture and urban development also alter groundwater flows, typically diminishing flows through withdrawals for drinking water or increasing impervious surface areas. Excessive groundwater removal has been proved to de-water and alter seepage communities and fens.

Goals for wetland plant communities should include maintaining or restoring native plant communities and diversity by re-establishing or approximating original hydrology and natural processes. Some plant community types with variable hydrology, such as cattail marshes and wet meadows, may be relatively easy to restore or enhance, while more specialized communities like fens and seepage swamps can be remarkably difficult to restore if hydrologic conditions have been excessively altered.

Some strategies for maintaining or restoring quality wetlands include the following:

- When possible, maintain or restore the natural hydrologic regime, limiting “bounce” from storm events and maintaining ground water flows. Use infiltration and vegetation filtering strategies to reduce runoff from the watershed area that drains to the wetland, or use ponding or other best management practices to moderate storm flows, and remove sediments and nutrients from stormwater before it enters the wetland.

- Remove or control invasive exotic species. Repeated herbicide treatments may be necessary to control reed canary grass and purple loosestrife. Biological controls, such as weevils, have also shown promise recently in managing purple loosestrife. Hand removal of exotics by digging may be effective in areas where invasions are limited. In forested wetlands, buckthorn removal may be required, using cutting and herbicide treatments. Use herbicides that are licensed for use in wetland areas.
- Establish a vegetative buffer around wetland areas, to filter runoff, slow stormwater flows, and provide essential upland habitat needed by many species that use both wetlands and uplands as habitat during their lifecycles. Prohibit cutting, dumping or other alteration of buffers.
- Plant native wetland and upland plants in constructed wetlands and buffers. Plantings should use locally native species, and may include aquatic plants, grasses, forbs, shrubs and trees to provide structural diversity and improve habitat.
- Maintain dead and fallen trees or add nesting structures if desired to improve wildlife habitat.
- Monitor management efforts and revise strategies as needed to meet goals.

5.2.6.3 Forest Management

Most of the forest areas in the area have been grazed at varying levels, and in some cases were logged. Forest communities are often associated with ravines and steep slopes and are therefore sensitive to the impacts of erosion and sedimentation. In addition, roads and trails frequently fragment forest communities. All of these activities encourage invasion by aggressive exotic species-particularly buckthorn and Tatarian honeysuckle. Fragmentation also reduces the value of the forest community for wildlife species such as migratory songbirds that require "interior" forest areas that are well buffered from human disturbances.

Following are management strategies for maintaining and restoring the diversity and health of forest communities:

- Avoid cutting trees in areas containing exotic shrub species. Where cutting trees is necessary, cut exotic shrubs and treat with a basal application of an appropriate herbicide. Where developments are proposed within or adjacent to forest areas, removal and treatment of exotic shrubs could be incorporated into the overall site preparation process.
- Slow growing and mast-bearing trees such as oak and hickory should be given particular protection due to their high value to wildlife. Other trees through their seeds or buds also serve as important food sources for wildlife; these include maples, elms, aspens, basswood and birch.

- Large trees, particularly those containing cavities, should not be removed unless absolutely necessary. Dead standing and down trees should likewise not be removed unless they present a safety hazard. While humans perceive a forest with dead trees as messy, dead trees are important because they harbor a high diversity of plants and animals throughout their decomposition cycle. (Note that sanitation cuts may be necessary where oak wilt or Dutch elm disease is present)
- Encourage removal of weedy and/or exotic tree species such as Siberian elm, Norway maple, Russian olive, black locust and similar. Plant higher value native trees and shrubs back into forests following removal.
- Oak forest communities are adapted to fires and can often be improved through prescribed burns. Prescribed burns will generally increase diversity of grasses and forbs, encourage oak seedling germination and kill back exotic or invasive shrub species. Where oak forest communities occur adjacent to prairie and savanna communities, fires from prescribed burns should be allowed to burn into the oak forest. Burn more frequently in early years and less frequently as exotic species are controlled. Include both spring and fall burns in the management regime.
- Maple-basswood and lowland hardwood forest communities are generally not adapted to fires and should not be burned, or burned very infrequently (every 20+ years).

Oak wilt is of particular concern in the region. It is spread by construction activity or other root/top damage during the growing season. Canopy openings created by oak wilt can augment invasion by exotic species if not replanted or managed to restore oak woodlands. Oak trees should not be cut, pruned or injured between April 15 and July 1 of each year. Exposed roots injured by construction activities facilitate the spread oak wilt infection. A vibratory plow can be used to sever roots along the edge of any construction area prior to beginning work. This can reduce the potential for transfer of the oak wilt fungus between individual trees through grafted roots and allow for regeneration at the point of cutting. If vibratory plowing is used, the disturbed ground should be restored to pre-plow contours and planted with an appropriate native seed mix to prevent invasion by nonnative shrubs and weeds. Tree protection zones should be fenced to prevent entry or compaction by construction equipment. Soil and construction materials should not be stored within the tree protection zone, as this can result in contamination.

