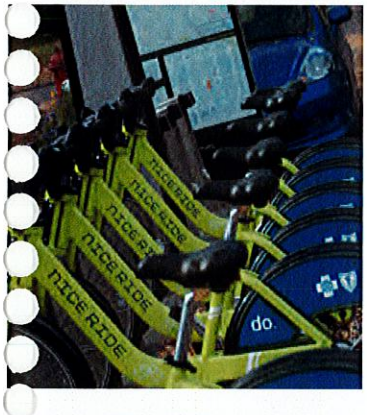
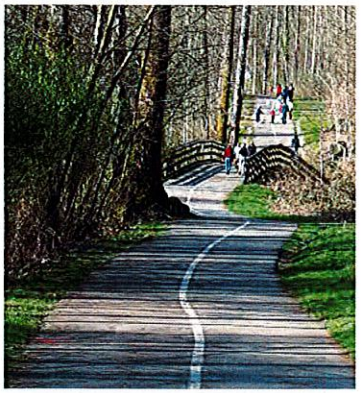
Village of Fox Lake

Greenways and Bikeways Plan

Final Plan
March 2013





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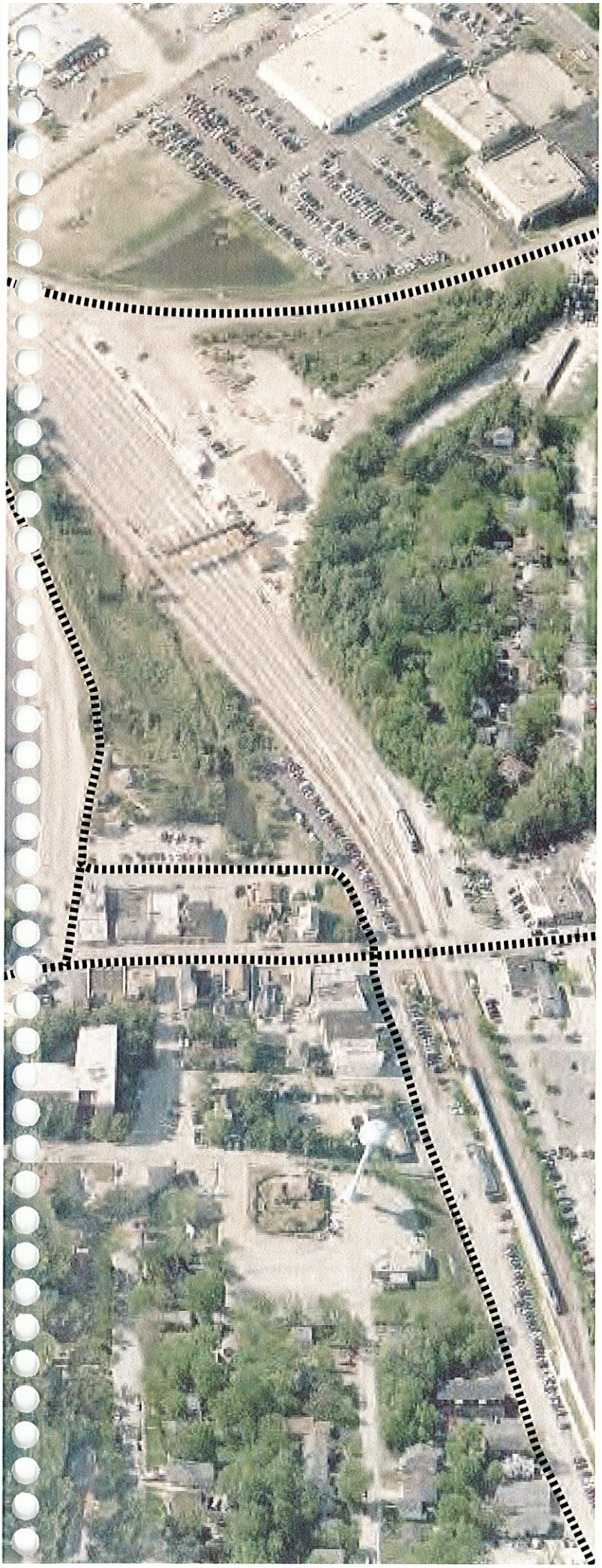

Acknowledgements

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Part 1 Existing Conditions

Fox Lake Greenways and Bikeways Plan

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1.1 Introduction

The Village of Fox Lake, located in northern Illinois near the Fox River and the Chain of Lakes, has a population of 10,579. It is located on three natural lakes and connected to seven others. Fox Lake sits at the heart of one of the busiest inland recreational waterways in the country. As a resort community located one hour from Chicago, Milwaukee, and Rockford, the Village of Fox Lake nearly triples in population during the summer months as visitors flock to the area's lakes, parks, and preserves.

Purpose

The *Greenways and Bikeways Plan* (Plan) seeks to build upon the assets that the Village currently possesses – outdoor recreation, waterway access, convenient location within the metropolitan area – to advance Fox Lake to greater status as prime destination for recreation as well as enhancing its transportation network for bicycling.

Planning Area

Fox Lake and its neighboring municipalities are shown in **Figure 1.1: Fox Lake Area Map**. The map also shows the Village's municipal planning area which serves as the study area for this plan. The planning area surrounding Fox Lake, also known as extraterritorial jurisdiction, is determined by state statute which states that the planning area is:

> *The corporate limits and contiguous territory not more than one and one-half miles beyond the corporate limits...for municipalities that have adopted official plans...In the absence of such agreement, the jurisdiction of any one of the corporate authorities shall extend to a median line equidistant from its boundary and the boundary of the other corporate authority nearest to the boundary of the first corporate authority.*[1]

The planning area is established by law and may not reflect actual future municipal boundaries. Generally, this means that the Village should consider the potential land use and transportation impacts within the planning area when making plans. The planning area allows local governments to make land use and transportation planning decisions surrounding the corporate limits under the expectation that this unincorporated area may, at some point in the future, be under the jurisdiction of a municipality.

1 65 ILCS 5/11-12-5.

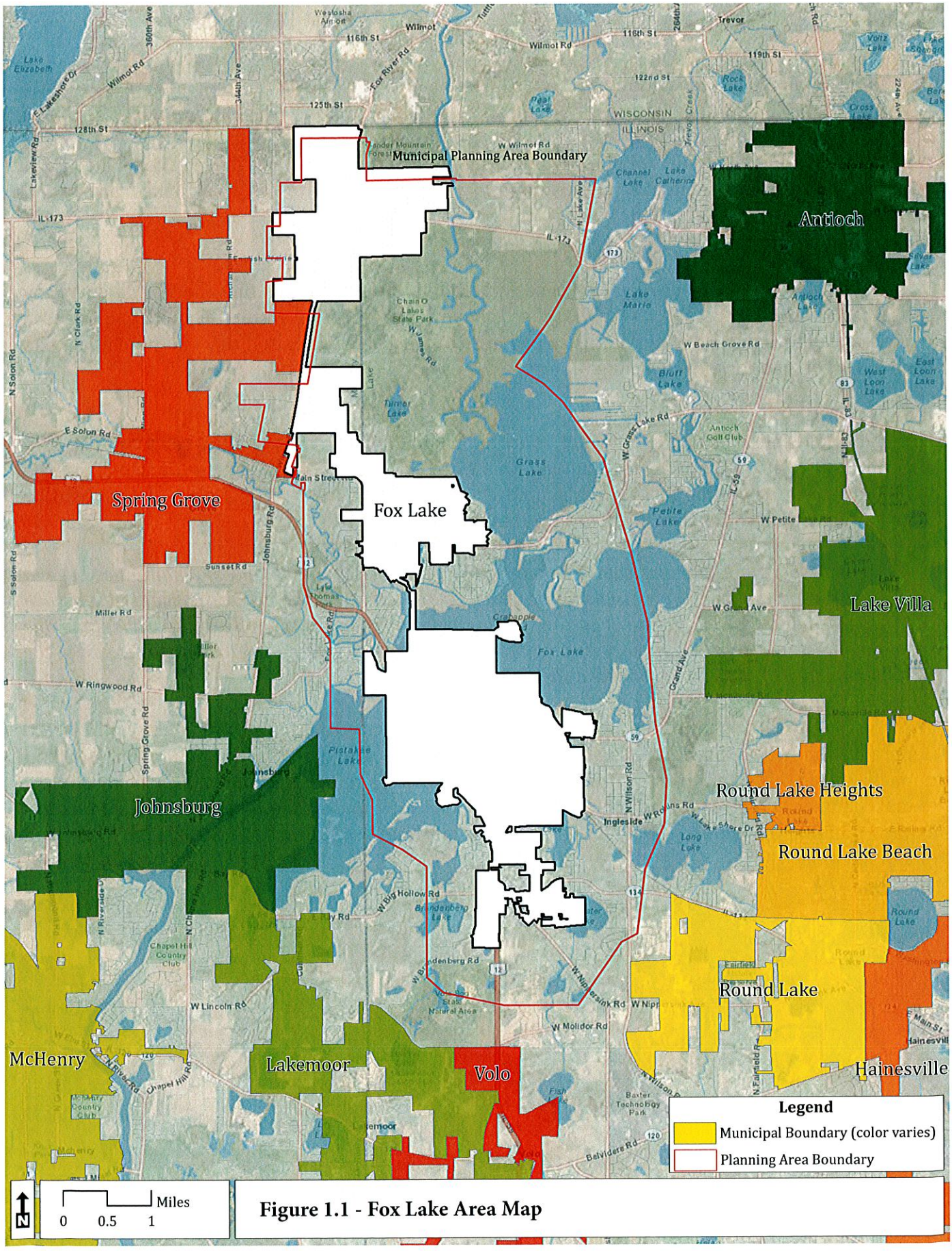


Figure 1.1 - Fox Lake Area Map

Comprehensive Plan

Many of the goals and objectives for the *Greenways and Bikeways Plan* were taken directly from the *Comprehensive Plan*. The *Comprehensive Plan* identified the major destinations within the Village where residents and visitors would like to be able to visit by bicycle: Town Center, lakefront, schools, and parks. The Village wants the bicycle network to extend beyond the Village limits, and expand the network to connect trails and parks.

Specifically, recommendations were developed for U.S. Route 12 because of its prominence in Fox Lake and the regional connections it provides. A specific vision for U.S. Route 12 was established in this document and includes recommendations to create a bike path connection to State Park Road. Additionally, the plan states that U.S. Route 12 should have continuous sidewalks on both sides of the street, underground utilities, improved street lighting, and coordinated signs.

This plan establishes recommendations that will require significant changes to the current condition of U.S. Route 12 to accommodate bicycles.

Downtown Lakefront Vision Plan

The Downtown Lakefront Vision Plan also provided objectives for the bicycle plan, including the recommendation to connecting the Town Center to the Grant Woods Forest Preserve and Grant High School. Additionally, recommendations from this plan identified roadways: Nippersink Road, Rollins Road, and U.S. Route 12, where the Village would like to accommodate bicyclists.

Goals and Objectives

The goals and objectives for this Plan have been adopted directly from two recently completed plans for Fox Lake: The *Fox Lake Comprehensive Plan* and the *Fox Lake Downtown and Lakefront Vision Study*. Organized for this plan, the goals and objectives of the Fox Lake Greenways and Bikeways Plan are:

Goals: Develop a comprehensive transportation network to serve the needs of mobility and accessibility including bicycle and pedestrian systems linking residential neighborhoods to recreational, employment, shopping and cultural facilities and activity areas (*Comprehensive Plan*, p. 25).

Upgrade and introduce a connective system of bicycling and walking trails that allow residents and visitors to access the lakefront, parks, and public open spaces (*Comprehensive Plan*, p. 54).

Objectives: *Redesign Route 12 to include on-street bicycle facilities that connect to State Park Road (Comprehensive Plan, p. 38).*

Provide bicycle facilities on Grand Avenue connecting Town Center to the Grant Woods Forest Preserve and to Grant High School (*Downtown and Lakefront Vision Study*, p. 34).

Connect bicycle paths on Nippersink, Rollins, the lakefront, and Route 12 (*Downtown and Lakefront Vision Study,* p. 44).

Make Town Center a focus of the community and center of activity by providing bicycle facilities that are accessible to all ages and abilities (*Downtown and Lakefront Vision Study,* p. 76).

The new cross-section design [for Nippersink Road] should include space for bicycles (*Downtown and Lakefront Vision Study,* p. 79).

Improve connections to the Chain O' Lakes Bike Path (Steering Committee Meeting, July, 2012)

1.2 Bicycle Network

Existing Bicycle Facilities

All of the existing bicycle facilities within Fox Lake are shared use paths. A shared use path is a facility, commonly called a bike path or bike trail, that permits various kinds of nonmotorized activity, including walking, jogging, and bicycling. Existing shared use paths within the study area are owned and maintained by four different agencies:

- Lake County Division of Transportation (LCDOT)
- Illinois Department of Natural Resources (IDNR)
- Lake County Forest Preserve District (LCFPD)
- Antioch Township

Existing and proposed shared use paths are shown in **Figure 1.2: Existing and Proposed Bicycle Facilities**. The map also includes major destinations including schools, the Town Center, commercial areas, Metra Stations, and Forest Preserves.

The shared use paths owned and maintained by LCDOT are located along Rollins Road and Grass Lake Road. The Chain O' Lakes Bike Path is located on the south side of Rollins Road from Grand Avenue to the Grant Woods Forest Preserve. The Grass Lake Road path segment is on the north side of the bridge that connects Grass Lake to Fox Lake and Nippersink Lake.

Other shared use paths within Fox Lake are maintained by IDNR and LCFPD. Most of these trails are made of crushed stone and are located inside Chain O' Lakes State Park and Grant Woods Forest Preserve.

Above left: Chain O' Lakes bike path along Rollins Road near Wilson Road. Right: Grant Woods Forest Preserve trail

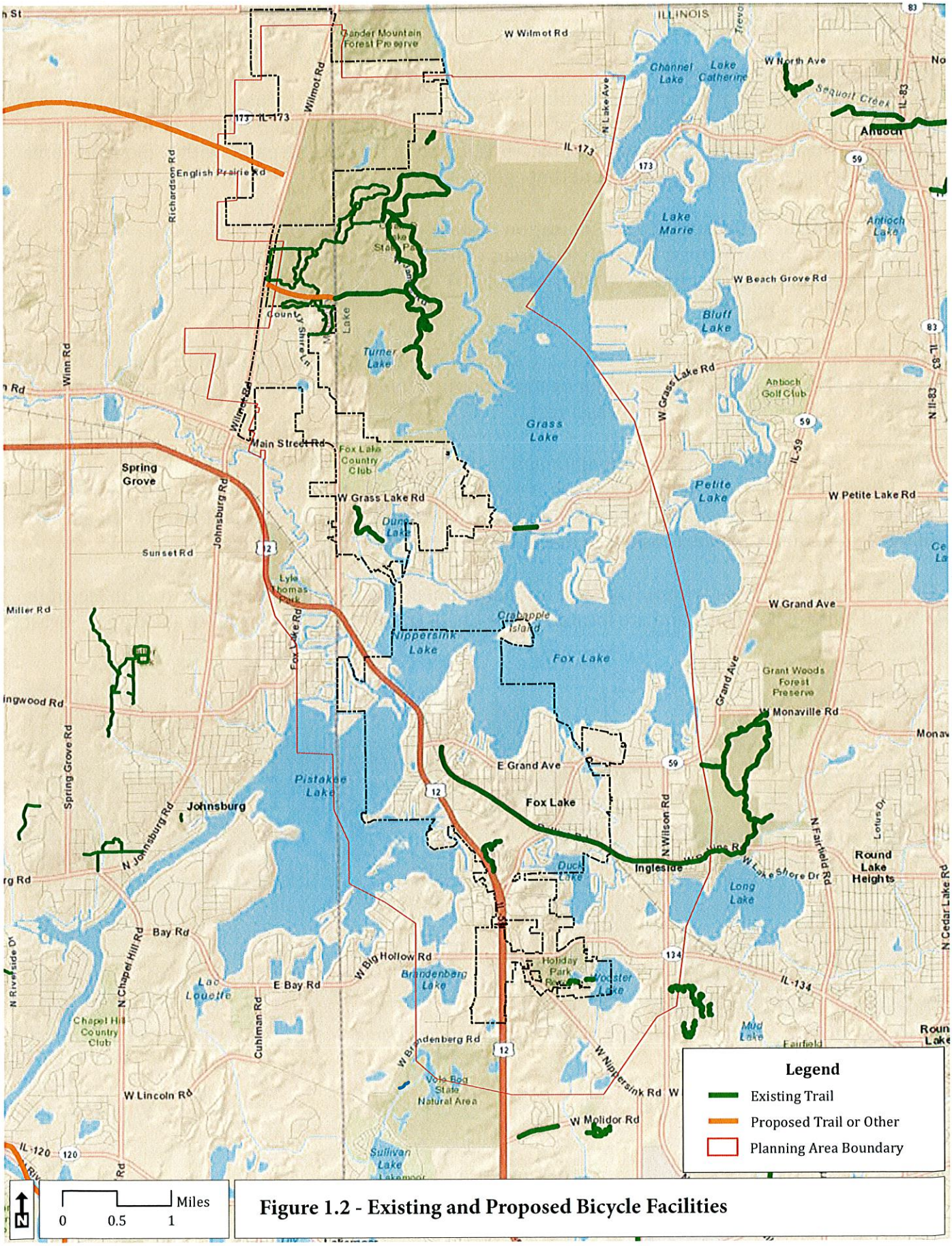


Figure 1.2 - Existing and Proposed Bicycle Facilities

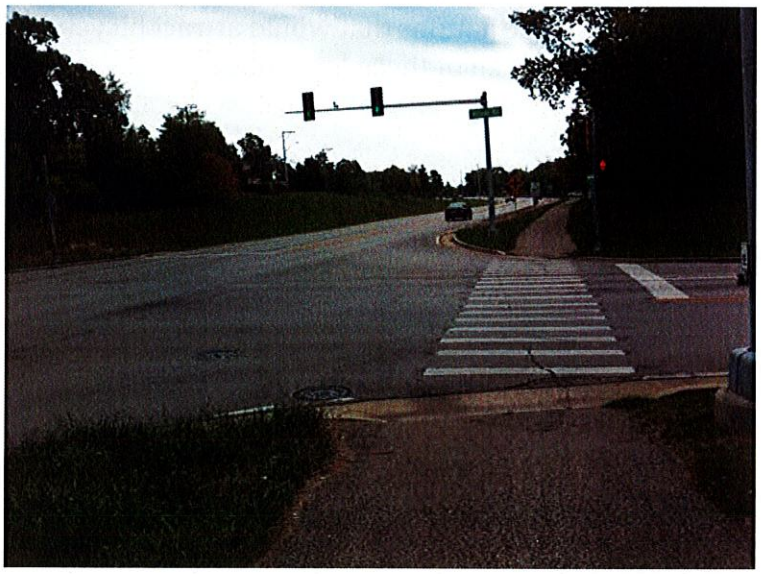
Major Destinations

A successful and connected bicycle network is one that provides bicyclists with access to major destinations that can easily be reached by bicycle. Identifying major destinations helps in proposing corridors for bicycle facilities. Major destinations in and around Fox Lake include:

- Chain O' Lakes State Park
- Chain O' Lakes Bike Path
- Fox Lake Metra Station
- Fox Lake Public Library
- Gavin Central School
- Grant Woods Forest Preserve
- Grant Community High School
- Ingleside Metra Station
- Lakefront Park
- Lotus School
- Nippersink Canoe Base County Park
- Stanton Elementary School
- Town Center

Proposed Bicycle Facilities

The McHenry County Division of Transportation (MCDOT) and the Lake County Division of Transportation (LCDOT) have prepared greenway and open space plans that incorporate bicycle facilities which have been included in their draft form in **Figure 1.2**.



Roadway crossing of the Rollins Road bike path near Wilson Road.

1.3 Municipal Characteristics

Population

The Chicago Metropolitan Agency for Planning (CMAP) forecasts population and employment growth in the Chicago metropolitan region. CMAP projects that Fox Lake's population will increase 71% by 2040 and employment will increase by 17%.