APPENDIX

Appendix A – GLOSSARY OF TECHNICAL TERMS

Acre-Foot: Volume of water that would cover an acre of land to a depth of one foot (43,560 cubic feet).
Alluvium Material:, such as sand and gravel, deposited by running water. River terraces and outwash plains are examples of landforms composed of alluvium.
Barrens: Usually refers to an area with sparse vegetation or stunted plants, caused by harsh growing conditions such as infertile, droughty, or thin soils; also, a plant community that has very sparse cover or is composed of stunted plants.
Bedrock: Any solid rock exposed at the earth's surface or covered by unconsolidated material such as till, gravel, or sand.
Best Management Practices: Methods, measures, or practices to prevent or reduce water pollution, including but not limited to structural and non-structural controls, operation and maintenance procedures, and scheduling of specific activities. Acronym is BMPs.
Blowout: An area, on a dune or other sand deposit, where wind has eroded a bowl-shaped hollow in the sand. Blowouts generally are sparsely vegetated.
Bluegreen algae: A type of algae whose population often increases dramatically at high nutrient concentrations in lakes. They can form objectionable surface scums, cause taste and odor problems, and secrete toxins poisonous to warm-blooded animals.
Bog: A wetland composed of a layer of acidic peat on which grows a specialized group of herbs and low shrubs. Bogs are distinguished from closely related poor fens by extremely nutrient-poor conditions and the absence of most of the minerotrophic species that occur in poor fens.
Bounce: In Hydrologic references, the rise in level in a wetland or lake resulting from a rainstorm event. The difference in elevation between the normal water elevation and the peak water elevation of a pond for a given size runoff event.
Brushland: An upland plant community composed of shrubs and tree sprouts.
Buffer strip: A band of un-maintained, preferably native, vegetation left along the edge of a stream, lake or wetland to filter runoff and/or stabilize the shoreline Calcareous Describes a soil or substrate that contains a significant amount of calcium carbonate.
Canopy: Aerial branches and leaves of terrestrial plants; generally the tallest layer of foliage in a plant community.
Chlorophyll: a The primary photosynthetic pigment in plants, a measure of the algal biomass in lakes
Colluvium: A deposit of rock and soil at the base of a cliff or slope, formed by gravitational action.
Colonial nesting birds: Species that nest in colonies (groups or aggregations), either with others of the same species or in mixed-species aggregations.
Cover: The proportion of the ground shaded when the living plant canopy is projected vertically downward; also a general term used to describe any component of the habitat that conceals animals from view.
DBH: (diameter at breast height) – a standard measure of tree trunk diameter taken approximately 4.5 feet above the ground level.
Dominant: Describes a plant species that shapes the character of a community by virtue of its size, abundance, dense shade, or effects on soils. Dominant species generally influence the presence, growth, and distribution of other plant species in the community.
Degradation: A decrease in quality.

Detention Pond: A pond designed to catch and temporarily store runoff before discharging the water downstream. The volume of the pool of standing water in the pond is important in determining how effective the pond will be in treating the incoming stormwater.
Dissolved Oxygen (D.O.): Oxygen that is dissolved in water. Fish and other water organisms need oxygen for respiration to survive. Depletion of oxygen from water can occur as a result of chemical and biological processes, including decomposition of organic matter.
Downcutting: The process by which a river or stream erodes and lowers its bed, eventually resulting in the formation of a valley or ravine.
Drift (glacial): Rock material, such as boulders, gravel, sand, silt, or clay, removed from one area and deposited in another by glaciers. Drift includes material deposited directly by glacial ice, such as till, as well as material deposited indirectly, such as outwash.
Ecosystem: The interacting group of physical elements (such as soils, water, etc.), plants, animals, and human communities that inhabit a particular place.
Emergent: Describes a plant capable of surviving indefinitely with its root system and lower stem in water and its upper stem above water (e.g., cattails).
Empirical : Based on experiment and observation; used to describe water quality models which are developed from measured data.
End moraine: A typically hilly landform composed of material deposited at the margin of a glacier.
Ephemeral habitat: A temporary habitat created by low intensity, short-lived fluctuations in environmental factors.
Epilimnion: Upper warm layer of a lake during thermal stratification.
Esker: A long, often serpentine hill or ridge composed of sand and gravel deposited by meltwater streams flowing in a channel in a decaying ice sheet.
Eutrophication: A natural process caused by the gradual accumulation of nutrients and consequent increased biological production, and resulting in the slow filling in of a basin with accumulated sediments, silt, and organic matter. Man's activities can increase the rate at which eutrophication occurs.
Eutrophic Lake: A nutrient rich lake; usually shallow, green due to excessive algae growth and with limited oxygen in the bottom layer of water.
Exotic species: A species that has been introduced to an area by humans or that is present in the area as a result of human-caused changes. (same as non native species.)
Export Coefficient: An estimate of the expected annual amount of a nutrient carried from its source to a lake.
Fen: a wetland community composed of sedges, grasses, forbs, and sometimes shrubs, that develops on peat in shallow basins.
Floating-leaved plants: Aquatic plants that root on lake, pond, or river bottoms and have leaves that float on the water surface at the end of long, flexible stems (e.g., water-lilies).
Floodplain: A flat area adjacent to a stream or river channel, created by erosion and deposition of sediment during regular flooding. Signs of 1flooding include debris caught in trees and ice scars at the bases of trees.
Flushing Rate: The number of times per year that a volume of water equal to the lake's volume flows through the lake.
Forb: A general term for broad-leaved, herbaceous plants.
Forest: A plant community with a nearly continuous to continuous canopy (70 to 100% cover) of mature trees.

Forest-grown tree: A tree that matured within a closed-canopy forest. Forest-grown trees tend to have narrow crowns and tall, straight trunks with few lower limbs.
Graminoid: An herbaceous plant with linear, "grass-like" leaves that typically are oriented vertically. Graminoids include grasses, sedges, and rushes.
Greenway or Greenway Corridor: A linear open space area, usually composed of natural vegetation, or vegetation that is more natural than surrounding land uses. May include paths or recreational trails.
Ground layer: A vegetation layer, mostly less than 3 feet tall, of grasses, forbs, and woody plants.
Ground moraine: A broad and level or gently undulating landform composed of material that was deposited underneath and sometimes at the margin of a glacier as the ice sheet melted; also referred to as a till plain.
Grove: A general term for a patch of trees less than 2 acres in area.
Grub: A tree or shrub whose aboveground shoots are repeatedly killed by fire or browsing but whose root system survives and continues to send up new shoots. The root system of a grub may be several hundred years old; the above ground shoots are generally much younger.
Habitat: The locality, site, and particular type of local environment in which plants, animals, and other organisms live.
Herb: A plant lacking a persistent above ground woody stem. Herbs include broad-leaved flowering plants, ferns, grasses, sedges, and others.
High Water Level (HWL): The peak water surface elevation in a ponding area as a result of a specific runoff event. Once the peak is reached, the pond water elevation eventually returns to its normal (standing) water level.
Hydrology: The science and study of water in nature, including its circulation, distribution, and its interaction with the environment.
Hydrophyte: A plant adapted to growing in water or on wet soils that are periodically saturated and deficient in oxygen.
Hypolimnion: Lower cooler layer of a lake during thermal stratification.
Ice block lake: A lake that occurs in a depression that was formed when a block of glacial ice was buried or surrounded by till or outwash sand, and then melted.
Ice scar: A scar on a floodplain tree caused by abrasion by ice floes during spring flooding.
Impervious Surface A surface that is impermeable to the downward seepage of water; e.g., pavement and roof tops.
Inflorescence: An arrangement of flowers on a plant, such as in a cluster or along a stalk.
Lacustrine: Refers to features (such as sediments, landforms, plant communities, or animal communities) that were formed by or are associated with a lake.
Landform: A land feature, such as plain, plateau, or valley, formed by a particular geologic process.
Life form: Characteristic structural features and growth pattern of plant species (e.g., broad-leaved deciduous shrub).
Litter layer: Relatively undecomposed organic matter and debris on top of soil layer.
Loading: The amount of a pollutant or other substance delivered to a lake, usually expressed as a weight per unit time (i.e. pounds per year). The loading of a given constituent to a receiving water is a function of the volume of incoming water and the concentration of the constituent in the incoming water.
Loess: Fine material consisting predominantly of silt with fine sand and clay. Loess is often deposited by wind.
Macrophytes: Higher plants which grow in water, either submerged, emergent, or floating. Reeds and cattails are examples of emergent macrophytes.