Table 1.1: Population and Employment Forecasts

Year	Population	Employment
2010	10,579	4,432
2040	18,063 (71%)	5,175 (17%)

According to the US 2010 Census, less than 1% of workers living in Fox Lake commute to work by bicycle. This is slightly less than the 1.3% of workers in Lake and McHenry Counties who bicycle to work.

Major Destinations

Providing access to major destinations is an important part of developing a bicycle network. Destinations in Fox Lake known to attract automobile traffic are similarly inclined to generate bicyclist and pedestrian activity. These locations are shown in **Figure 1.3: Major Destinations** and **Figure 1.4: Major Destinations – Town Center.** These include Town Center, the Fox Lake Metra Station, Ingleside Metra Station, schools, and some private developments. Shared use paths, forest preserves, and the Chain O' Lakes State Park also are major destinations that would attract bicyclists. It is important to consider facilitate bicycling connections to each of these locations.

Above left: Dockers Restaurant on Grand Avenue. Right: Fox Lake Library

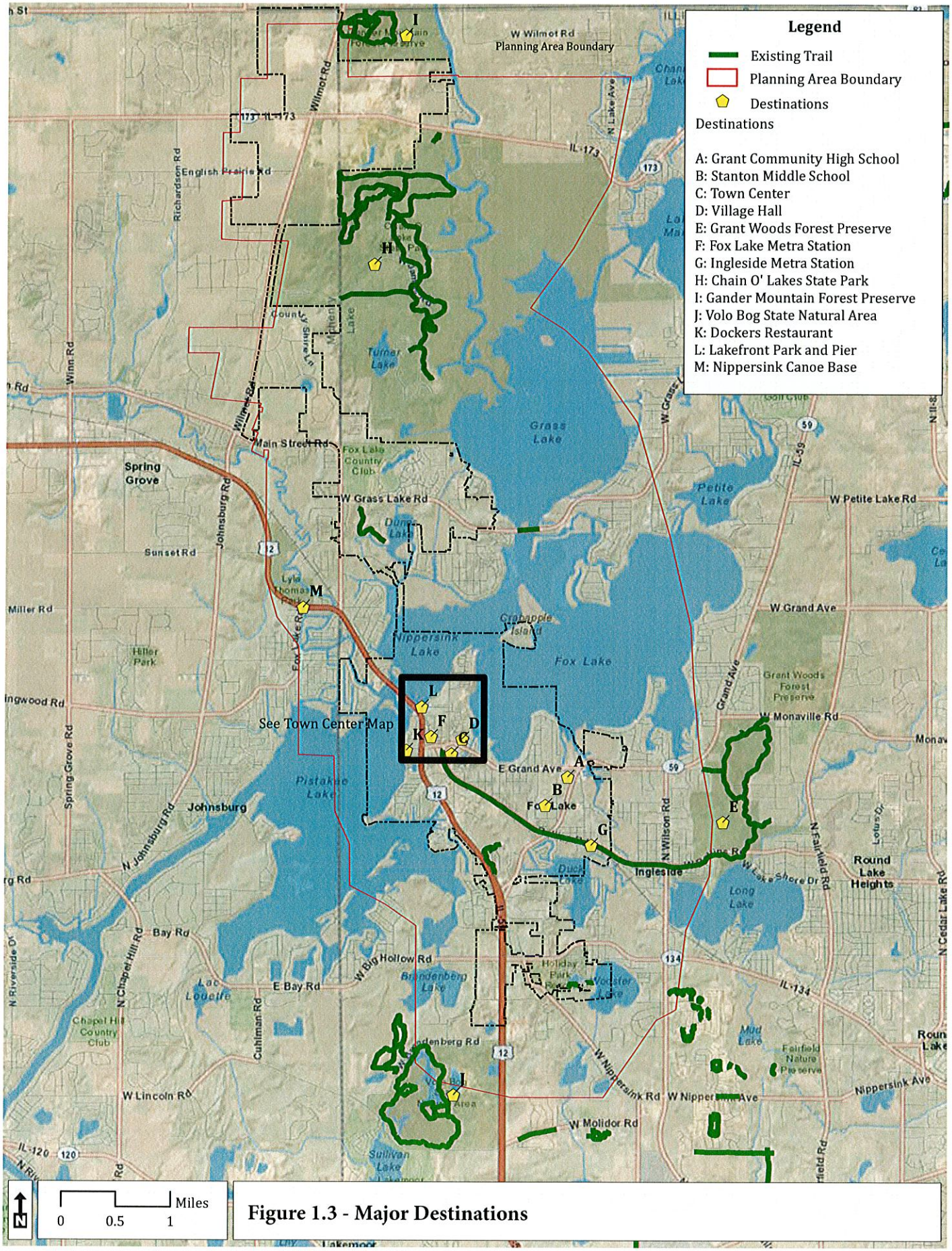


Figure 1.3 - Major Destinations

Figure 1.4 - Major Destinations Town Center

Above left: Ingleside Metra Station. Right: Fox Lake Metra Station.

1.4 Roadway Suitability

The suitability of a roadway to accommodate bicyclists is a primarily related to how comfortable someone feels riding on a roadway. The comfort of a bicycle network is related to roadway width, traffic speeds, and amount of traffic.

Active Transportation Alliance Roadway Suitability

The Active Transportation Alliance, a regional advocacy group for bicycling and walking, periodically prepares a map that determines the suitability of existing roads for bicycling. Roadway suitability is determined by collecting the perceived comfort of roadways for bicycling by illustrating the combined preferences of bicycling enthusiasts, transportation professionals, and advocates familiar with the region. **Figure 1.5: Roadway Suitability** shows roadway suitability in and around Fox Lake.

Crash Data

Crash data were reviewed for the years 2007 - 2011 in Fox Lake to identify areas where traffic crashes occur most often. Crashes involving pedestrians, bicyclists, and crashes that resulted in a fatality were reviewed. The majority of crashes that were reported occurred on U.S. Route 12, Rollins Road, Grand Avenue, and State Park Road.

Level of Traffic Stress

Another measure which proves helpful when evaluating roadway suitability is level of traffic stress (LTS) analysis. LTS is a concept that was developed for the purposes of evaluating roadways with respect to the amount of traffic stress that would be experienced by a bicyclist riding on the street in its current condition. This method takes into account the amount of average daily traffic (ADT), the number of roadway lanes, location of the center line, and posted traffic speed[2].

This method breaks roads into four LTS levels: LTS 1, which corresponds to low stress and pleasant bicycling conditions, to LTS 4, which corresponds to high stress and unfavorable bicycling conditions. **Table 1.2: Criteria for Level of Traffic Stress** shows the thresholds used to determine LTS.

Table 1.2: Criteria for Level of Traffic Stress for Bicyclists in Shared Traffic Conditions

Speed Limit	Street Width		
	2 or 3 lanes	4 or 5 lanes	6 lanes or more
25 mph or less	LTS 1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

*The lower LTS value applies on two-lane, local neighborhood streets without painted centerlines.

The majority of children and adult bicyclists prefer (and would only be encouraged to bicycle on) roadways with LTS 1 and possibly LTS 2. Based on the criteria shown above, traffic stress increases considerably as posted speed limits or number of roadway lanes increases. Using this method, roads

2 Mekuria, M. C., Furth, P. G., & Nixon, H. (2012). *Low-Stress Bicycling and Network Connectivity.* San Jose: Mineta Transportation Institute.

in Fox Lake were evaluated to determine their LTS. **Figure 1.6: Level of Traffic Stress** shows that the majority of streets in Fox Lake are rated LTS 1. This means that a large swath of the Village is relatively bicyclist-friendly, and short trips on a bicycle are simple and convenient.

However, the map also illustrates the challenges in Fox Lake. While local neighborhood streets may rank well with respect to traffic stress, almost every single neighborhood is cut off by high-stress roadways. This makes bicycle trips to the library, school, Town Center, the movie theater, and other destinations difficult because they are stressful and perceived as unsafe. Crash data are shown on this map, as well.

Figure 1.7: Level of Traffic Stress – Town Center highlights the challenges of bicycling in the Town Center. There are three major roads that travel through the Town Center: U.S. Route 12, Grand Avenue, and Rollins Avenue. All three roads have a high LTS and yet are important links to many key destinations in and around Fox Lake. This presents a challenge for accommodating the majority of bicyclists. Crash data are included on this map, as well.

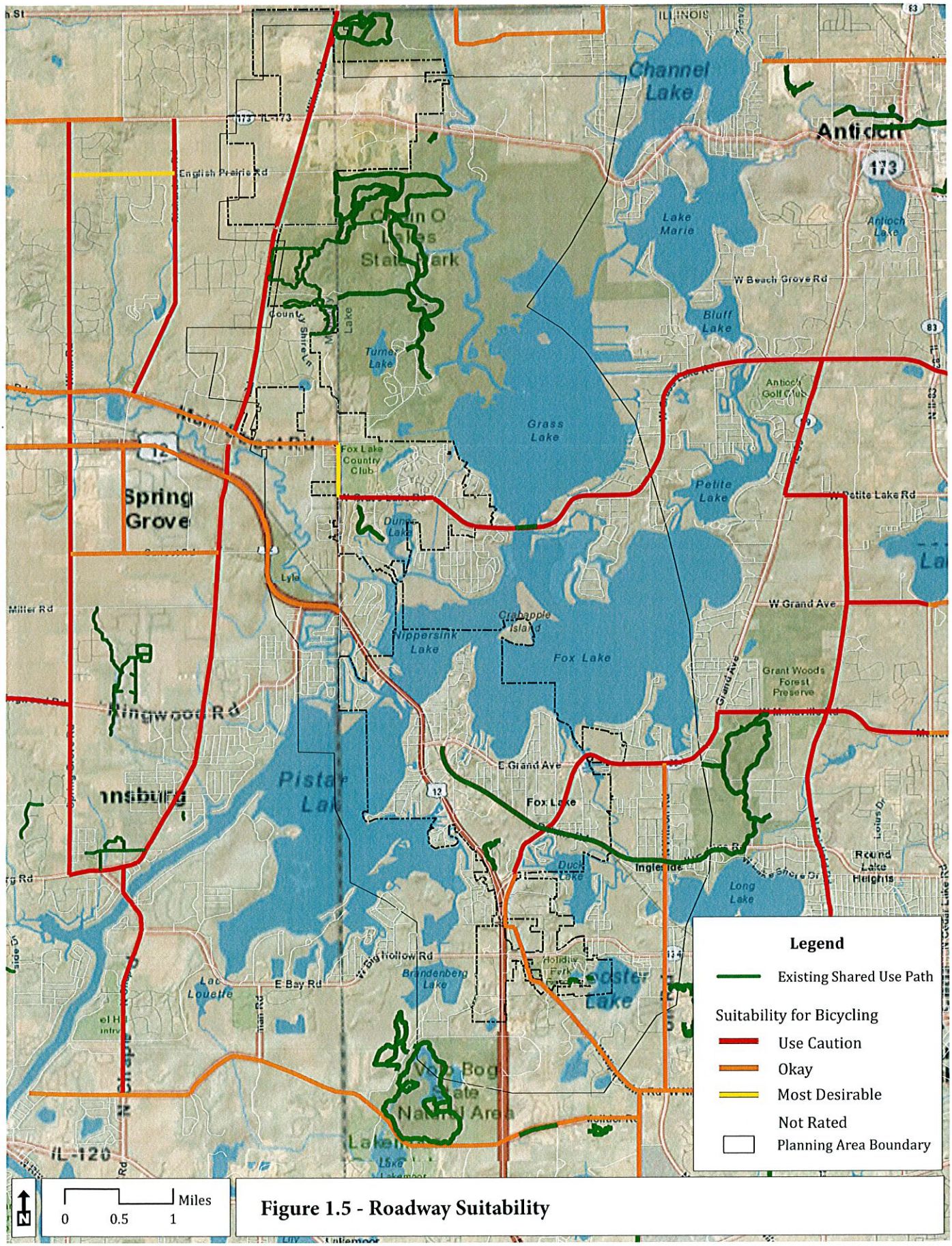


Figure 1.5 - Roadway Suitability

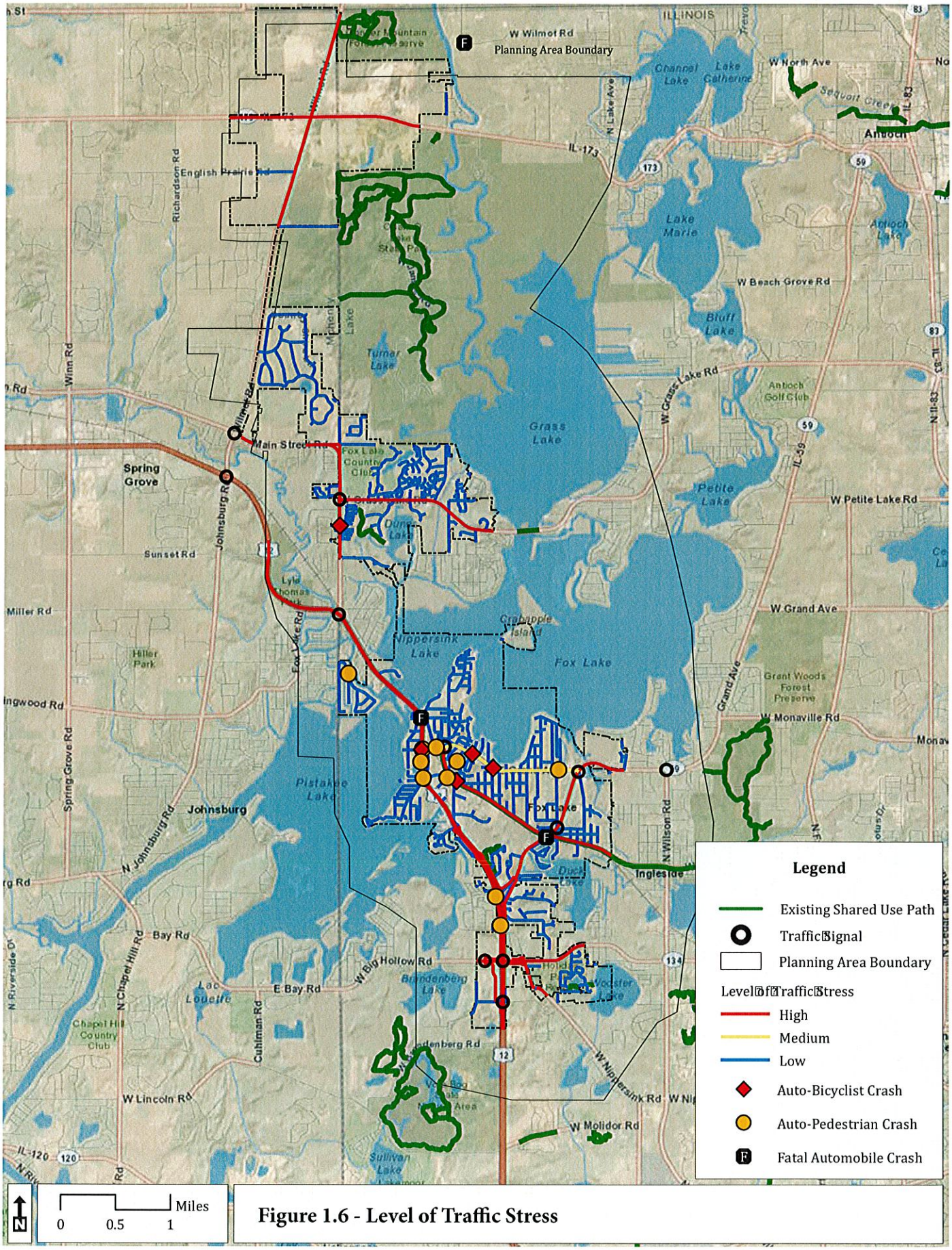


Figure 1.6 - Level of Traffic Stress

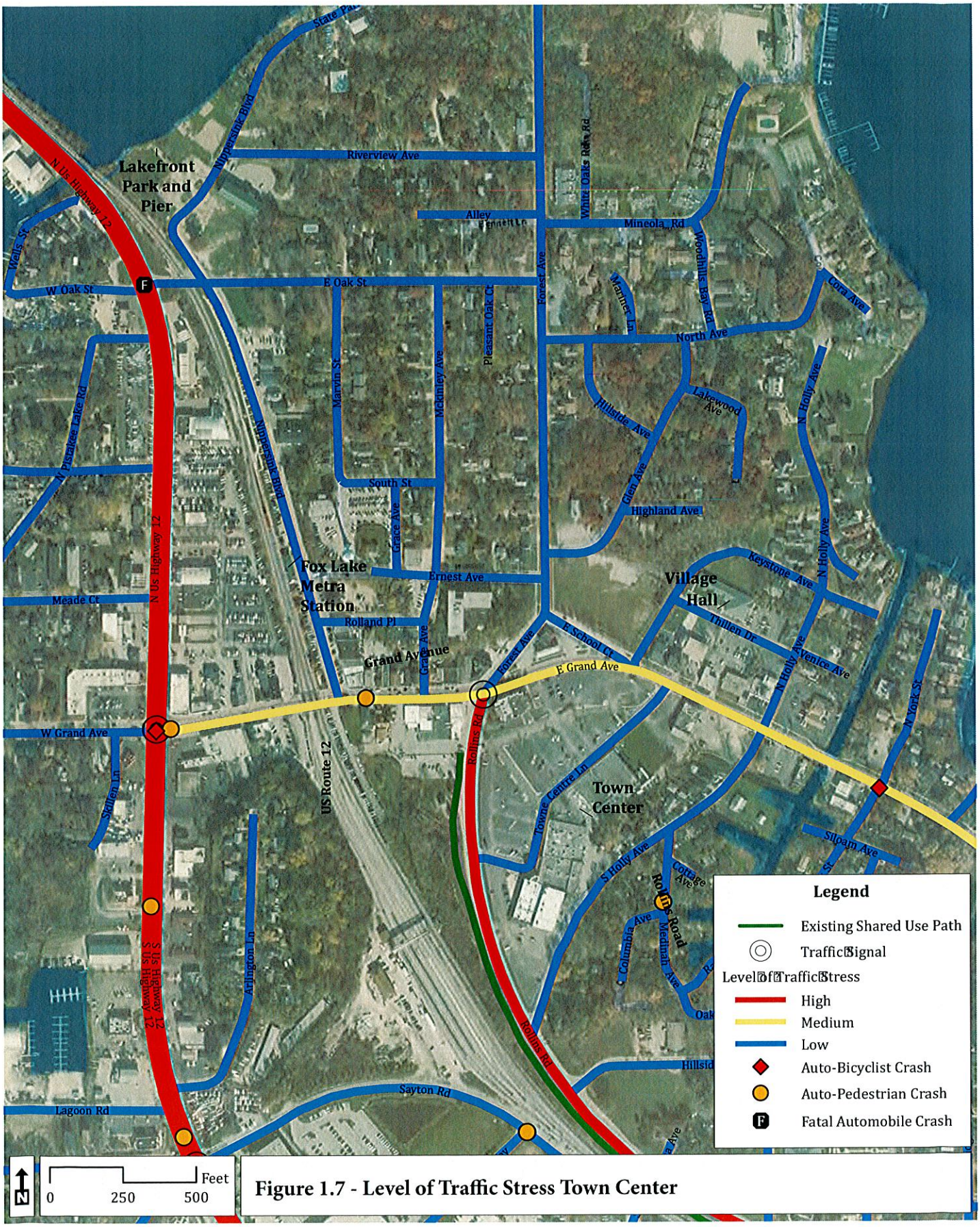


Figure 1.7 - Level of Traffic Stress Town Center

1.5 Fox Lake Plans, Policies and Programs

There are several plans, policies, and programs that affect how bicycle facilities are provided in Fox Lake. This section reviews these plans as they relate to the Greenways and Bikeways Plan.

Bicycle Ordinances and Code

Currently, Fox Lake does not have any ordinances that pertain to bicyclists. Per Illinois vehicle code, bicyclists are permitted on all public rights-of-way in Fox Lake. Fox Lake's zoning code does not include a bicycle parking requirement as a condition of development.