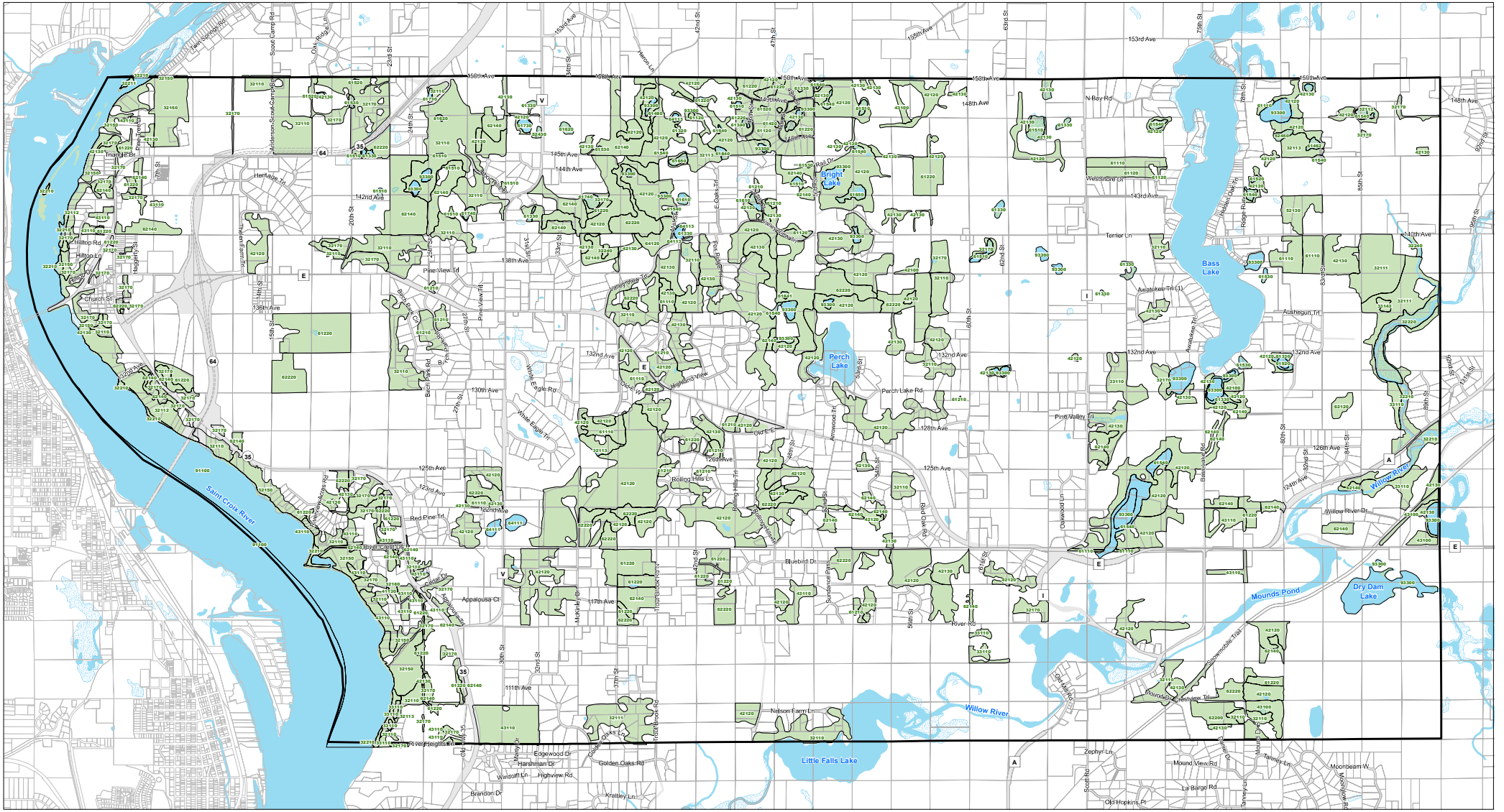
Marsh: A plant community of shallow wetland basins, dominated by herbaceous, emergent aquatic plants such as cattails and bulrushes. Marshes usually have standing water throughout the growing season.
Meltwater: Water released by melting glacial ice.
Mesic: A general term describing upland habitats that are intermediate between wet and dry; also used to describe plants and plant communities that occur in mesic habitats.
Mesotrophic Lake: Midway in nutrient levels between eutrophic and oligotrophiclakes.
Microhabitat : A small, specialized habitat.
Mineral soil: A soil composed mostly of inorganic matter, including clay, silt, sand, and gravel. Mineral soils usually have less than 20% organic matter but may have organic surface layers up to 12 inches thick.
Minerotrophic: A general term describing wetlands with nutrient levels that fall between very low (such as in bogs) and very high (such as in seepage meadows).
Mitigation: Actions taken to reduce an impact. Water quality mitigation measures can be non-structural (such as street sweeping, regulation of fertilizer use, and creation/protection of natural buffers to filter runoff) or structural (such as installation of detention basins). Properly designed detention basins are among the most effective and reliable measures for mitigating the water quality impacts of urban developments.
Model: A mathematical representation of an event or process.
Moraine: Rock and mineral debris deposited directly by glacial ice. Moraines most often consist of unsorted rock and mineral particles.
Muck: A dark-colored organic soil of highly decomposed plant material in which the original plant parts are not recognizable.
MUSA (Metropolitan Urban Service Area): The area designated by the Metropolitan Council of the twin cities area to receive urban services such as central sewer, urban streets, etc.
Native habitat A habitat formed and occupied by native plants and animals and little modified by logging, farming, ditching, flood control, and the like.
Native species: A species that occurs naturally within a given region.
Native vegetation: Vegetation composed of native plants, that has been little modified by human activities such as logging, farming, ditching, or the introduction of nonnative species.
Natural area: Geographic area in which the dominant plants and animals are native species.
Natural community: An assemblage that tends to recur over space and time of native plants and animals that interact with each other and with their abiotic habitats in ways that have been little modified by nonnative plant and animal species. Natural communities are classified and described according to their vegetation, successional status, topography, hydrologic conditions, landforms, substrates, soils, and natural disturbance regimes (such as wildfires, windstorms, normal flood cycles, and normal infestation by native insects and microorganisms).
Nonnative species: A species that has been introduced to an area by humans or that is present in the area as a result of human-caused changes.
Non-Point Source Pollution: Refers to pollution other than that caused by discharge of pollutants through a pipe from a closed system to a receiving water. Pollution caused by runoff from farm fields or paved streets are examples of this non-point pollution.
Normal Water Level (NWL): The elevation of the surface of the standing water pool within a pond or wetland. Generally, the NWL is the elevation of the bottom of the primary outlet pipe or overland flow channel. Nutrient Budget: An itemized estimate of nutrient inputs and outputs (usually for a period of one year), taking into account all sources and losses.
Nutrient Loading: The input of nutrients to a lake
Nutrient Trap: A type of pond or wetland that is effective at removing nutrients from water.