Bicycle Safety Training - Rodeo

The Village of Fox Lake's police department holds bicycle safety training in the form of a bicycle rodeo event. This event usually occurs in the summer and is targeted at elementary school children. A bicycle obstacle course is setup, prizes and gift certificates are awarded, lunch is catered by local restaurants, other bicycle activities are prepared, and additional safety training and bicycle services are provided.

1.6 Related Planning Efforts

Surrounding Municipalities
The surrounding municipalities do not have bicycle plans, although the Village of Antioch is in the process of preparing a greenway and lifestyle corridor plan. Other municipalities surrounding Fox Lake do not have bicycle plans.

Lake and McHenry Counties
Lake County and McHenry County have prepared plans that identify trail and greenway improvements. These planned improvements are located on county right-of-way or within forest preserves under the jurisdiction of LCFPD or the McHenry County Conservation District (MCCD). To ensure plan consistency, greenway corridors that are identified in these plans were treated as targets for potential improvements in Fox Lake.

Complete Streets Policy
Complete Streets is a concept of planning and designing streets for all users. This includes pedestrians, bicyclists, transit users, and motorists, regardless of age or ability. In March 2007, the State of Illinois adopted a Complete Streets Policy and IDOT subsequently updated its Bureau of Design and Environment (BDE) Manual to include Complete Streets principles. This established requirements for IDOT to consider bicycle and pedestrian accommodations as part of improvements to IDOT highways. LCDOT and MCDOT frequently coordinate with IDOT on improvement projects and incorporate these policies, as well[3].

Chicago Metropolitan Agency for Planning
The Chicago Metropolitan Agency for Planning (CMAP) *Go To 2040* Plan is the long-rage regional plan for the Chicago Metropolitan Region. Among the main themes of Go To 2040 are those that support development of bicycle facilities in Fox Lake. This includes:

- *Achieve greater livability through land use and housing:*

  By implementing bicycle improvements, it becomes easier to reach destinations by bicycle. Reducing dependence on an automobile allows households to spend money on other items. Additionally, making it possible to bicycle to destinations also makes it possible for people to access jobs that previously may only have been accessible by car, thereby expanding employment opportunities to those who are too young to drive or do not have access to a car.

- *Expand and improve parks and open space:*

  Fox Lake provides access to some of the region's best recreational waterways. However, access to parks is limited. **Figure 1.8: Proximity to Parks** shows an estimate of the number of acres of parks per 1,000 people. Improving trails and greenways in Fox Lake will increase access and improve parks and open space.

3 Lake County Division of Transportation, (2010). Policy on Infrastructure Guidelines for Non-Motorized Travel Investments. Page 5.

- *Pursue coordinated investments:*

Fox Lake's will need to pursue coordinated investments since nearly every major intersection or destination involves another IDOT, LCDOT, IDNR, or LCFPD. Coordinated improvements can greatly expand bicycle facilities in Fox Lake at minimal cost to the Village.

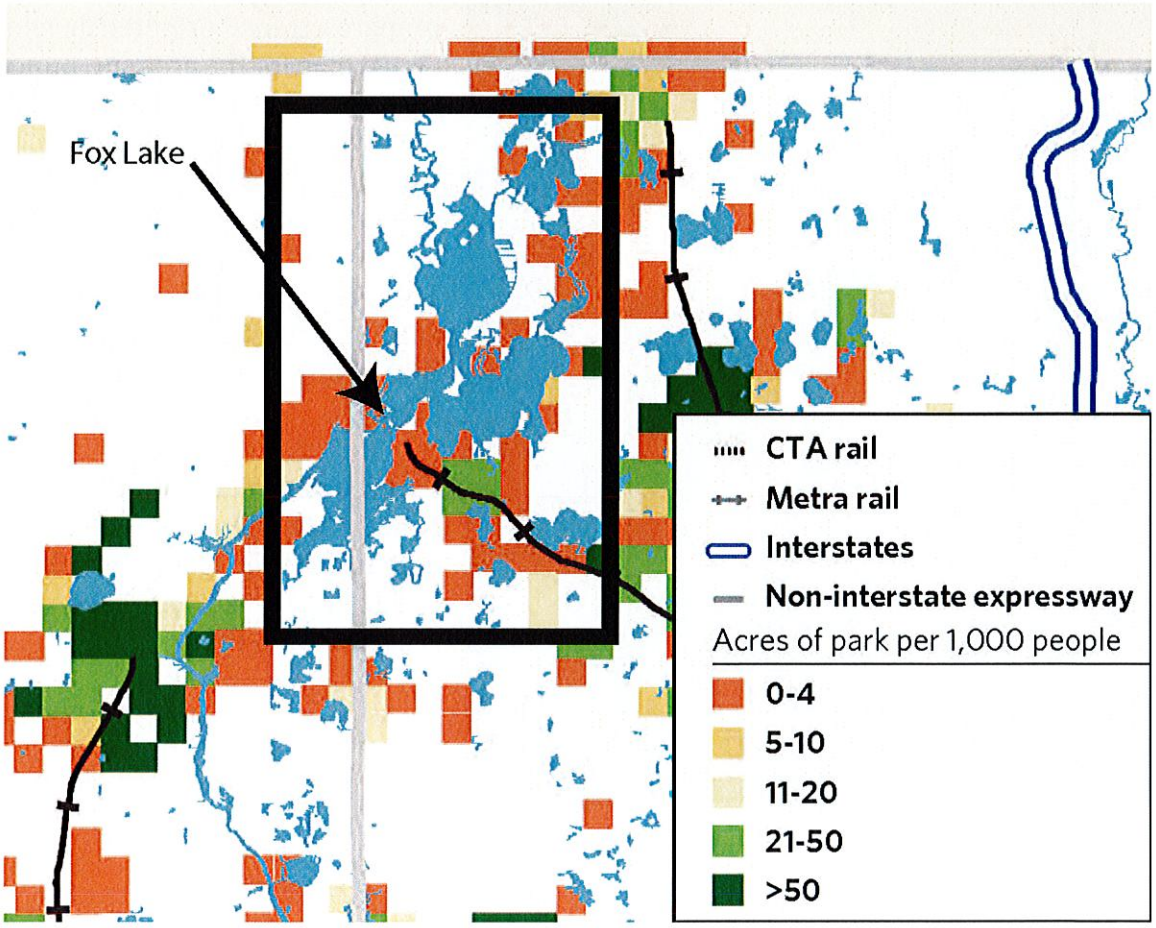
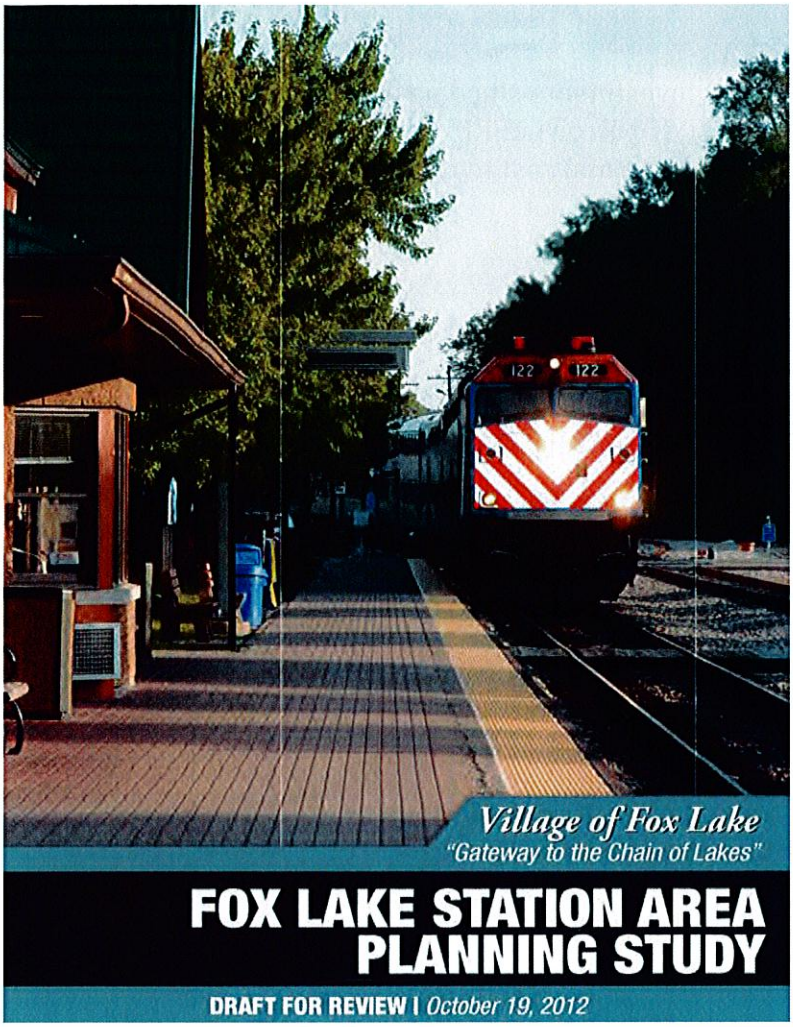


Figure 1.8: Proximity to Parks (Source: CMAP)



Fox Lake Station Area Planning Study

The Village of Fox Lake currently is working with the Regional Transportation Authority (RTA) to prepare a transit oriented development (TOD) plan for the area surrounding the Fox Lake Metra Station. This involves a review of land use and transportation facilities in the vicinity of the Fox Lake Metra Station.

The Fox Lake Station Area Planning Study is consistent with the goal of connecting bicycle facilities in the region.

Part 2 of this Plan outlines a vision for connecting the Chain O' Lakes Bike Path to other proposed bicycle facilities in Fox Lake, Lakefront Park, and Chain O' Lakes State Park.

1.7 Planned and Programmed Roadway Improvements

Roadway Jurisdiction

Roadway jurisdiction does not necessarily impact the suitability of a roadway for bicycle facilities but it is an important factor in the implementation of the plan. Roads in Fox Lake are owned and maintained by several agencies: the Illinois Department of Transportation (IDOT), the Lake County Division of Transportation (LCDOT), the McHenry County Division of Transportation (MCDOT), the Village of Fox Lake, Grant Township, and other roads that are privately owned and maintained. **Figure 1.9: Roadway Jurisdiction** shows roadway jurisdiction by agency.

The number of roadway agencies highlights the importance of coordination during this planning process. It will be important to work with roadway agencies to determine when and how bicyclists can best be accommodated in each case. Coordination also is important to ensure implementation of the plan.

Capital Improvements

The five-year capital improvement plans for LCDOT, MCDOT, and IDOT were reviewed to determine what roads in and around Fox Lake were programmed for major improvements (increased capacity or reconstruction). **Tables 1.3, 1.4**, and **1.5** below show planned and programmed improvements in and around Fox Lake.

Figure 1.10: Planned and Programmed Roadway Improvements shows construction projects by agency. These projects were shown to identify potential areas where there may be an opportunity to coordinate with other agencies to provide bicycle facilities. According to this figure, Fox Lake will need to coordinate on improvements that will occur on Grass Lake Road, IL 59, IL 134, and Wilmot Road.

Table 1.3: IDOT Planned and Programmed Improvements

Map Reference No.	Location	Project	Timeframe
IDOT 1	US 12 at IL 59	Add Right Turn Lane	2013
IDOT 2	IL 173	Resurfacing	2014-2018
IDOT 3	IL 59	Resurfacing	2014-2018
IDOT 4	IL 132	Bridge Replacement	2014-2018
IDOT 5	IL 132 at Fairfield Road	Intersection Reconstruction	2014-2018
IDOT 6	IL 59 at Petite Lake Road	Traffic Signal Installation	2014-2018
IDOT 7	IL 173 at Lake Avenue	Traffic Signal Timing and Channelization	2014-2018
IDOT 8	IL 173 at Wilmot road	Traffic Signal Installation	2014-2018
IDOT 9	US 12 at IL 59	Bridge Replacement	2014-2018
IDOT 10	US 12 at Sullivan Lake/ Molidor Road	Intersection Improvement	2014-2018
IDOT 11	IL 134	Resurfacing	2014-2018

Table 1.4: LCDOT Planned and Programmed Improvements

Map Reference	Location	Project	Timeframe
LCDOT 1	Grass Lake Road at Bluff Lake Channel	Bridge Deck Profiling	2012-2017
LCDOT 2	Fairfield Road	Reconstruction	2013
LCDOT 3	Petite Lake Road	Reconstruction	2012-2015
LCDOT 4	Rollins Road	Resurfacing	2015
LCDOT 5	Monaville Road	Resurfacing	2013
LCDOT 6	IL 59	Intersection Expansion	2015
LCDOT 7	Lake Avenue	Intersection Modernization	2015
LCDOT 8	IL 83	ITS PASSAGE Signal Upgrades	2014
LCDOT 9	Petite Lake Road	Intersection Improvements	2014
LCDOT 10	Fairfield Road	Intersection Improvements	2014
LCDOT 11	Rollins Road	ITS PASSAGE Signal Upgrades	2014

Table 1.5: MCDOT Planned and Programmed Improvements

Map Reference	Location	Project	Timeframe
MCDOT 1	IL 173 at Wilmot Road	Intersection Improvement	2014
MCDOT 2	Johnsburg Road	Roadway Expansion	2012-2016

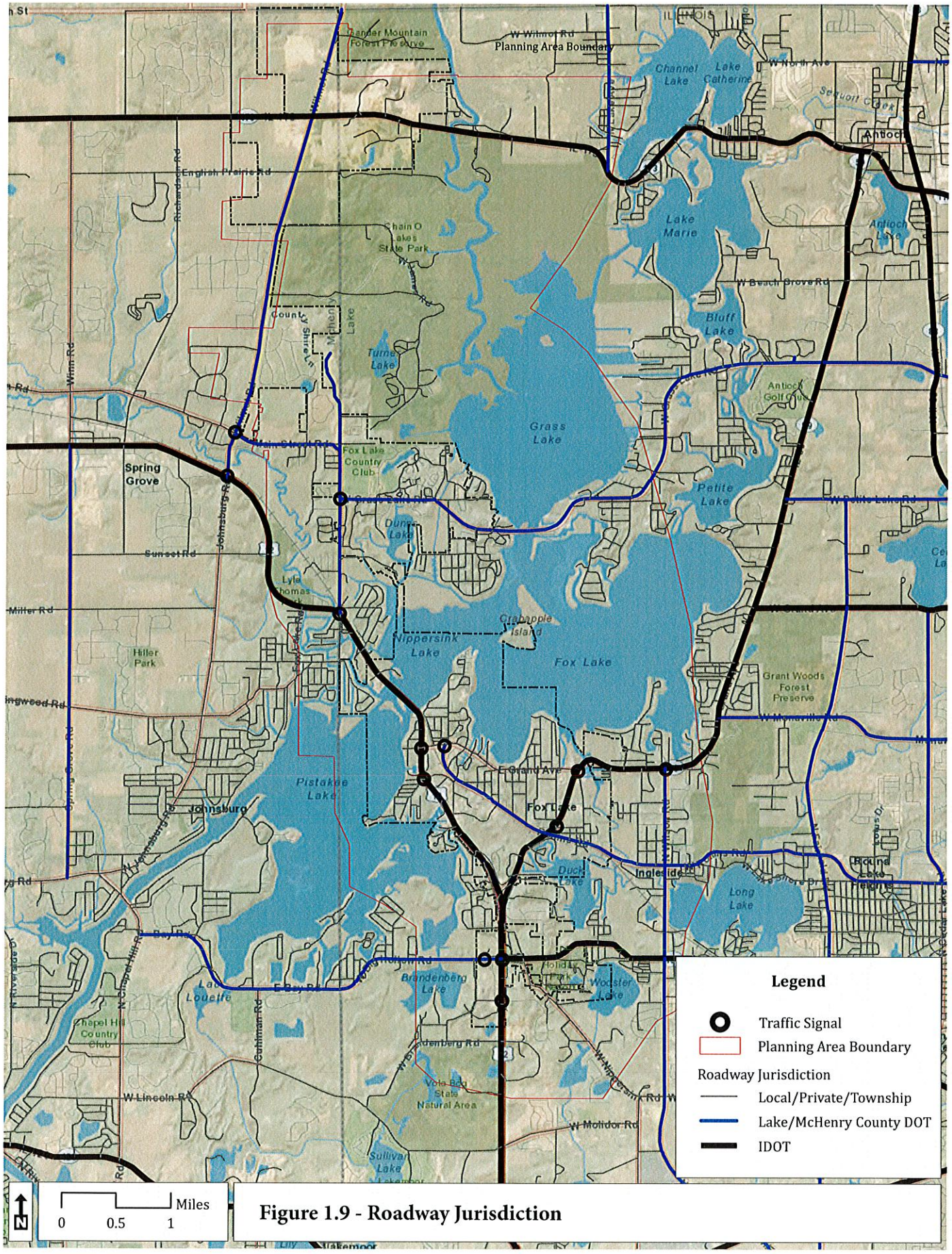


Figure 1.9 - Roadway Jurisdiction

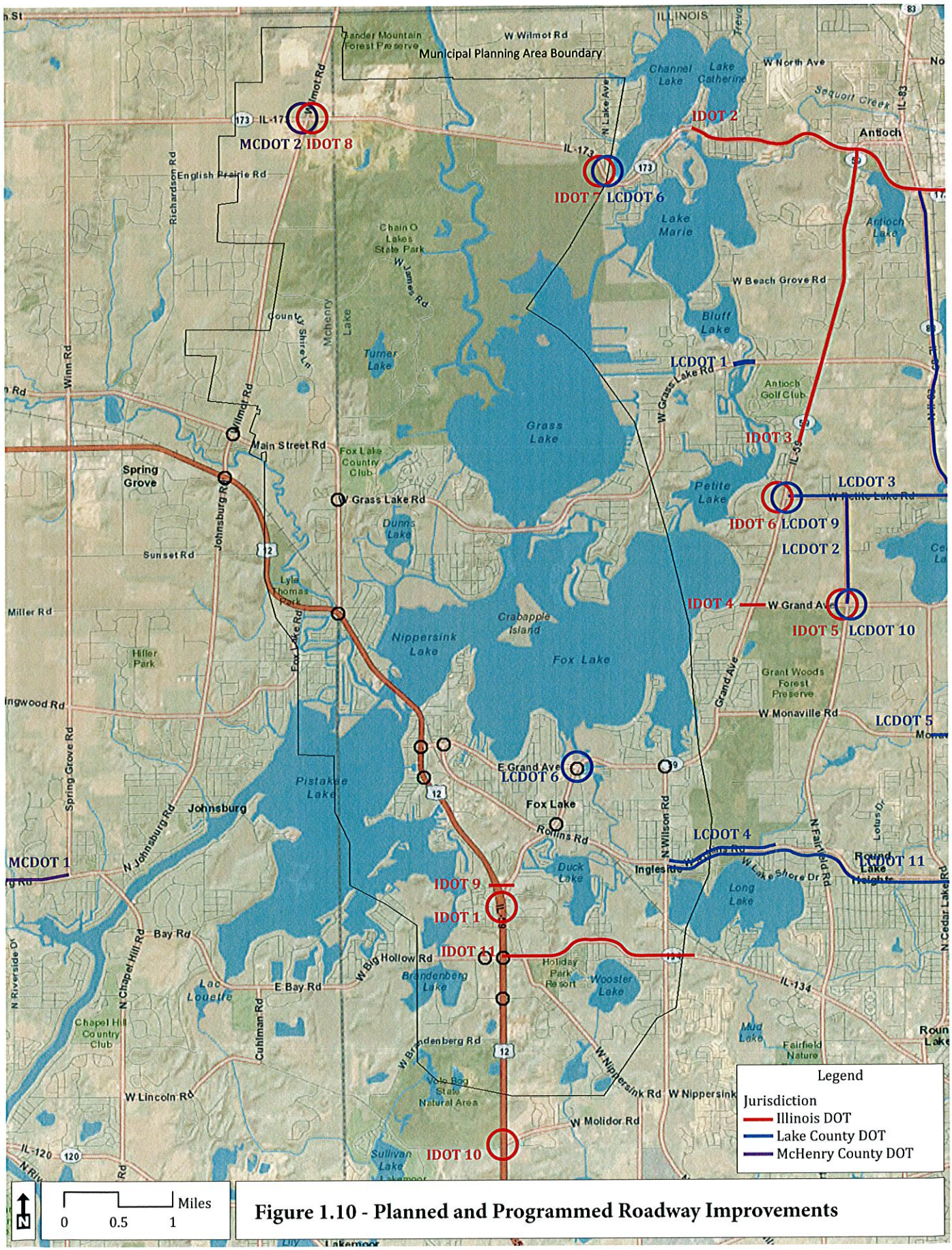


Figure 1.10 - Planned and Programmed Roadway Improvements

1.8 Community Input

Steering Committee

The planning effort was led by a Steering Committee that consists of Village Staff and agency stakeholders with an interest in improving bicycle accommodations in Fox Lake. Steering Committee meetings were held to review project progress on the Existing Conditions report as well as collect comments during the process.