Nutrients Elements such as phosphorus and nitrogen that are required for plant growth. When excess amounts are transported in stormwater they may encourage excessive algae or other plant growth in receiving water bodies.
Oligotrophic Lake: A relatively nutrient-poor lake, usually clear and deep with bottom waters high in dissolved oxygen.
Open-grown tree: A tree that has matured in an open setting, such as a prairie or savanna. Open-grown trees tend to have broad crowns and thick, spreading lower limbs.
Organic soil: A soil in which the upper surface layers contain more than 25% organic matter.
Outcrop: Bedrock that projects above the soil.
Outwash plain: A plain formed of sorted and stratified material-such as layers of sand and gravel-carried from an ice sheet and deposited by glacial meltwater.
pH: A measure of the acidic or basic nature of the water; it is defined as the logarithm of the reciprocal of the hydrogen-ion concentration in moles/liter.
Parent material: The weathered rock or partly weathered soil material from which topsoil develops.
Parts per billion (ppb): a unit of concentration, sometimes expressed as micrograms per liter (ug/l).
Parts per million (ppm): a unit of concentration, sometimes expressed as milligrams per liter (mg/l).
Peat soil: A dark brown or black organic soil consisting largely of undecomposed or slightly decomposed plants. Peat soils usually form where persistent excessive moisture slows or inhibits the decay of plant material.
Persistent vegetation: Wetland vegetation formed by emergent hydrophytic plants with stems that normally remain standing until the beginning of the following growing season (e.g., cattails and bulrushes).
Phosphorus: A nutrient essential to plant growth. Phosphorus is the nutrient most commonly limiting plant growth in lakes.
Phosphorus Export: The amount of phosphorus carried off of a given area of land by stormwater.
Phytoplankton: Open water algae; it forms the base of the lake's food chain and produces oxygen.
Prairie: An upland plant community composed of grasses and forbs. Prairies generally lack trees; shrubs, if present, are not prominent.
Presettlement:A term used for convenience to denote the time period before Euro-American settlers moved into the Region. The Region was actually settled by American Indians for thousands of years before European-Americans arrived.
Range (geographic): The limits of the geographic distribution of a species or group.
Rate Control: A term that refers to controlling the rate at which water is discharged from a watershed. Rate control is often accomplished by creating ponds-either by excavation or berming - to temporarily store runoff, then discharging the stored water at a slower rate to downstream areas. Further reductions in the rate at which water is released from a pond can be accomplished by reducing the size of the outlet, such as through installation of a wall in the outlet structure with a hole (orifice) through it.
Reintroduced species: Species that had been eliminated from areas where they occurred historically and were later released back into the area by humans.
Remnant: A portion or fragment of a natural community that has survived while the rest of the community has been destroyed by logging, urban development, clearing of land for cultivation, and other human activities.