Stakeholder Interviews

Eight stakeholder interviews were conducted with members of the Steering Committee and other business owners in Fox Lake. Stakeholders were provided with maps showing current conditions in Fox Lake with respect to roadways, major destinations, and existing bicycle facilities. They were asked several questions that included a review of the goals and objectives mentioned above. Their responses to the interview questions are summarized below.

Goals and Objectives

Stakeholders concurred with the goals and objectives (Section 1.1). Some mentioned that that these goals and objectives will help Fox Lake to begin constructing more facilities in the Village.

On-Street Bicycle Facilities

Stakeholders were shown examples of three types of bicycle facilities: those that shared space on the road with motorists, those that were on-street but were assigned exclusive space for bicyclists, and facilities that were entirely separated from automobile traffic, such as shared use paths. Generally, stakeholders preferred exclusive facilities for bicyclists but acknowledged that space and funding constraints meant that some on-street facilities would be needed.

Major Destinations

Stakeholders identified additional major destinations in and around Fox Lake that were incorporated in **Figure 1.3** and **Figure 1.4**.

Bicycle Parking

In discussing bicycle parking, stakeholders identified where additional bicycle parking would be helpful, including Lakefront Park, along Grand Avenue, at parks, forest preserves, and in the Town Center. Bicycle rentals also were mentioned in conjunction with bicycle parking.

Comfort and Stress of On-Street Bicycling

Stakeholders were asked on what streets they do or would feel the most comfortable and on which streets they felt unsafe or uncomfortable. Consistent with the traffic stress maps that are shown in **Figure 1.6** and **Figure 1.7**, stakeholders preferred local streets with little traffic and low travel speeds. However, many stakeholders identified that Route 12 was a key street that needed either to be made less stressful or that an alternative facility be made available for bicycling. Additionally, some stakeholders noted the importance of selecting roads that avoided traveling up or down steep hills in Fox Lake, which could pose challenging to potential bicyclists.

Encouragement and Events
Stakeholders were asked what types of things the Village could do to encourage bicycling and additionally, what events the Village held that could be made more accommodating to potential bicyclists. The majority of stakeholders named several Village events that would be good candidates for potential bicyclists. This included Celebrate Fox Lake, the Fourth of July Fireworks, the Classic Car and Motorcycle Show, the Bicycle Rodeo hosted by the Fox Lake Police Department, and Fox Lake Oktoberfest. Bicycle rentals were mentioned by several stakeholders as a potential encouragement and tourism option.

Current Bicyclists
Stakeholders described Fox Lake as a Village where most bicycling is recreational and that the majority of bicyclists are spotted on trails or on the Chain O' Lakes Bike Path adjacent to Rollins Road. However, some stakeholders mentioned seeing bicyclists in and around the Town Center, on Grand Avenue, and some spotted bicyclists on Route 12.

U.S. Route 12
Many stakeholders stated that they saw the U. S. Route 12 Bridge as a barrier between central Fox Lake and areas to the northwest. One stakeholder noted that most destinations in Fox Lake are located north and east of U.S. Route 12, which made crossing U.S. Route 12 on a bicycle less of a priority.

When asked about the possibility of accommodating bicyclists on the bridge, most stakeholders were supportive of the idea and stated that space constraints and the likely cost of improvements would make accommodation difficult. Many stakeholders offered design ideas that involved on-street facilities as well as separate facilities for bicyclists.

In conclusion, stakeholder interviews revealed the following:

- The Village embraces the idea of bicycling primarily as a recreational activity and tourist draw
- Bicycle parking is seen as a potential encouragement method and tourism draw
- Roads in Fox Lake vary between State, County, local, and private jurisdiction.
- Existing shared use paths are high quality and popular among residents
- Many destinations in Fox Lake would be desirable to access by bicycle, but gaps exist in the network
- Most gaps in the network involve crossing busy roads that are barriers to bicycling
- Large-scale bicycle trail improvements involve county and state roadway agencies and will require coordination

1.9 Public Involvement

Public involvement involved two public workshops. Public workshops consisted of interactive working meetings whereby Fox Lake residents and other attendees were able to comment on draft plan materials, reviewed recommended bikeways and maps, and provided input on design concepts.

The plan was refined based on input from both of these groups, and a copy of meeting materials is provided in the Appendix.

1.10 Summary of Findings

The current bicycle network in and around Fox Lake is high-quality, but lacks critical connections, limiting the connectivity of an overall greenways and bikeways network. Existing trail facilities and local, residential streets that are comfortable for bicycling currently are cut off from each other by high-speed and high-stress roadways.

Many of Fox Lake's major destinations are located on high-stress roadways, making them difficult to reach on a bicycle. The majority of the high-stress roads in the Village are under the jurisdiction of IDOT, LCDOT, and MDCOT. Making connections on these roadways will require interagency coordination.

On many of these roadways, the current right-of-way is constrained which will make roadway expansion difficult for any mode. Agencies in this position are even more challenged in addressing the need to accommodate additional modes of transportation.

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Part 2 Plan Framework

Fox Lake Greenways and Bikeways Plan

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2.1 Introduction

This section identifies recommendations in three categories: projects, policies, and programs. The project section primarily involves the plan to implement a greenways and bikeways network in and around Fox Lake.

The policies section provides recommendations for how the Village can incorporate bicycle improvements as part of new property subdivisions and development, and public buildings.

The programs section provides recommendations for partnership opportunities, marketing, education, and enforcement activities to help encourage bicycling and increase awareness of bicyclists and traffic laws.

Part 1, Existing Conditions, established the need for bicycle improvements in and around Fox Lake. The proposed Greenways and Bikeways Map, shown in **Figure 2.1**, identifies the future bicycle facility network for Fox Lake. (**Figures 2.2a - 2.2f** show this map in greater detail.) The proposed improvements include on-street facilities and off street trails. The proposed bicycle network was developed during this planning effort with input from the Fox Lake Greenways and Bikeways Plan Steering Committee and from the public.

2.2 Proposed Greenways and Bikeways Map

For implementation purposes, the proposed *Greenways and Bikeways Plan* is broken into segments as shown in **Figure 2.3 and Figure 2.4**. **Table 2.1** shows each segment by approximate length and primary agency of jurisdiction. Much of the network is on roads under the jurisdiction of IDOT, LCDOT, and MCDOT. As such, extensive coordination with these agencies will be needed to implement the plan.

Some of the proposed facilities extend beyond the Village limits and planning area boundary. These other facilities are shown on the map to ensure that connections can be made to other proposed local and regional bikeways. Many of these bikeways are taken from the *Lake County 2040 Bikeways Plan* or the *McHenry County 2030 Bikeways Plan.*

As part of the planning process, key locations were identified that present the greatest obstacles to connection the region's existing bicycle facilities into a network. The key locations will be the most challenging parts of the network to implement. However, focusing planning efforts at these key locations will be instrumenting in completing the Fox Lake Greenways and Bikeways network.

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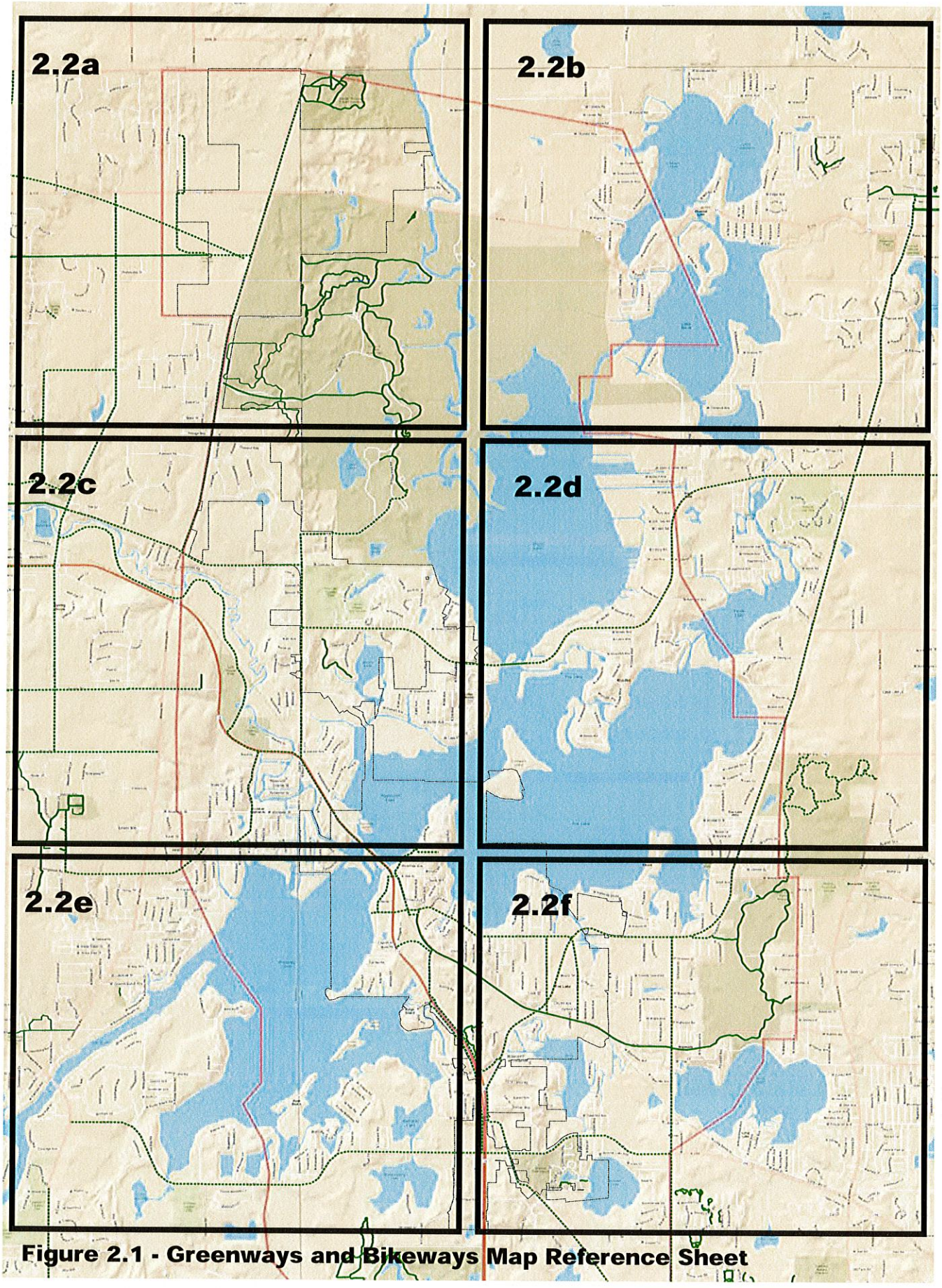


Figure 2.1 - Greenways and Bikeways Map Reference Sheet

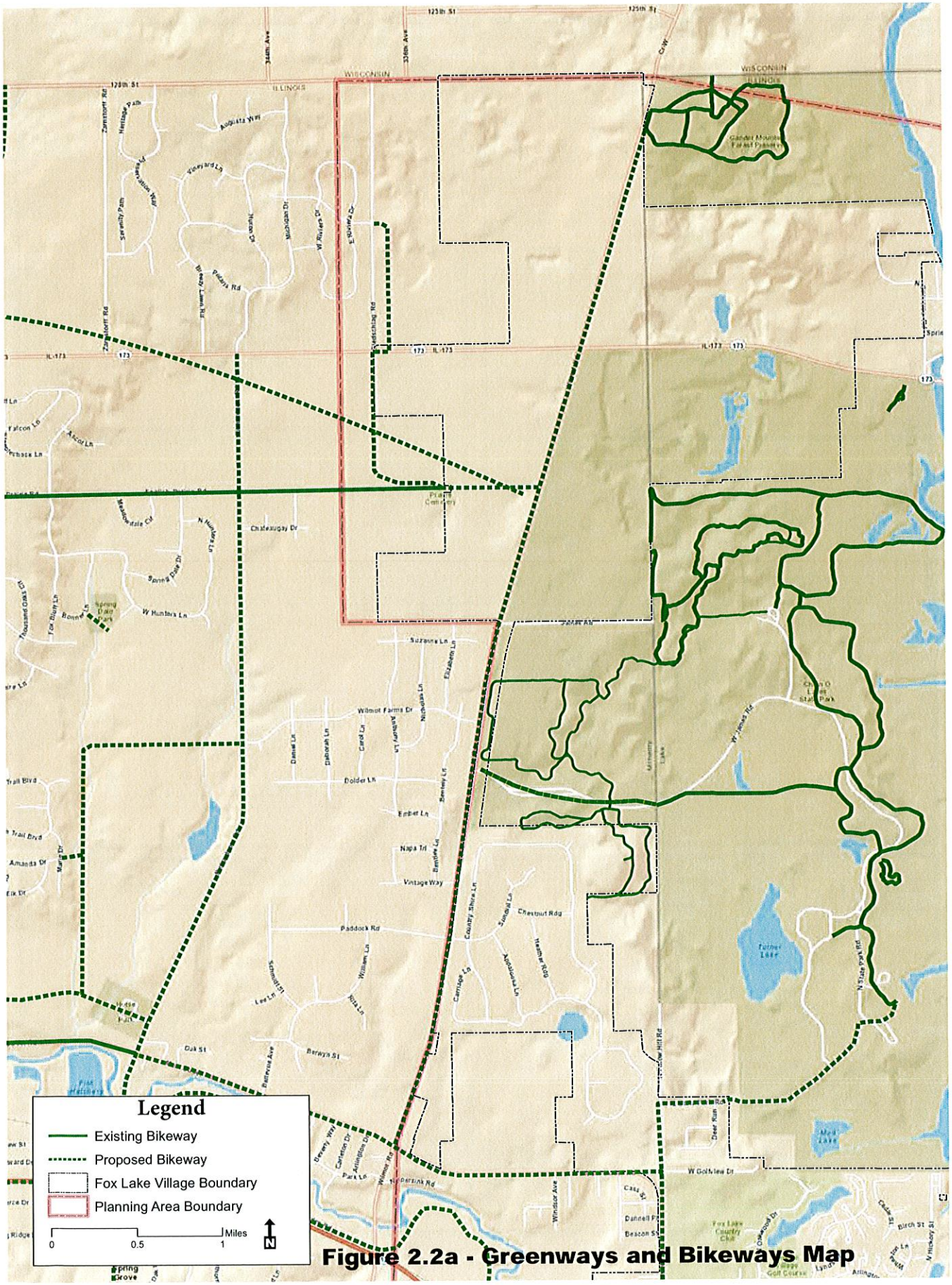


Figure 2.2a - Greenways and Bikeways Map

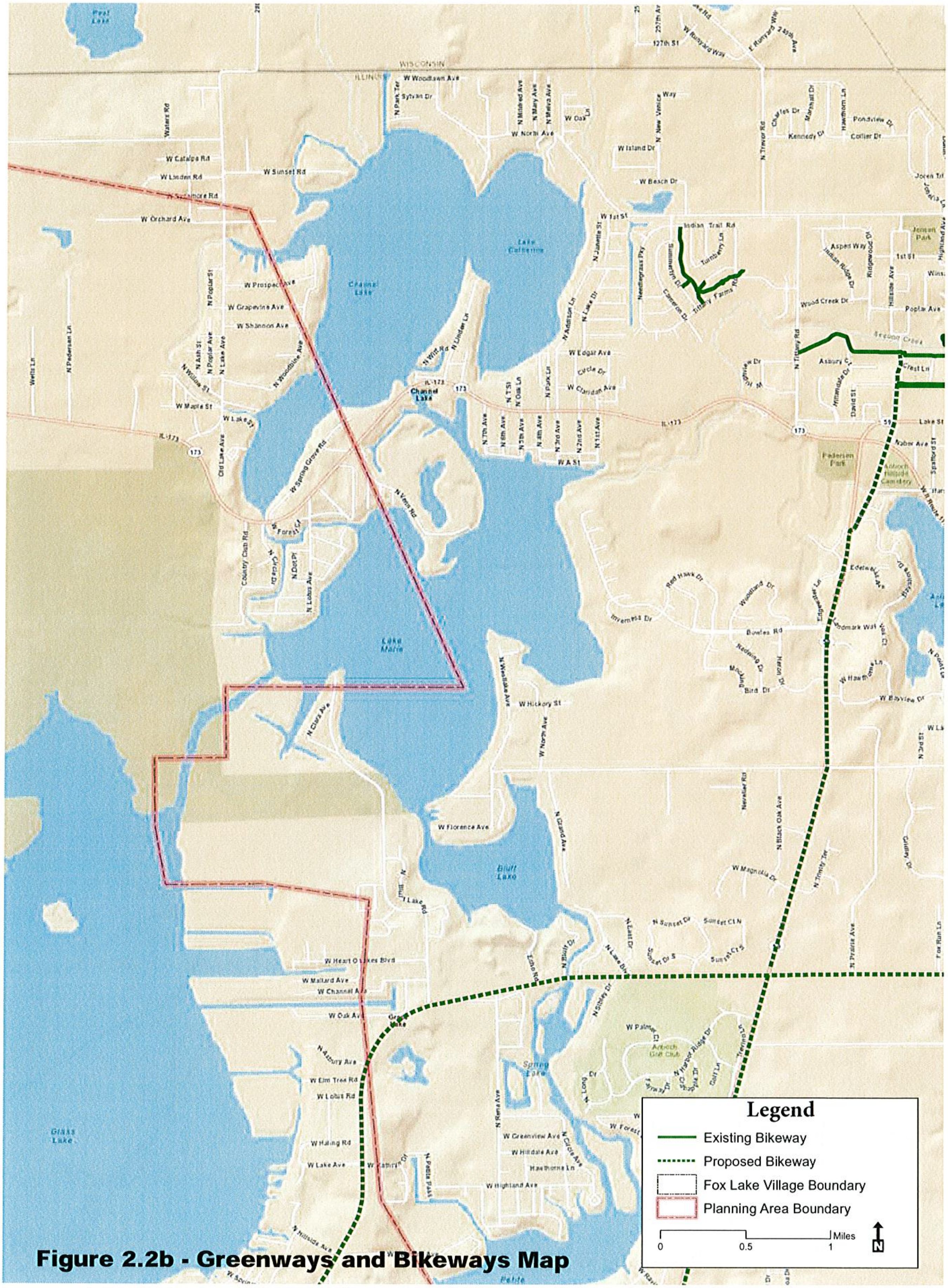


Figure 2.2b - Greenways and Bikeways Map

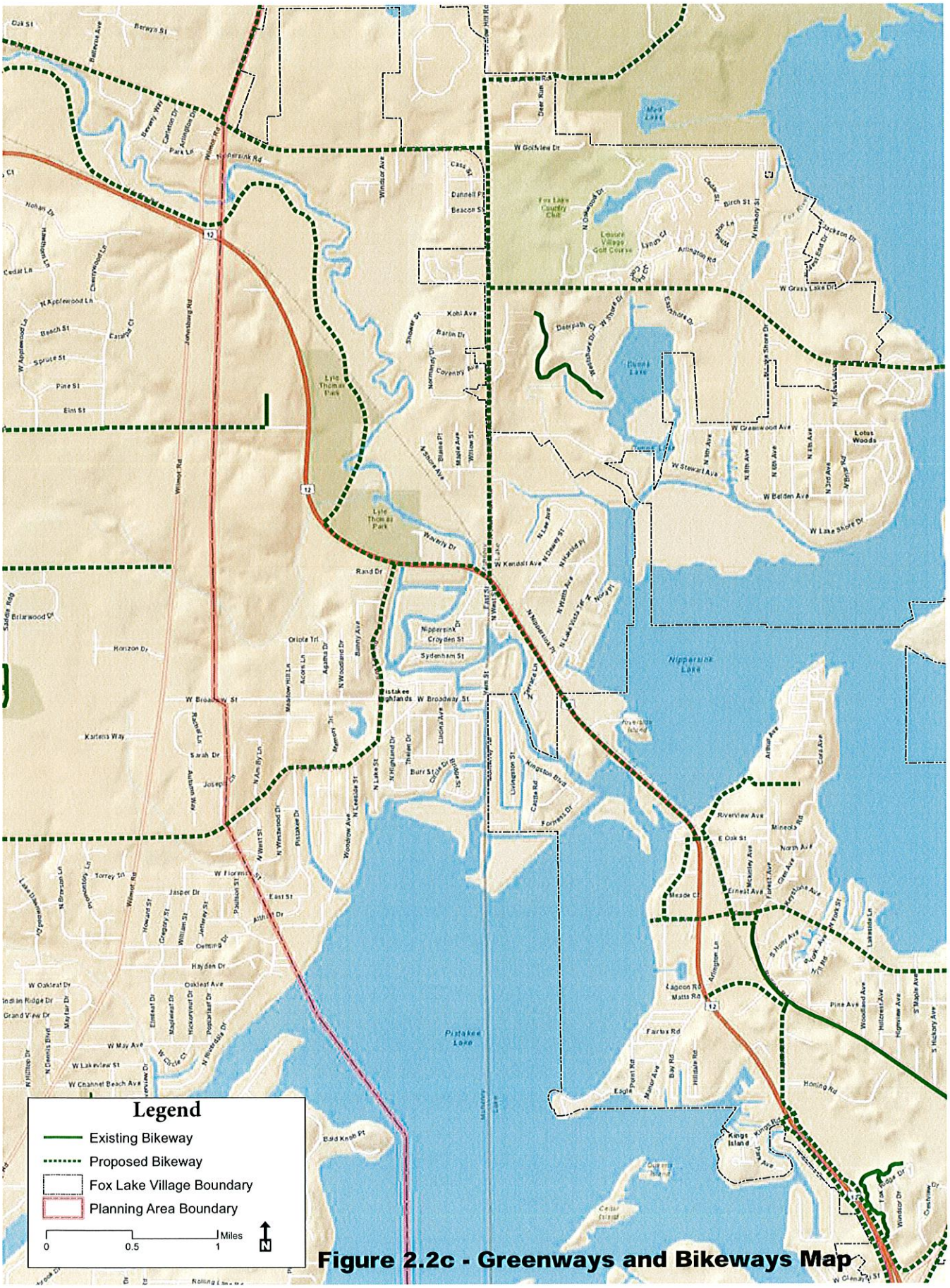


Figure 2.2c - Greenways and Bikeways Map

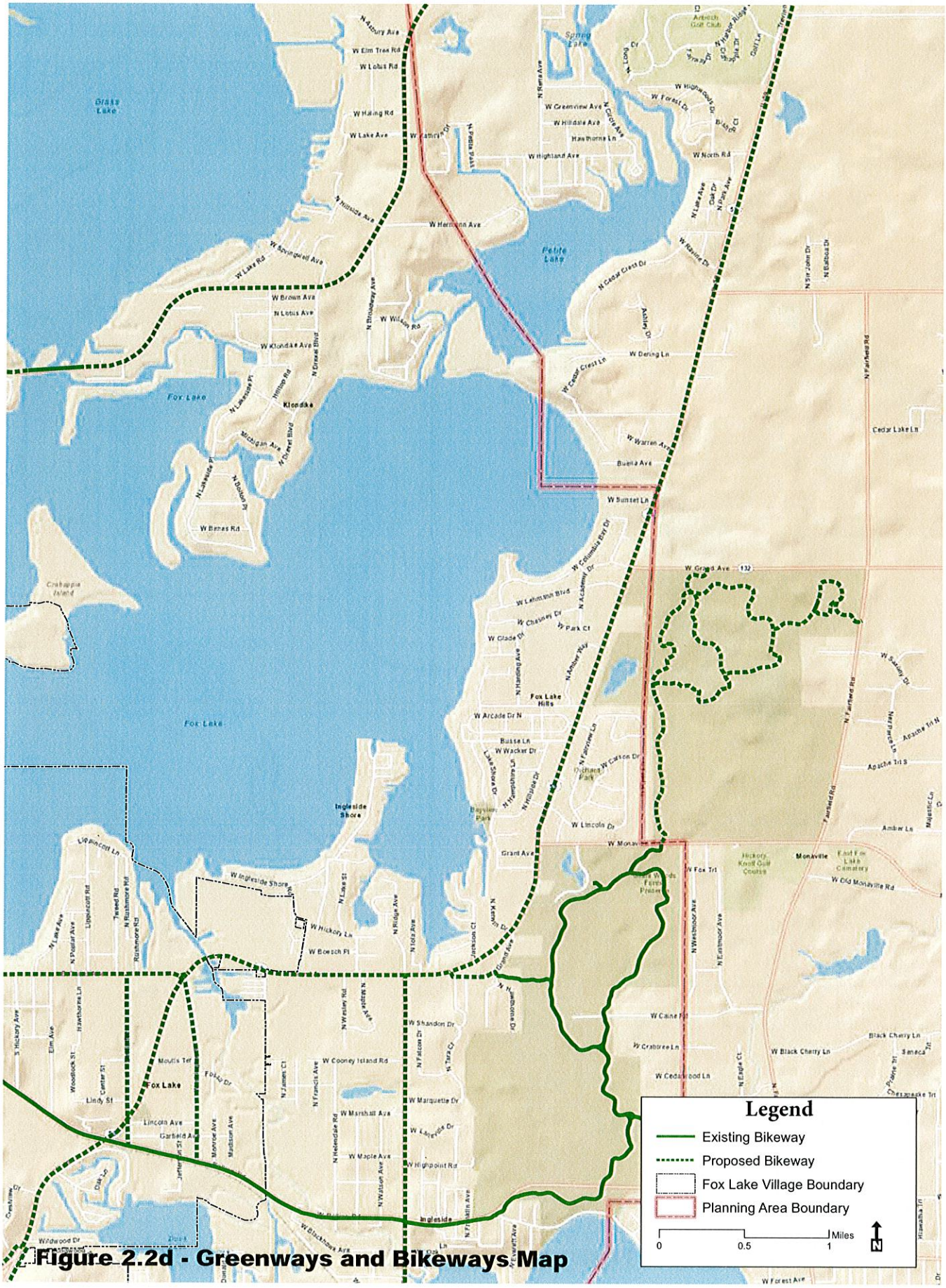


Figure 2.2d - Greenways and Bikeways Map

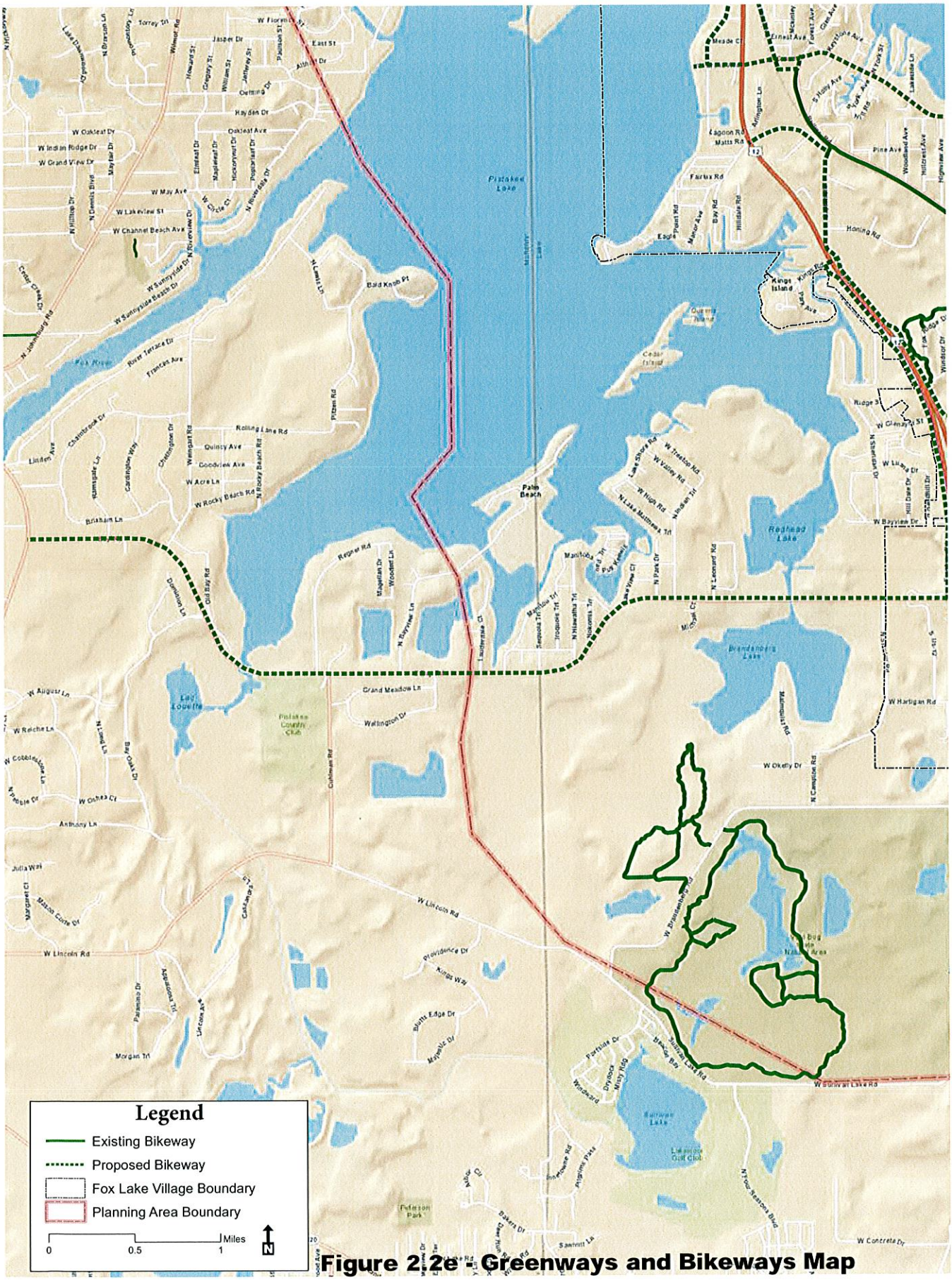


Figure 2.2e - Greenways and Bikeways Map

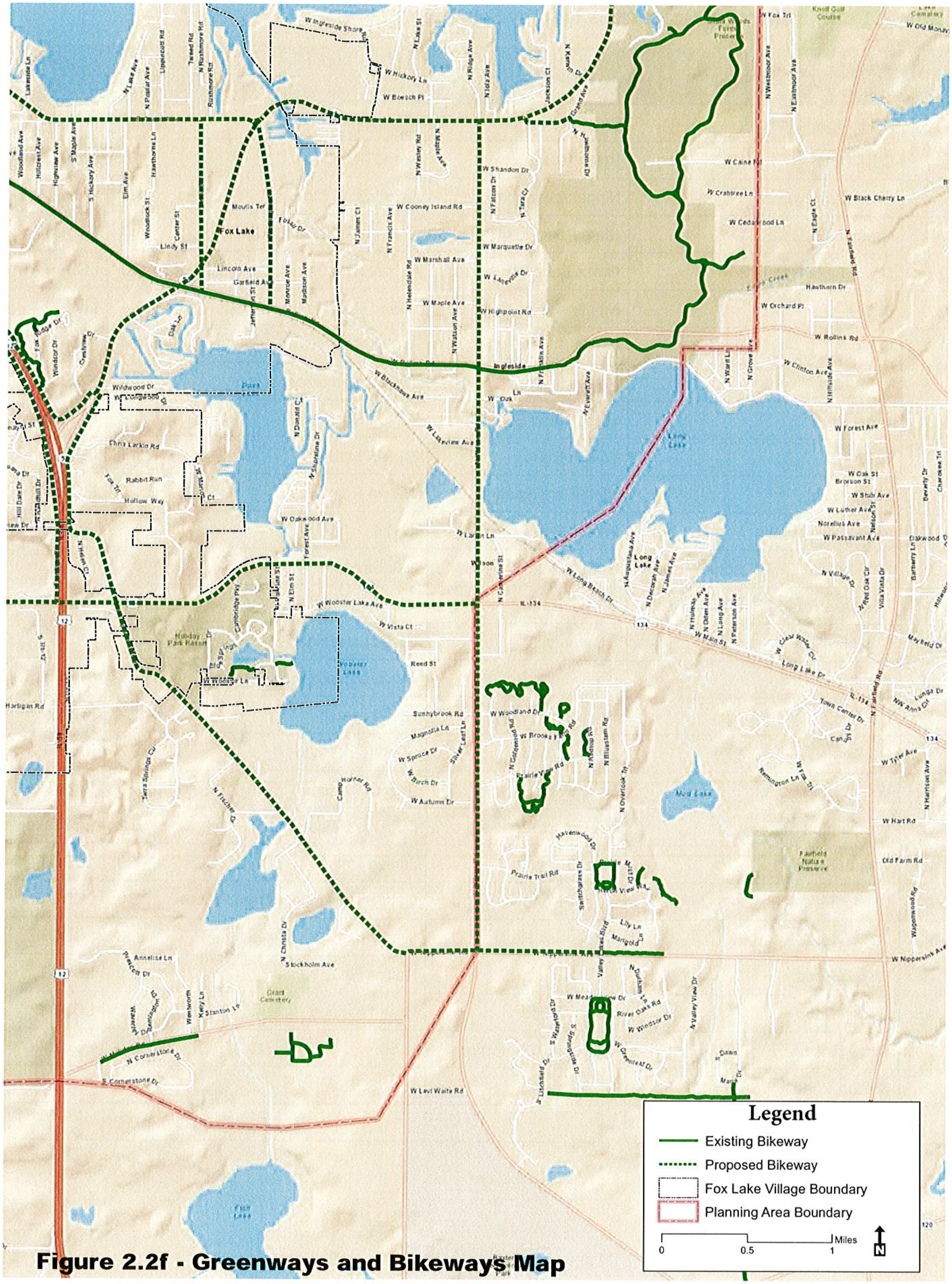


Figure 2.2f - Greenways and Bikeways Map

Table 2.1 - Bikeways and Greenways Plan by Segment

ID	Segment Name	From	To	Miles	Roadway Jurisdiction
1	Big Hollow Road	Baywater Lane	Nippersink Road	2.1	MCDOT
2	Devlin Road	Rollins Road	Grand Avenue	0.6	Fox Lake
3	Grand Avenue	Nippersink Boulevard	Washington Street	1.4	Fox Lake
4	Grass Lake Road - 1	State Park Road	Grass Lake Road Bridge	1.7	LCDOT
5	Grass Lake Road - 2	Grass Lake Road Bridge	Asbury Avenue	2.0	LCDOT
6	IL 134	Nippersink Road	Wilson Road	1.4	LCDOT
7	IL 59 - 1	IL 134	Rollins Road	1.4	IDOT
8	IL 59 - 2	Rollins Road	Washington Street	0.6	IDOT
9	IL 59 - 3	Washington Street	Wilson Road	0.9	Fox Lake
10	IL 59 - 4	Wilson Road	Sunset Lane	2.1	IDOT
11	Main Street	State Park Road	Wilmot Road	1.0	MCDOT
12	Nippersink - South	Wilson Road	IL 134	1.7	Fox Lake
13	Nippersink - Town Center	Rollins Road	Oak Street	0.4	Fox Lake
14	Fox Lake Road / Ringwood Road	Wilmot Road	US Route 12	1.3	MCDOT
15	State Park Road - 1	US Route 12	Grass Lake Road	1.1	LCDOT
16	State Park Road - 2	Grass Lake Road	Chain O' Lakes State Park	1.8	LCDOT
17	US Route 12 - Lake	State Park Road	Oak Street	1.2	IDOT
18	US Route 12 - McHenry	Wilmot Road	State Park Road	2.3	IDOT
19	Washington Street	Rollins Road	Grand Avenue	0.7	Fox Lake
20	Washington Street	US Route 12	Dockers Restaurant	0.2	Fox Lake
21	Wilmot Road - 1	Main Street	James Road	1.9	LCDOT
22	Wilmot Road - 2	James Road	Gander Mountain Forest Preserve	2.0	LCDOT
23	Wilson Road - 1	Nippersink Road	IL 134	1.3	LCDOT
24	Wilson Road - 2	IL 134	Rollins Road	0.9	LCDOT
25	Wilson Road - 3	Rollins Road	Grand Avenue	0.9	LCDOT
26	Kings Road	US Route 12 Frontage	IL 59	0.8	Fox Lake
27	Sayton Road	US Route 12	Rollins Road	0.3	Fox Lake
			Total Length (miles)	34	

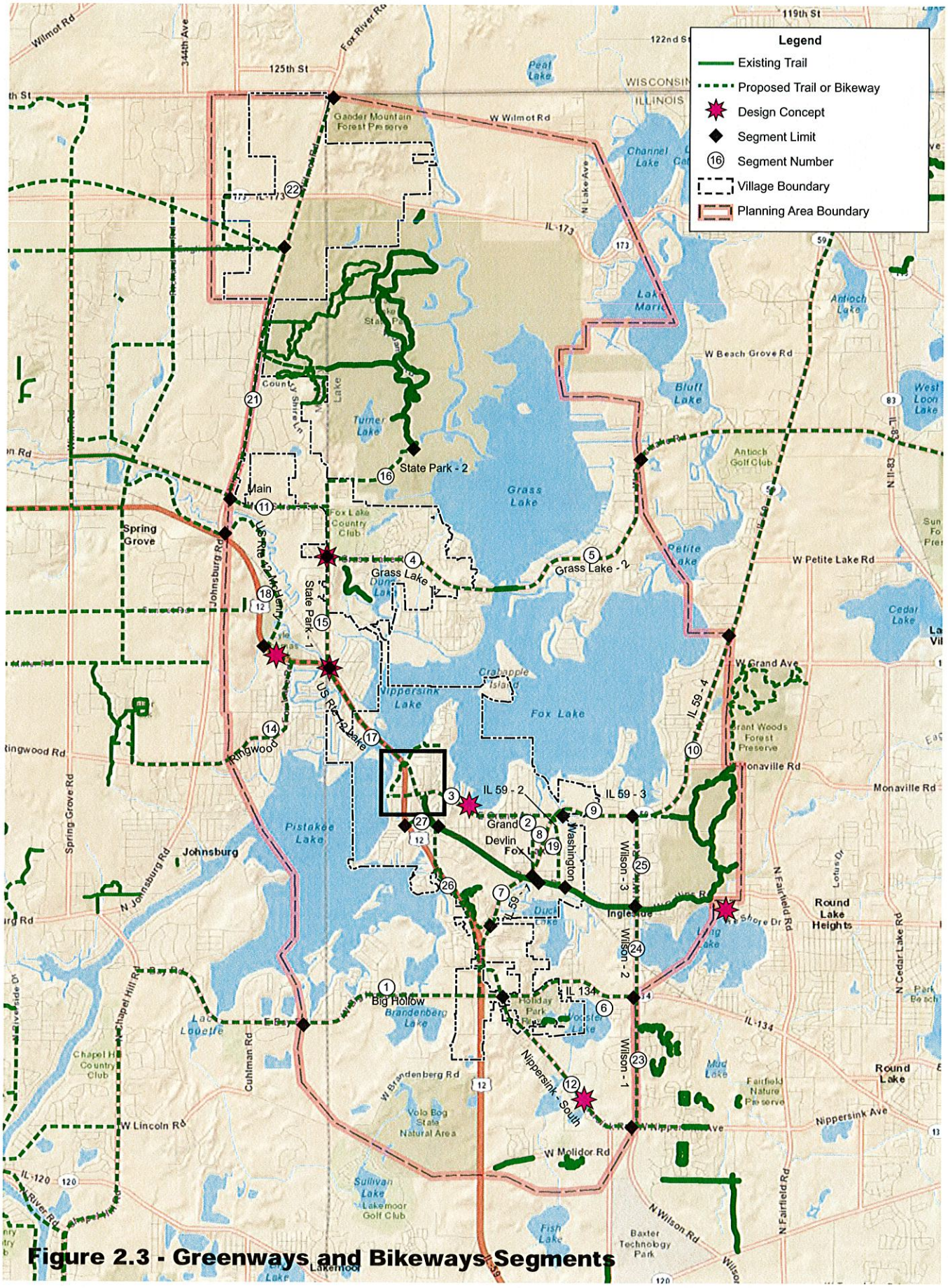


Figure 2.3 - Greenways and Bikeways Segments

Figure 2.4 - Greenways and Bikeways Segments Town Center

2.4 Recommended Projects

This section proposes a network of more than 34 miles of proposed bikeways within the Fox Lake planning area. This includes bikeways that were recommended as part of plans by other agencies. Total mileage is calculated for proposed bikeways within the planning area.