Residence Time: The amount of time it takes for water flowing into a lake to equal the lake volume. The shorter the residence time, the more incoming water the lake is receiving relative to its volume.
Rhizome: A horizontal underground plant stem.
Savanna: An upland plant community formed of prairie herbs with scattered trees or groves of trees. The canopy cover of trees in a savanna is generally between 10 and 70%.
Secchi Disc: A device measuring the depth of light penetration in water, typically a 9-inch, white circular plate attached to a rope. Used to measure water transparency.
Sedge: Any of a number of grasslike plants of the family Cyperaceae.
Sedimentation: The process by which matter (usually soil particles) settles on a substrate following transport by water, wind, or ice.
Seepage: The slow, diffuse oozing of groundwater onto the earth's surface.
Shallow Lake: Lakes with mean depth of less than 10 feet
Shrub layer: A vegetation layer, usually less that 6 feet high, of shrubs and tree seedlings.
Shrub swamp: A wetland community dominated by a nearly continuous to continuous canopy (70 to 100% cover) of shrubs, such as willows and alders.
Subcanopy: A vegetation layer, composed of patches of individuals of approximately equal height, that is lower than the canopy layer; often refers to a layer of saplings, tall shrubs, or small trees between 6 and 35 feet high.
Submergent: Describes an aquatic plant that grows entirely under water.
Substrate The surface layer of organic or mineral material-such as till, outwash, or bedrock-from which the soil is formed.
Succession: The change in vegetation over time.
Swale: A broad, shallow depression in a till plain or broad river plain.
Swamp: A wetland community with a fairly continuous to continuous canopy of shrubs or trees, such as speckled alder, black ash, or tamarack. Swamps generally occur in shallow basins or wet depressions.
Talus: Rocks and other coarse mineral debris that accumulate at the base of a cliff or steep slope.
Terrace: A sandy and gravelly alluvial plain bordering a river. Terraces represent former river floodplains, left stranded when the river level dropped because of channel downcutting or decreased flow. Terraces are ordinarily level or nearly level and are seldom flooded.
Till: Unstratified and unsorted material deposited directly by a glacier. Till consists of clay, sand , gravel, or boulders mixed in any proportion.
Till plain: A broad and level or gently undulating landform composed of material that was deposited underneath and at the margin of a glacier as the ice sheet melted; also referred to as a ground moraine.
Total Phosphorus (TP): A measure of all of the different forms of phosphorus in water. Includes phosphorus dissolved in the water, suspended or incorporated in algae or other organisms.
Total Suspended Solids (TSS): Particulate material which floats in or is carried along in water (e.g., algae, soil particles).
Transitional habitat: A habitat present between two adjacent natural communities (for example, the edge of a forest along a wet meadow). Transitional habitats often have features that set them apart from the habitats formed by either of the adjacent communities.
Trophic State: The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, or depth of light penetration.
Understory: The vegetation occurring below the canopy in a plant community.

Vine: A plant with a long, weak stem that grows along the ground or climbs on other vegetation for support.
Watershed: The area of land draining into a specific body of water.
Water Transparency: A measure of the clarity of water. The depth at which an object can be seen in water.
Wetland Habitats: where the soil is saturated or covered with water for part of the year.
Woodland: A wooded habitat characterized by an interrupted tree canopy; also used as a general term to describe any tract of land with trees growing on it.
Woodland-brushland: An upland plant community composed of a patchy canopy (10 to 70% cover) of mature trees and a dense understory of shrubs, tree shoots, and saplings. Usually the trees occur in scattered groves with dense thickets of brush between them.

Appendix B - Natural Resource Inventory Area Codes



Natural Resources Inventory Area Codes

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Municipal Boundary
Natural and Semi-Natural Areas
Right-of-Way
Open Water
NWI Wetland