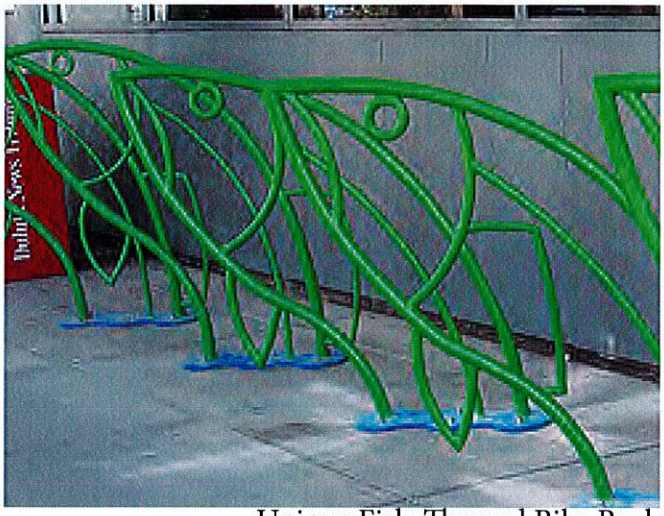
Implement the Proposed Greenways and Bikeways Map

The proposed bikeways presented in Section 2.3 present the vision of a completed bikeway network. The Village should pursue implementation of this network through construction of bikeways on Village roadways as well as through coordination of bikeway improvements completed by other agencies. Part 4, Finance and Implementation, provides further guidance on implementation, potential funding sources, and project phasing.

Install Bike Parking

Lakefront Park is a popular Village destination and the site of several Village events. Providing bike parking in Lakefront Park would help encourage bicycling to the park as well as provide an option for attendees to bicycle to Village events.

Lakefront Park



Unique Fish-Themed Bike Rack
Source: Richard Layman

Fox Lake Library

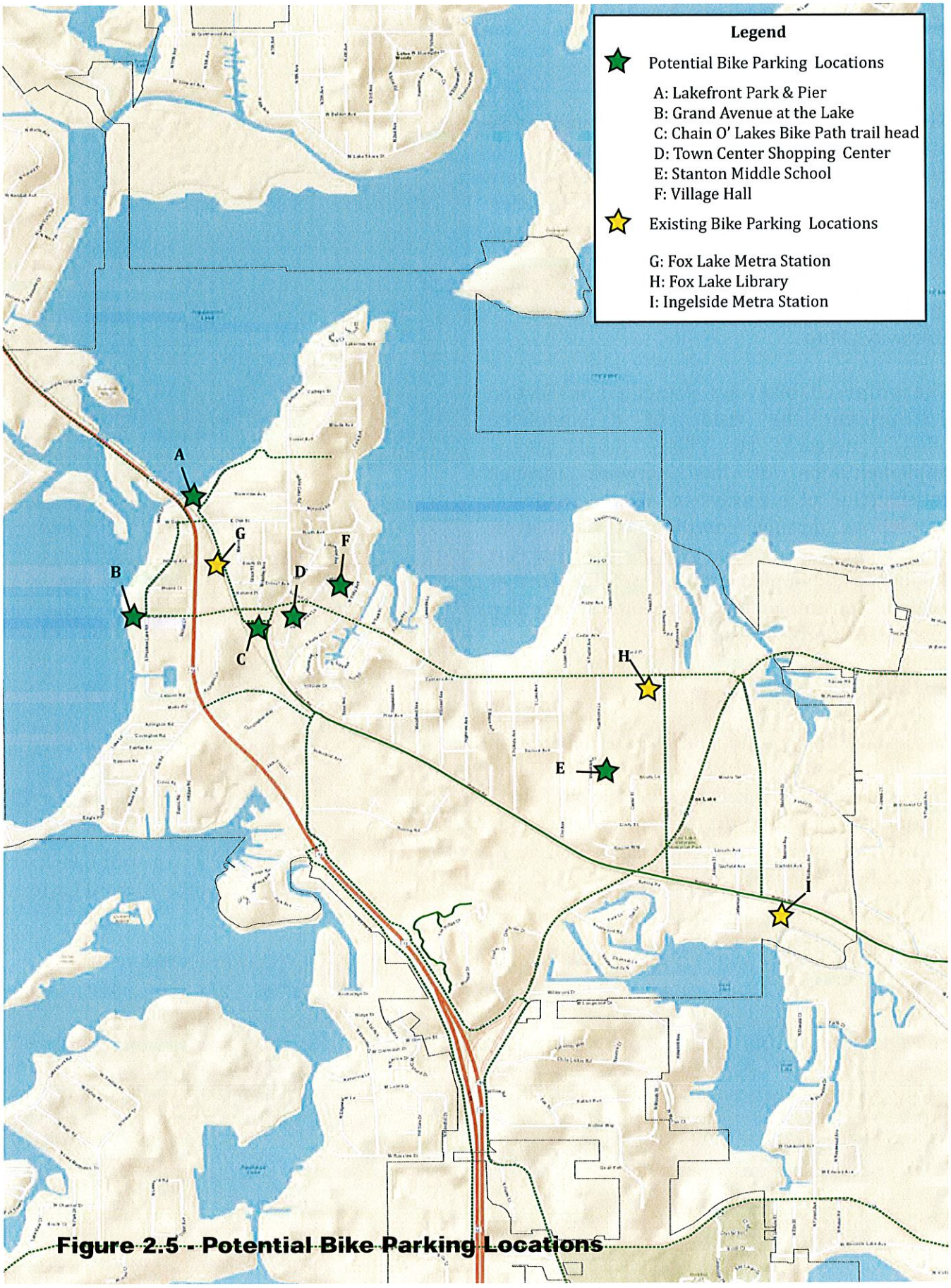


Figure 2.5 - Potential Bike Parking Locations

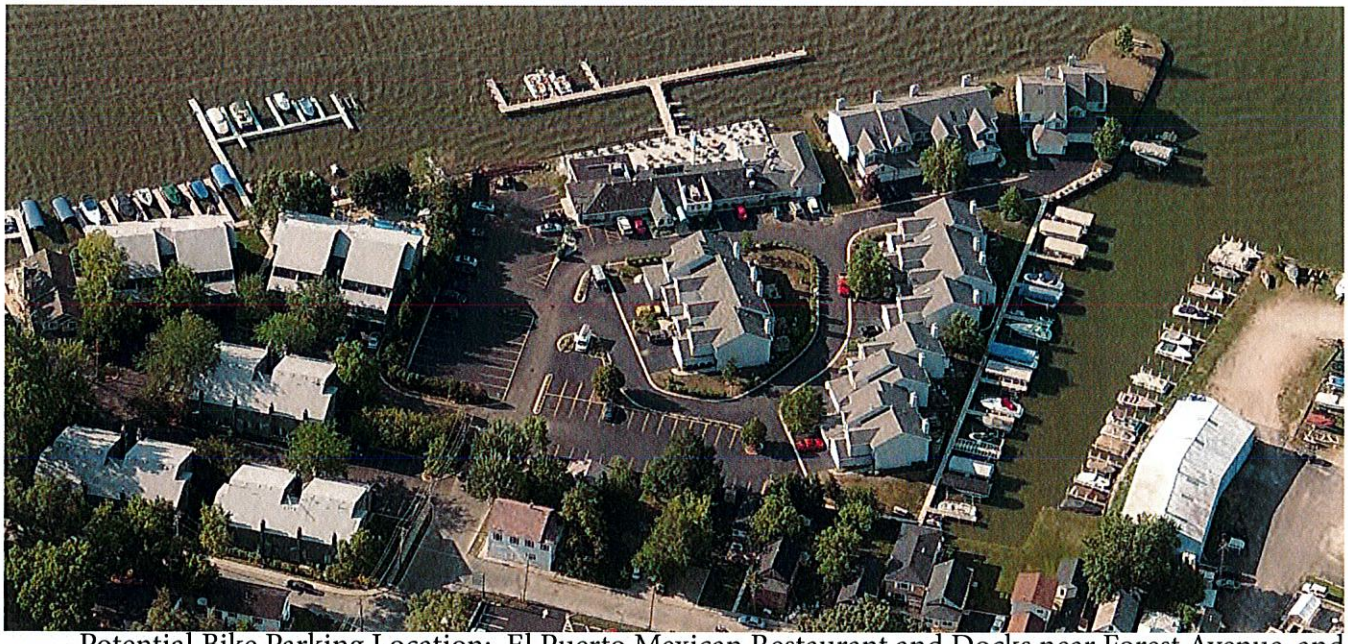
Efforts to encourage biking in Fox Lake can be supported by ensuring that there is bike parking available at key, high-usage locations. These locations, as well as current bike parking, are shown in **Figure 2.5 - Potential Bike Parking Locations**.

Bike parking should be installed at several locations in downtown Fox Lake. Installation of additional bike parking will help encourage existing bikers to visit downtown Fox Lake and help provide access the commercial district and amenities. Bike parking installations should be considered at the trail head for the Chain O' Lakes bike path, the Town Center, and along Grand Avenue.

In addition to the downtown bike parking, other opportunities to increase the overall amount of bike parking should be pursued. Potential places to install or upgrade bike parking would be at elementary and middle schools. Coordinating efforts to help support biking initiatives at the local schools will be important in helping foster a biking culture.

Bike Parking at Fox Lake Library

Bike Rack Design (Source: Sino Concept)



Potential Bike Parking Location: El Puerto Mexican Restaurant and Docks near Forest Avenue and Lakeview Avenue (Source: Bing)

2.5 Recommended Policies

Incorporate Bicycle Facilities Into Village Roadway Resurfacing Projects

The Village should implement the Plan by incorporating on-street bicycle facilities on Village roadways when they are resurfaced. The parts of the Greenways and Bikeways Plan that include on-street bicycle facilities are Nippersink Boulevard, Grand Avenue, Washington Street, and possibly Big Hollow Road.

When roads are reconstructed or resurfaced, the Village should ensure that pavement marking plans are included to show the location of exclusive on-street bicycle facilities where they are recommended.

The Village's recently completed Roadway Inventory was consulted to identify which roads were identified as being in most need of improvement. Project priorities are provided in **Part 4: Finance and Implementation**.

Incorporate Bicycle Parking Into Development Regulations

The planned development process allows the Village to work with developers to achieve various objectives, including improving transportation infrastructure.

Bicycle trails can be negotiated as a condition of development. Bicycle parking also can be required if the Village establishes a policy for incorporating bicycle parking ordinance similar to requirements for automobile parking by establishing recommended minimums and placement guidelines.

The Village should incorporate bicycle parking guidelines. Design guidelines for bicycle parking and other facilities are provided in **Section 2.7: Design Guidelines**.

2.6 Recommended Programs

Develop a Village Bike Share Program

Many residents and members of the Steering Committee expressed interest in bike share programs as a means to increase recreation tourism in Fox Lake. The Village should explore the feasibility of a bike share program that would be made available to residents and visitors to Fox Lake.

Bike share programs vary in size and can involve one or several rental locations. The program may be Village-owned, operated by a private contractor, or non-profit organization. In addition, public-private partnerships can be used to help offset costs.

Typically, the Village would subsidize the start-up cost (retain ownership of the stations and bikes), while a private contractor would oversee day-to-day operations. Potential partners could include local businesses. Fox Lake could experiment with a single rental location near the Fox Lake

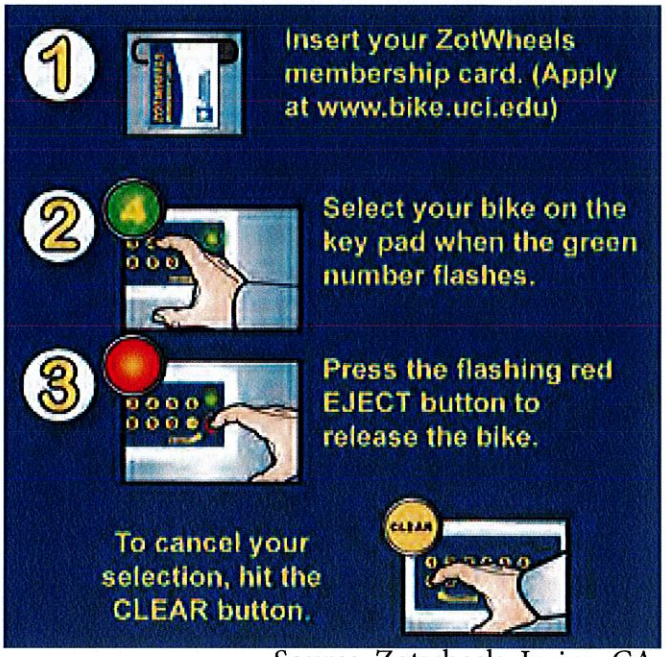
Bike Parking at Fox Lake Metra Station

Metra Station or in the Town Center.

The Federal Highway Administration recently prepared a report summarizing bike share programs around the United States of various sizes and price ranges. A small-scale program of less than 10 bikes can be implemented for a startup cost of less than $50,000 with an average annual operating costs of $12,000 to $15,000. The Village would have to conduct additional research to determine if this size program is desirable and feasible in Fox Lake.

Bike share programs of this size and with similar characteristics to Fox Lake include Spartanburg, South Carolina; and Zotwheels, operated at the University of California at Irvine. Additional information can be found in *Bike Sharing in the United States: State of the Practice and Guide to Implementation (September 2012).*

Source: Nice Ride, Minneapolis / St. Paul, MN



Source: Zotwheels, Irvine, CA.

Offer Bike Valet Services at Village Events

The Village could offer free valet bike parking at Village events as a means of encouraging bike parking as well as increasing the total amount of available parking at Village events such as the Fourth of July and Fox Lake Oktoberfest.

Bike valet services consist of temporary or permanent bike racks installed near the entrance to an event where valet customers have an attendant park their bikes in exchange for bike check tags. The bike valet is staffed by one or two volunteers who oversee the service and assist with parking and retrieving bicycles. Bike valet services can help encourage families to bicycle to events and helps eliminate the need to carry bike locks and can reduce resident concern over leaving bicycles unattended.

Source: Washtenaw County, MI

Host a Walking and Bicycling Event on the Chain O' Lakes Bike Path

The Chain O' Lakes Bike Path is a quality bike path that is highly visible in Fox Lake. The Village should host a walking and bicycling event that features the Chain O' Lakes Bike Path adjacent to Rollins Road.

These events are common in other municipalities including the rides and walks to benefit diabetes, cancer and other illness prevention and research. This would showcase the bike path to passing motorists as well as provide families an opportunity to enjoy the bike path as a group during an organized event.

Source: Fit City Scottsdale. Scottsdale, AZ.

Source: Baton Rouge Advocates for Safe Streets, LA.

2.7 Design Guidelines

While innovation continues to change the way bicycle facilities are designed, the Village should develop guidelines to help ensure consistency in design, construction, and maintenance of bikeways, crossings, and bike parking.

The IDOT Bureau of Design and Environment (BDE) Manual and the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (Bike Guide) are the best resources for bicycle facility design. Since the publication of the AASHTO Bike Guide, other transportation agencies have further developed guidelines for use in various environments, including off-road trail design and suburban and urban bicycle facility design.

Guidelines provided below have been selected for their suitability for use in Fox Lake. This includes information for on-street facilities such as buffered and protected bike lanes, off-street trails, trail crossings, and bike parking.

Shared Lane Marking

Guideline:
Shared lane markings are added to roadways where bicycle accommodations are desired but space is either insufficient to provide an exclusive bike lane, or where it is desirable to guide bicyclists through short segments of shared roadway conditions and remind motorists of the likely presence of bicyclists.

Shared lane markings consist of pavement markings placed away from the roadway edge to help bicyclists ride in the roadway where they can be seen by approaching and passing motorists, as to ensure they are spaced far enough from parked cars on streets with on-street parking.

In some cases on low-speed roads, it is appropriate to place a shared lane marking in the center of the travel lane to make it clear to motorists and bicyclists that, for short distances, there is insufficient room to pass slower moving vehicles and that all roadway users should travel single file until the roadway widens.

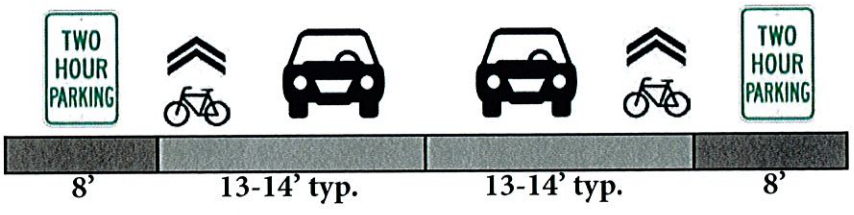
Standard:
Typical roadway width for shared lane marking: 13-14 feet for side-by-side shared lane condition; any roadway width adequate for short distances if shared lane marking is placed in the center of the lane.

Riding Surface:
Smooth riding surface should be suitable for bicyclists and motorists.

Shared Lane Marking
Source: National Association of City Transportation Officials (NACTO)

Shared Lane Marking
Source: National Center for Safe Routes to School

Typical Cross Section
Shared Lane Marking



Protected Bike Lanes

Guideline:
Protected bike lanes are space provided on the roadway that is for the exclusive use by bicycles; cars are not permitted to drive in protected bike lanes. To protect bicyclists from motorists, a physical barrier is constructed that separates the automobile travel lane from the bike lane.

Protected bike lanes may be provided on both sides of the street similar to automobile lanes or may be designed as a two-way facility on one side of the street. Generally, if a two-way facility is desired, it should be placed on the side of the street with the least amount of potential conflicts in the form of parked cars, alleys, or driveways.

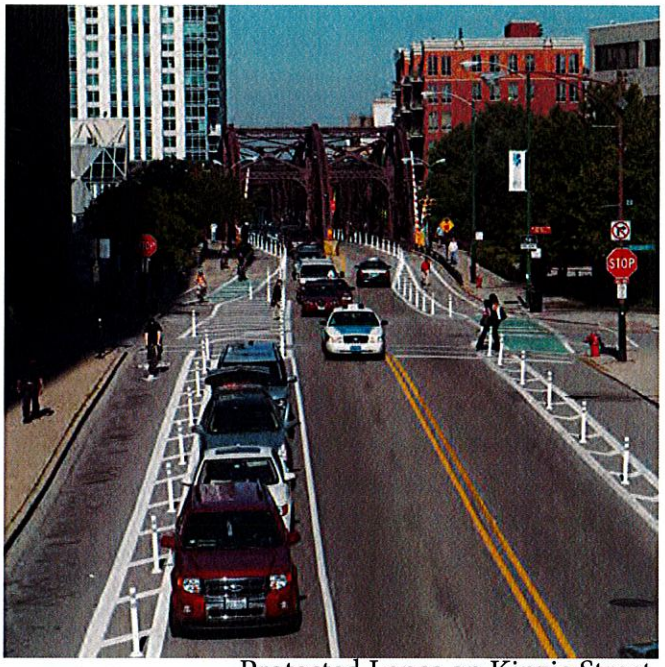
The barrier that separates the bike lane from the automobile travel lane may be a concrete barrier such as a "jersey barrier" or a raised continuous curb, decorative planters, reflective posts, or parked cars on streets where there is sufficient space to provide parking as well as bike facilities.