0 1,500 3,000 6,000 Feet

Stantec

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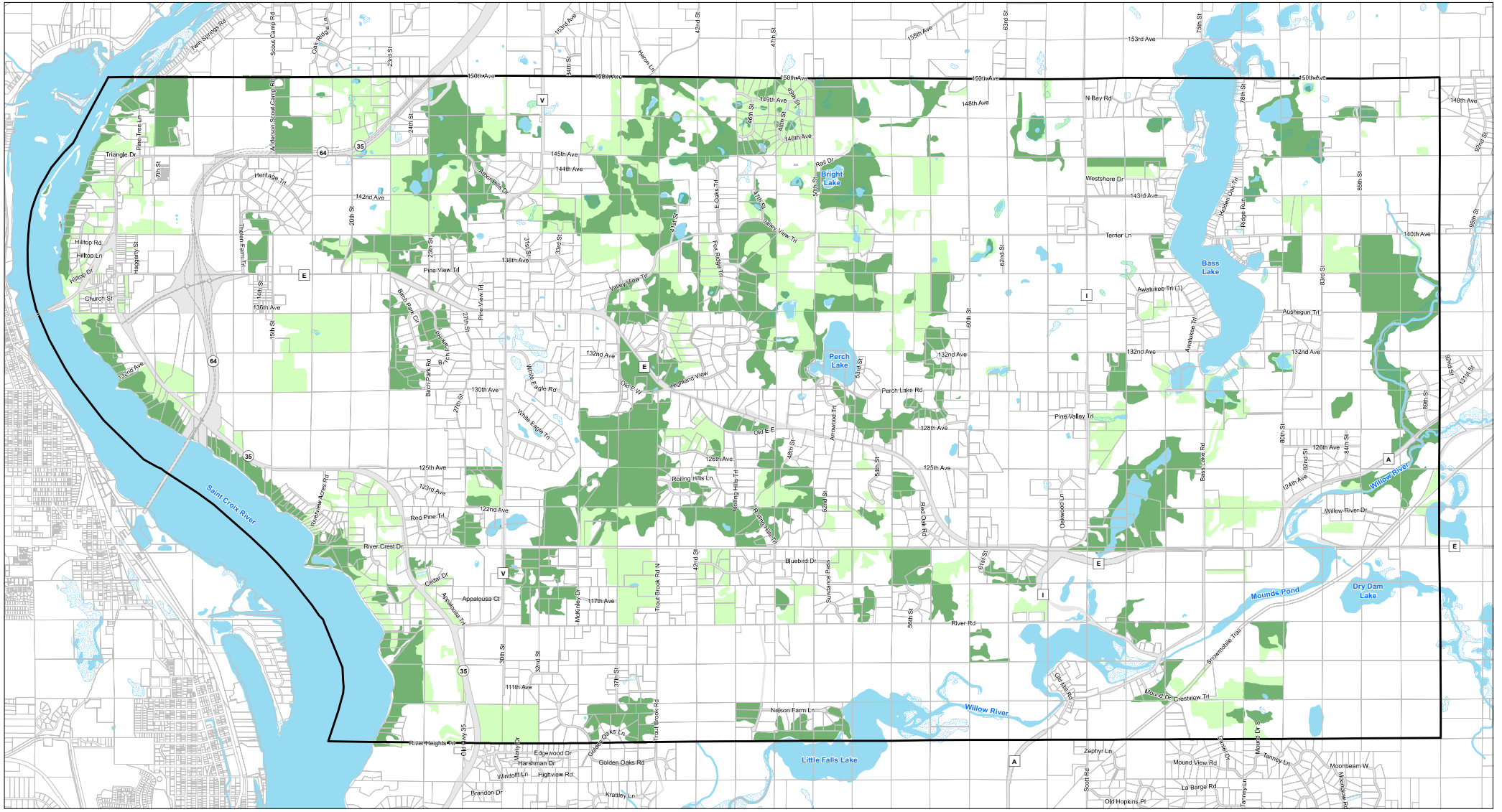
Appendix C - Natural and Semi-Natural Areas



Natural Resources Inventory Natural and Semi-Natural Areas

Town of St. Joseph Comprehensive Plan 2016

September 20, 2016

Stantec

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Appendix D - MLCCS Codes Used in the Town of St. Joseph NRI

The Classification System
Land Cover Coding Schemes

The MLCCS is a typical hierarchical classification system. The organization of the numerical and alphanumerical codes reflect this multi-level nested hierarchy.

Numerical codes

The numerical codes use a five digit number. The digits are organized left to right and each digit represents a level of the classification system; the first digit represents level one, the second digit represents level two, etc.

The five levels of the MLCCS are represented by a five digit number:

level one	level two	level three	level four	level five
first digit	second digit	third digit	fourth digit	fifth digit

Examples:
30000 - Interpreted to the first level, thus represents *Forests*
32000 - Interpreted to the second level, thus represents *Deciduous forest*
32100 - Interpreted to the third level, thus represents *Upland deciduous forest*
32110 - Interpreted to the fourth level, thus represents *Oak forest*
32113 - Interpreted to the fifth level, thus represents *Oak forest dry subtype*

Alphanumerical codes

The alphanumerical codes use a unique combination of numbers and letters (characters) for each level. The unique character clusters for each level are separated by periods.

level one	level two	level three	level four	level five
arabic number	two lowercase letters	two uppercase letters	three characters	three characters

Examples:

3	Interpreted to the first level, thus represents *Forests*
3.de	Interpreted to the second level, thus represents *Deciduous forest*
3.de.UP	Interpreted to the third level, thus represents *Upland deciduous forest*
3.de.UP.nOA	Interpreted to the fourth level, thus represents *Oak forest*
3.de.UP.nOA.nOD	Interpreted to the fifth level, thus represents *Oak forest dry subtype*

See "Definitions of the alphanumeric characters" insert link

APPENDIX K: ST. CROIX COUNTY PLANS AND ZONING AUTHORITY

St. Croix County has zoning authority over the Town of St. Joseph. These regulations and plans are adopted by the County and are or can be in effect in the Town of St. Joseph; no town action is required.

The County has adopted the following plans:

- St. Croix County, Wisconsin 2012-20135 Comprehensive Plan
- SCC Bike and Pedestrian Plan
- SCC Outdoor Recreation Plan
- SCC Natural Resource Plan
- SCC Land and Water Conservation Plan
- SCC Farmland Preservation Plan

The County has adopted the following ordinances:

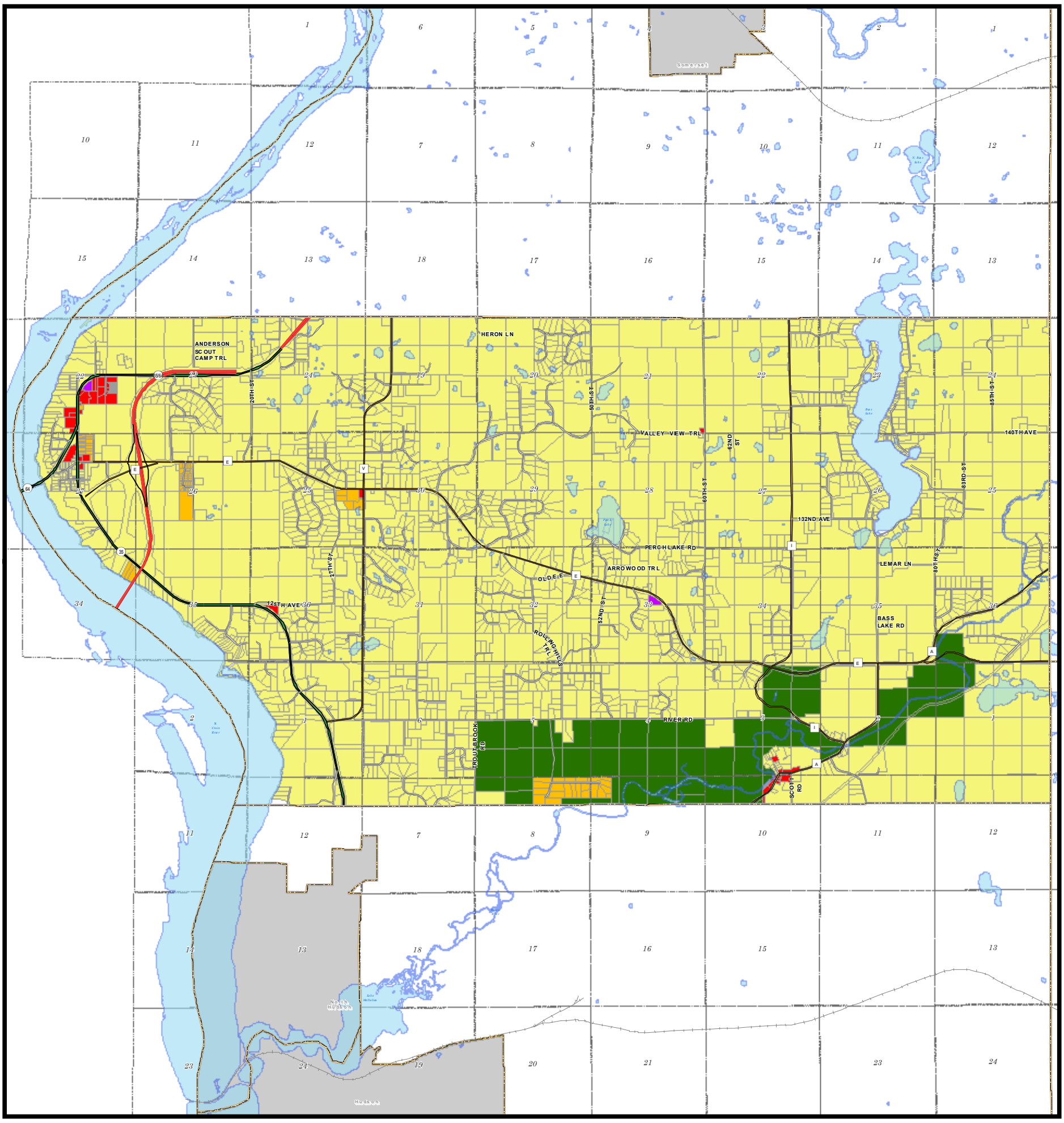
- St. Croix County Code of Ordinances Chapter 17 Zoning (joint authority for general zoning)
- Floodplain Overlay Zoning
- Shoreland Zoning
- Land Division Ordinance
- Sanitary Ordinance
- Nonmetallic Mining Ordinance Regulations
- Animal Waste Storage Facilities Ordinance
- Municipal Solid Waste: Reduction, Recovery & Recycling Solid Waste and Recycling Ordinance
- Erosion Control/Stormwater Management Regulations (within Zoning and Land Division Ordinance)

The County's zoning map is included on the following page for reference.

Official County Zoning Map
St. Croix County, Wisconsin

TN ST JOSEPH

T29 & 30N, R19 & 20W



Zoning Districts

- Residential
- Rural Residential
- Commercial
- Industrial
- Conservancy
- Ag-1
- Ag-2

Contact the Planning & Zoning Department for floodplain, shoreland, and wetland zoning.

N W E S

0 0.25 0.5 1 Miles

St. Croix County Community Development Department
1101 Carmichael Rd.
Hudson, WI
Phone: 715.386.4680
Email: pz@co.saint-croix.wi.us

This official county zoning map is a visual representation of the zoning district boundaries as created and amended by the St. Croix County Board of Supervisors through county zoning ordinance amendments on file with the St. Croix County Clerk.
9/2/2014. Amended 9/1/2015