Standard:
Typical one-way width: 6 feet to face of curb or 5 feet to edge of pavement.

Minimum one-way width: 4 feet around drainage grates or in-road obstructions that cannot be avoided

Riding surface: Smooth concrete or asphalt pavement, no loose aggregate

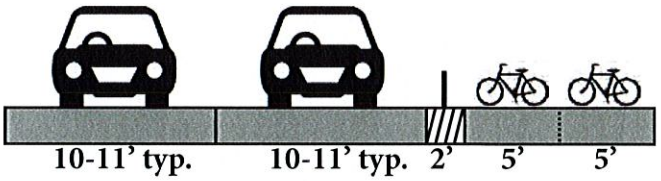
Barrier: Minimum 2 feet wide or curb with 2-foot buffer from bike lane to edge of travel lane.



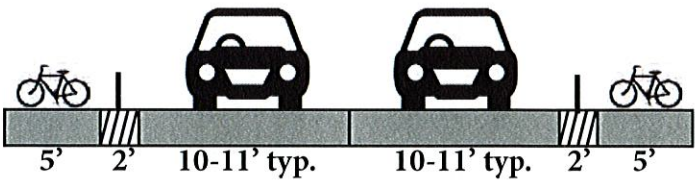
Protected Lanes on Kinzie Street, Chicago, Illinois


Protected Lanes on Kinzie Street, Chicago, Illinois

Typical Cross Section
Two-Way Protected Bike Lane



Typical Cross Section
One-Way Protected Bike Lane



Buffered Bike Lanes

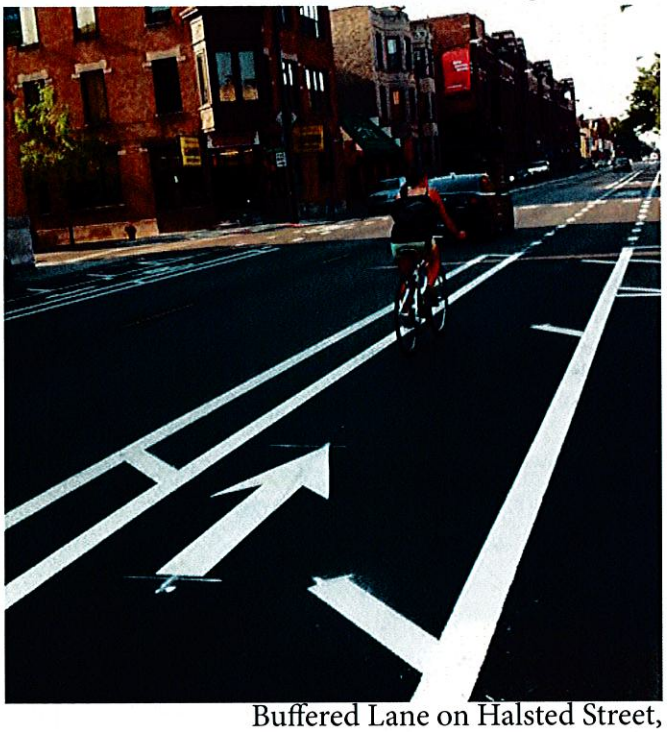
Guideline:
Like protected bike lanes, buffered bike lanes are an on-street bicycle facility that is designed for exclusive use by bicycles; cars are not permitted to drive in bike lanes.

Buffered bike lanes separate motorists and bicyclists with pavement markings typically two feet wide. Buffered bike lanes are recommended on roadways that are wide enough to allow automobile traffic as well as bicycle traffic, and are desirable over traditional bike lanes because of the added space provided to reduce traffic stress experienced by bicyclists.

Standard:
Similar width and riding surface to protected bike lanes.

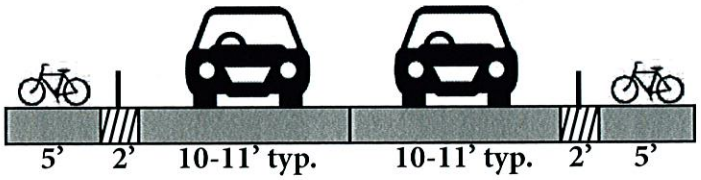
Buffer: Minimum 2 feet wide buffer from bike lane to edge of travel lane. Buffered bike lanes differ from protected bike lanes in that no flexible posts or delineators are used.

Buffered Lane on Halsted Street, Chicago, Illinois



Buffered Lane on Halsted Street, Chicago, Illinois

Typical Cross Section
Buffered Bike Lane



Shared Use Path

Guideline:
Shared use paths were identified as the most desirable type of bike facility in Fox Lake, although residents acknowledged that cost and right-of-way constraints make it difficult to provide in all areas.

However, expanding the trail network was identified as an important objective of this plan.

Standard:
Shared use paths should be 10 feet wide to allow for two-way bicycle travel while also providing adequate space for other trail users including pedestrians and joggers. If space constraints are encountered along shared use path, it is acceptable to reduce the width of the trail to eight feet for short distances. These narrow points should be accompanied by signs to warn approaching trail users of the reduced width.

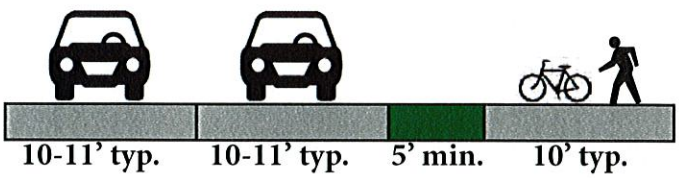
Mile marker posts should be placed at regular intervals to assist in location of trail users in the event of emergency situation and to provide reference for maintenance (e.g. mowing, snow removal). Mile markers can be seen on the Chain O' Lakes Bike Path along Rollins Road.

Buffer From Roadway:
A minimum of 5 feet is recommended between the roadway edge and an off-street trail, similar to the distance recommended for a sidewalk. For roads with speeds above 35 mph, greater separation or a barrier may be desired. Barriers should be a minimum of 42" high.

Chain O' Lakes Bike Path,
Fox Lake, Illinois

Chain O' Lakes Bike Path,
Fox Lake, Illinois

Typical Cross Section
Shared Use Path



Trail Crossings

Trails often must cross roadways, and in many cases, these crossings occur far from signalized intersections. However, trail crossings can be provided at unsignalized locations so long as certain requirements are met.

In addition to ensuring the sight distanced are adequate at the proposed crossing location, national and local guidance for trail crossings includes information about warning signs, pavement markings, and design treatments to facilitate trail crossings where needed.

The amount of trail crossing treatments varies based on the width and traffic of the road that is being crossed. Narrower roads with slower traffic typically require fewer treatments than wider, higher speed roads.

Trail crossings should have high visibility pavement markings at the crossing location, warning signs in advance of the crossing for motorists as well as trail users, and the trail should jog slightly prior to the crossing to slow approaching trail users and orient their path of travel to face and scan oncoming traffic.

Trail crossings on multilane roads or on roadways with posted speeds higher than 35 mph may also be accompanied by median refuge islands, warning lights, beacons, or a midblock signal.

Source: Todd Gill

Bike Parking

Bike parking is a critical component of a bicycle network. Bicyclists, like motorists, should be able to securely park near commercial areas, major employers, schools, parks, and other popular destinations. In addition to incorporating bike parking into the development process, bike parking should be added at existing locations.

Bike parking may vary in style so long as the following requirements are met: a bicycle must be able to be securely fastened in two locations on the bicycle frame to a structure that is permanently affixed to the ground or wall of a structure. There should be a minimum of 30 inches between mounting posts to allow room to maneuver the bicycle into the space.

If multiple bike racks are desired in a location, single bike racks may be installed in succession along a linear path or sidewalk, and group racks or "bike corrals" may be used. Bike corrals also may be installed for temporary or seasonal bike parking or bike parking for special events.

Bike Corral in Chicago, Illinois

Bike Corral

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Part 3

Proposed Design Concepts

Fox Lake Greenways and Bikeways Plan

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3.1 Introduction

Part 3 presents proposed design concepts that show what potential bicycle facility improvements could look like if implemented on roads in and around Fox Lake. National guidelines for bicycle facility design (Part 2) were used to develop these concepts.

Some of the roadways recommended for bicycle facilities are not able to be implemented in the short term due to the need to expand the roadway, alter the roadway's drainage, or construct a physically-separated trail. However, these projects are important links to the overall network and will require analysis and concept development after the approval of this plan.

3.2 Proposed Design Concepts

Proposed design concepts are shown on the following pages. For some of the concepts, one ore more design alternatives were prepared showing options for accommodating bicyclists either through the use of on-street or off-street bicycle facilities. In some instances, one concept was found to be the preferred alternative and is provided below. For others, two or more design alternatives are provided to show options; however, a preferred alternative was not selected.

Figure 3.1 Proposed Design Concepts shows the approximate location for which proposed design concepts have been prepared. **Table 3.1** shows segments by number which correspond to segment numbers on the map.

As part of the planning process, the Village met with IDOT to discuss the concepts and how to accommodate bicycles on the two bridge structures that cross the Nippersink Lake Channel. A summary of this meeting is included in **Section 3.3, U.S. Route 12 Bridge Concepts**.

Table 3.1 - Bikeways and Greenways Plan by Segment

ID	Segment Name	From	To	Miles	Roadway Jurisdiction
1	Big Hollow Road	Baywater Lane	Nippersink Road	2.1	MCDOT
2	Devlin Road	Rollins Road	Grand Avenue	0.6	Fox Lake
3	Grand Avenue East	Nippersink Boulevard	Washington Street	1.4	Fox Lake
4	Grass Lake Road 1	State Park Road	Grass Lake Road Bridge	1.7	LCDOT
5	Grass Lake Road 2	Grass Lake Road Bridge	Asbury Avenue	2.0	LCDOT
6	IL 134	Nippersink Road	Wilson Road	1.4	LCDOT
7	IL 59 - 1	IL 134	Rollins Road	1.4	IDOT
8	IL 59 - 2	Rollins Road	Washington Street	0.6	IDOT
9	IL 59 - 3	Washington Street	Wilson Road	0.9	Fox Lake
10	IL 59 - 4	Wilson Road	Sunset Lane	2.1	IDOT
11	Main Street	State Park Road	Wilmot Road	1.0	MCDOT
12	Nippersink - South	Wilson Road	IL 134	1.7	Fox Lake
13	Nippersink - Town Center	Rollins Road	Oak Street	0.4	Fox Lake
14	Fox Lake Road / Ringwood Road	Wilmot Road	US Route 12	1.3	MCDOT
15	State Park Road 1	US Route 12	Grass Lake Road	1.1	LCDOT
16	State Park Road 2	Grass Lake Road	Chain O' Lakes State Park	1.8	LCDOT
17	US Route 12 - Lake	State Park Road	Oak Street	1.2	IDOT
18	US Route 12 - McHenry	Wilmot Road	State Park Road	2.3	IDOT
19	Washington Street	Rollins Road	Grand Avenue	0.7	Fox Lake
20	Grand Avenue West	US Route 12	Dockers Restaurant	0.2	Fox Lake
21	Wilmot Road 1	Main Street	James Road	1.9	LCDOT
22	Wilmot Road 2	James Road	Gander Mountain Forest Preserve	2.0	LCDOT
23	Wilson Road 1	Nippersink Road	IL 134	1.3	LCDOT
24	Wilson Road 2	IL 134	Rollins Road	0.9	LCDOT
25	Wilson Road 3	Rollins Road	Grand Avenue	0.9	LCDOT
26	Kings Road	US Route 12 Frontage	IL 59	0.8	Fox Lake
27	Sayton Road 1	US Route 12	Rollins Road	0.3	Fox Lake
28	Pistakee Lake / Oak / Nippersink	Grand Avenue	Mineola Road	1.0	Fox Lake
			Total Length (miles)	35	

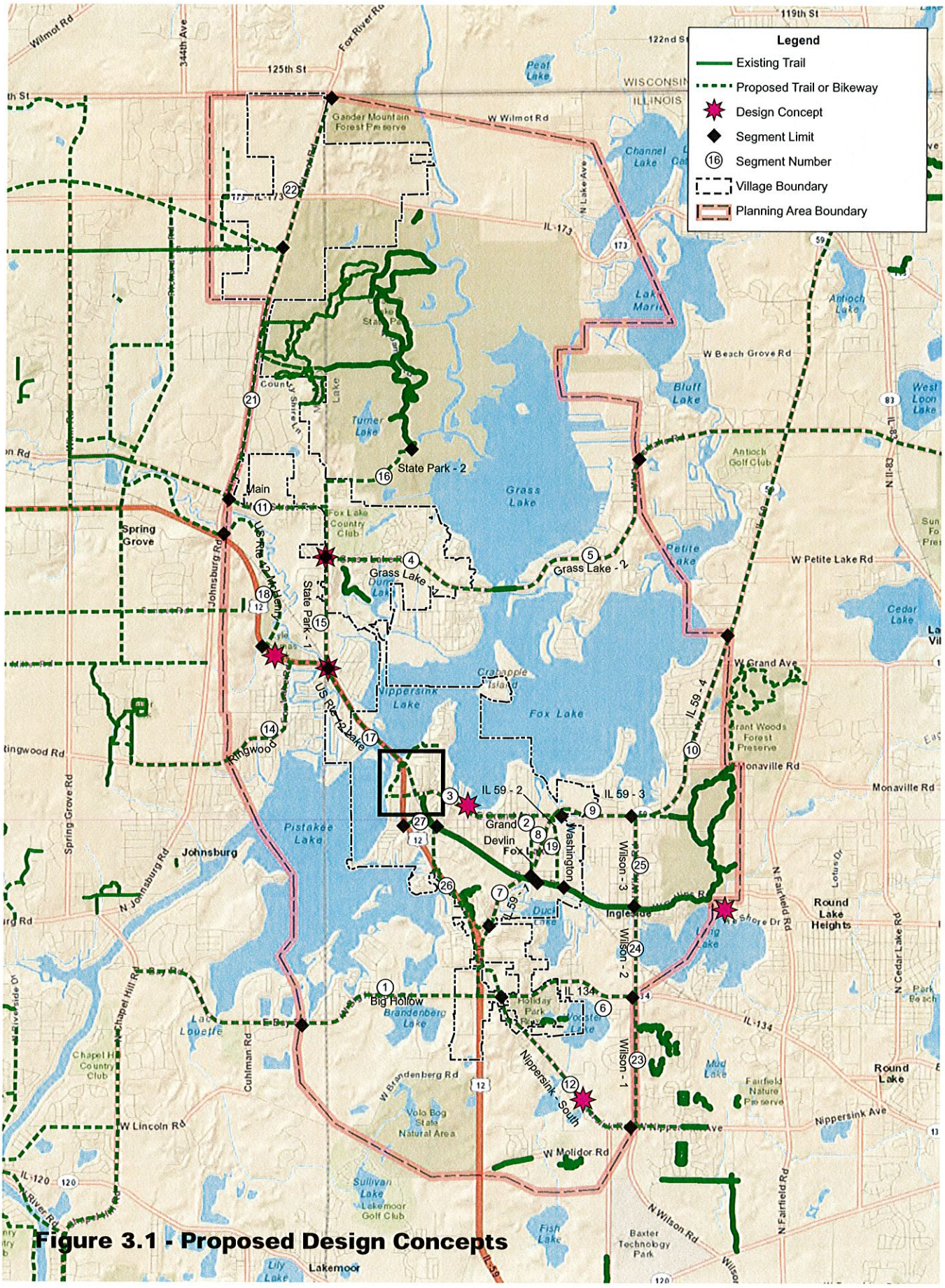

Figure 3.1 - Proposed Design Concepts

Figure 3.2 - Proposed Design Concepts - Town Center

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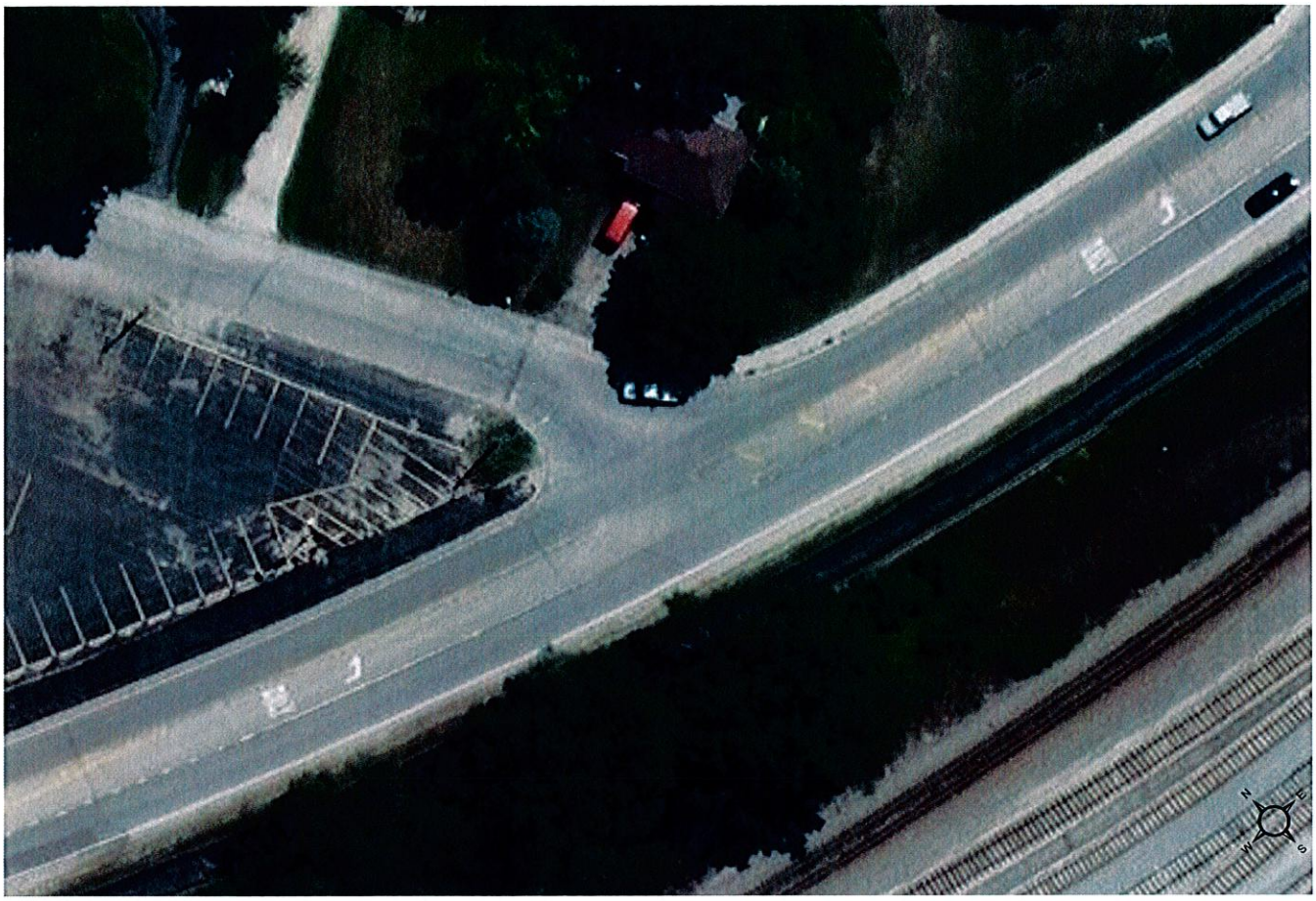
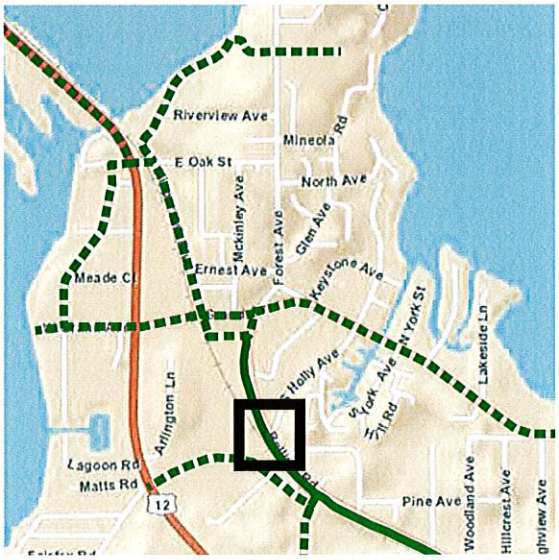


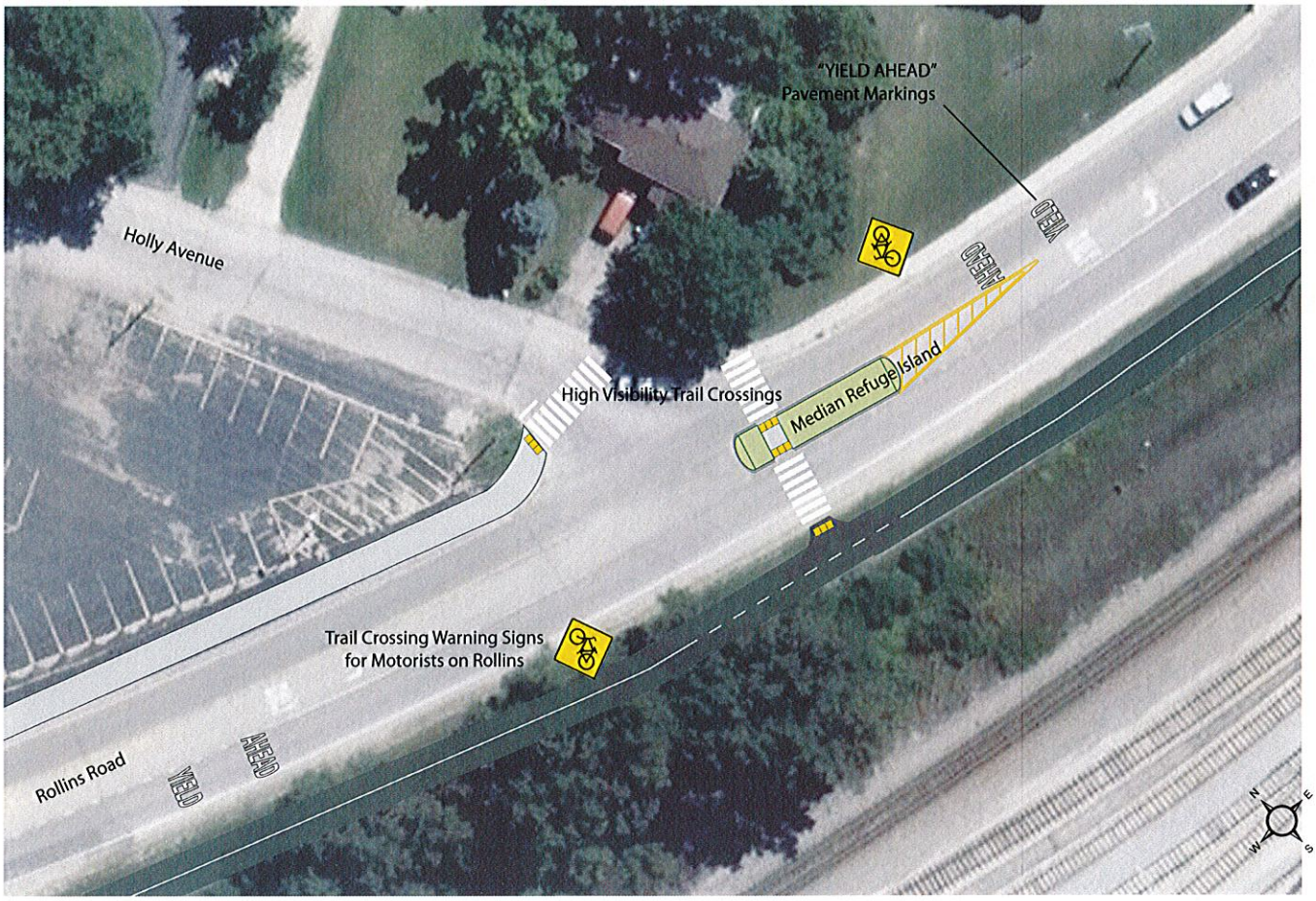
Location: Rollins Road at Holly Avenue

Existing Condition: Two lanes with left-turn lane at Holly Avenue

Posted Speed: 40 mph

Jurisdiction: Lake County Division of Transportation





Location: Rollins Road at Holly Avenue

Proposed Concept: Trail crossing with median refuge island

Purpose: Connect Bike Path to the Town Center and improve the crossing at Holly Avenue

To facilitate crossings of this three-lane road, a median refuge island is recommended so that bicyclists and pedestrians may cross one lane of traffic at a time. The island should be placed south of the left turn lane on Rollins Road at Holly Avenue. Pavement markings and signs should be used to give advance notice to northbound motorists approaching this intersection.

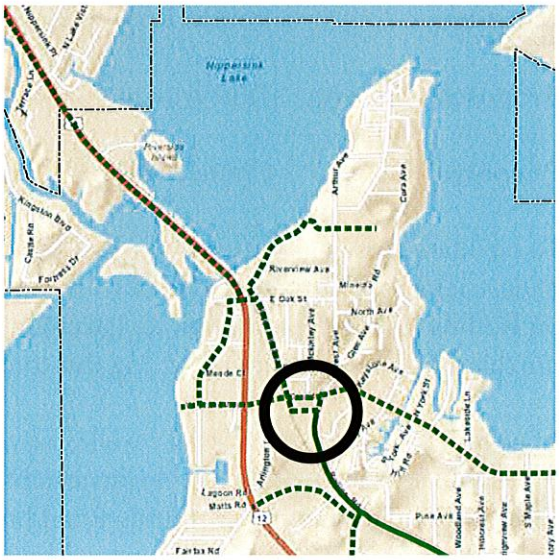
In general, this concept was very well received because of the connection it provides to the Chain O' Lakes Bike Path and using Holly Avenue instead of Grand Avenue. Most attendees stated that the flashing beacon would not be necessary on Rollins Road but liked the concept of constructing a refuge island on Rollins Road. The median refuge island would be long enough to provide a refuge for bicyclists and pedestrians crossing Rollins Road and should taper in order to preserve the left turn lane for motorists entering Hillside Drive (shown on the right side of the concept above).

Location: Alley and Metra Parking Lot South of Grand Avenue, west of Rollins Road

Existing Condition: Alley and parking lot

Posted Speed: N/A

Jurisdiction: Village of Fox Lake



Location: Alley and Metra Parking Lot South of Grand Avenue, west of Rollins Road

Proposed Concept: Two-way Path Through Alley and Adjacent to Metra Parking Lot

Purpose: To connect Chain O' Lakes Bike Path to Lakefront Park

Two concepts were prepared to make a connection between the end of the Chain O' Lakes bike path and Nippersink Boulevard: direct bicyclists on Grand Avenue or this concept, consisting of a two-way path in the alley one half block south of Grand Avenue that would connect the end of the bike path to Nippersink Boulevard.

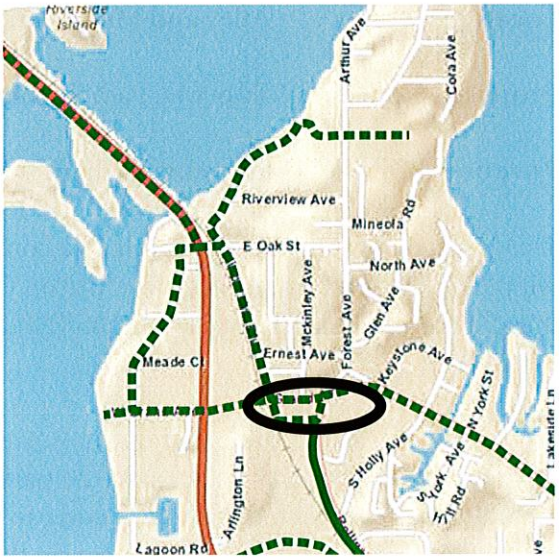
This concept was the preferred option instead of sending bicyclists along Grand Avenue. The Village of Fox Lake owns property adjacent to the parking lot that can support a two-way path. This would allow for a path to be constructed without having to relocate Metra parking. However, the workshop participants stated that it would be feasible to relocate the parking spaces if necessary.

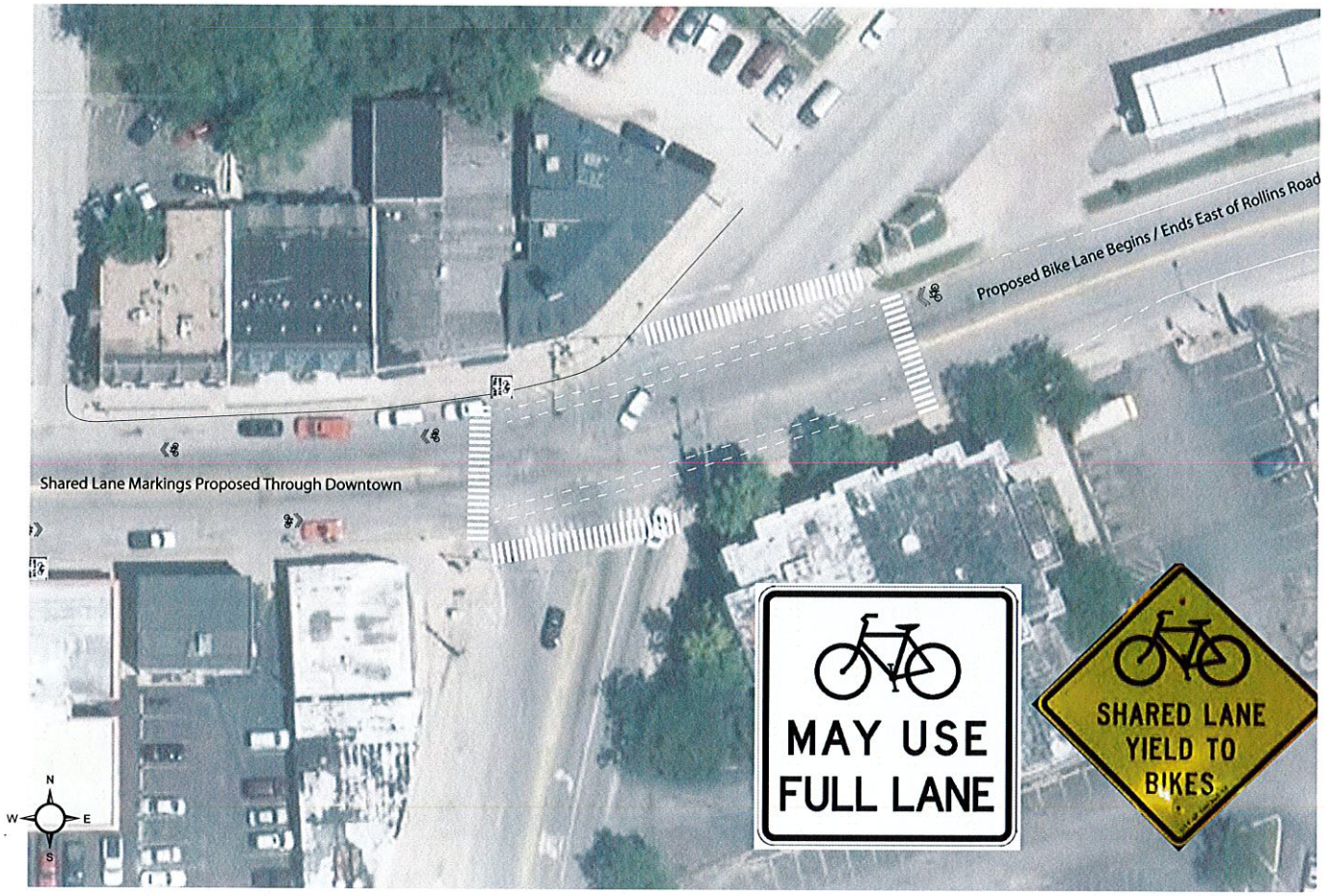
If the Village prefers to relocate parking instead of placing the path in the parkway, it will work with Metra to identify locations for replacement parking. Additionally, a commuter parking lot is proposed north of this location closer to the Metra station that also will increase the amount of commuter parking available in Fox Lake.

Location: Grand Avenue at Rollins Road

Existing Condition:
Grand Avenue: Two lanes with on-street parking
Rollins Road: Two lanes with left-turn lane at Grand Avenue

Jurisdiction: Village of Fox Lake

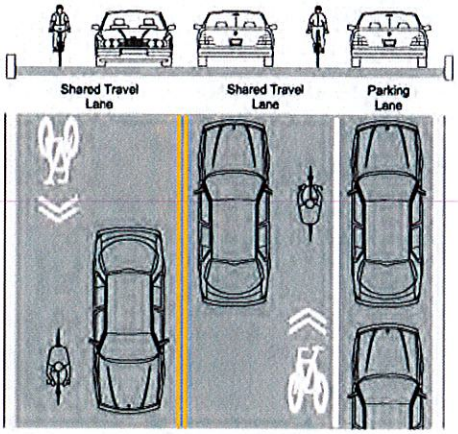




Location: Grand Avenue at Rollins Road

Proposed Concept: Shared Lane Markings on Grand Avenue

Purpose: To connect the Chain O' Lakes Bike Path to the Town Center



Proposed Cross-Section
(Source: AASHTO Bike Guide)

To connect the end of the Chain O' Lakes Bike to the Town Center, an on-street facility is proposed on Grand Avenue. Many workshop attendees did not feel comfortable with encouraging bicyclists on Grand between Rollins Road and Nippersink Boulevard. There was concern over automobile traffic and congestion.

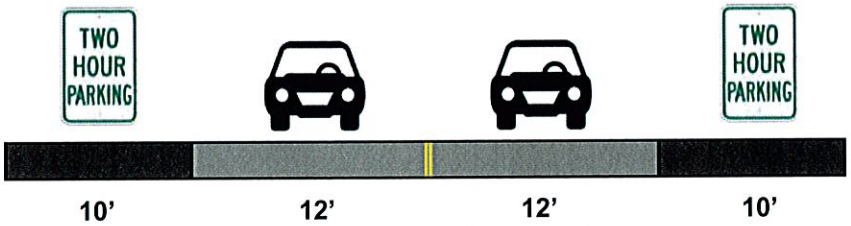
As a result, this segment should be considered as part of a network of improvements that includes the two-way buffered bike lane through the alley to the south, as shown in the previous concept.

This facility would be preferable to adult bicyclists who are comfortable in mixed traffic conditions. Some suggested that a posted 30 mph speed limit on Grand Avenue east of Rollins Road should be implemented to be consistent with the speed limit west of Rollins Road. Additional concepts for this location are shown on the following page.

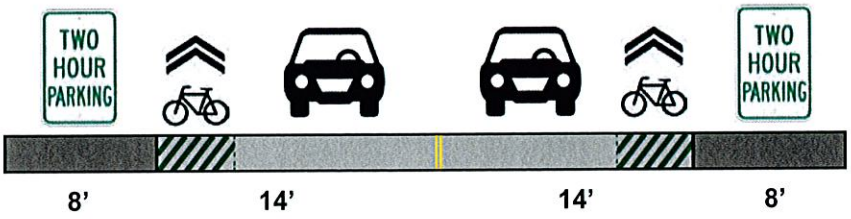
Location: Grand Avenue between Rollins Road and US Route 12

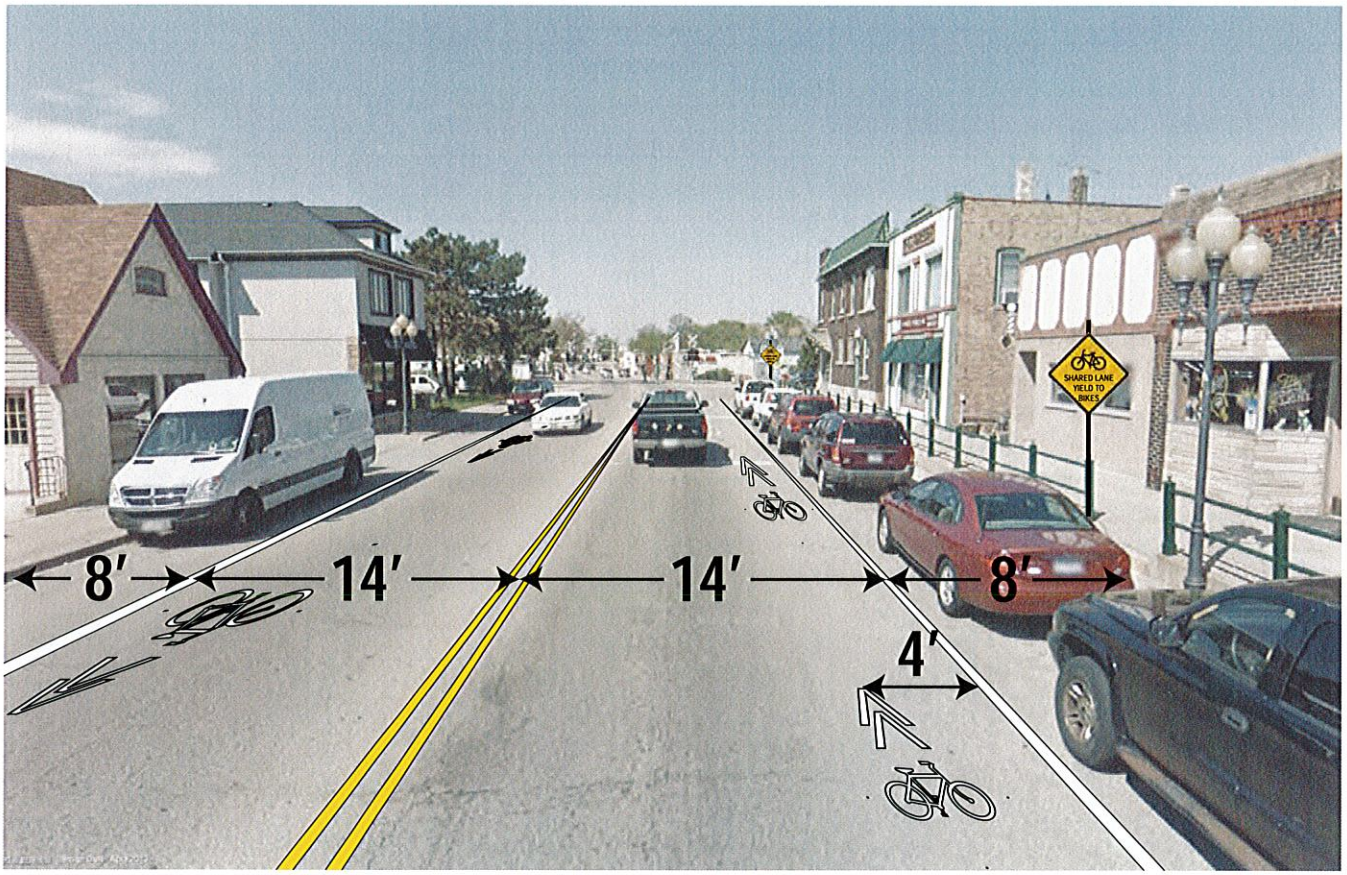
Existing Condition: Two 12-foot travel lanes and two 10-foot parking lanes

Jurisdiction: Village of Fox Lake



Proposed Conditions: Two 14-foot travel lanes and two 8-foot parking lanes



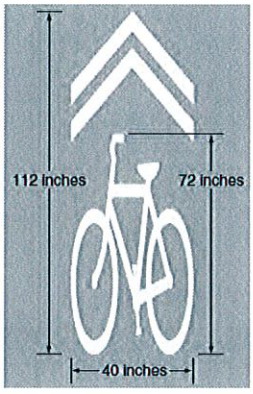


Location: Grand Avenue between Rollins Road and US Route 12

Proposed Condition: Two 14-foot travel lanes and two 8-foot parking lanes

Purpose: Provide room for shared lane markings while preserving through traffic

This concept shows the proposed placement of shared lane markings to indicate that Grand Avenue, currently operating as a shared roadway (although not often), would be able to accommodate bicyclists in mixed traffic conditions while preserving through traffic capacity. When traffic is light, motorists are provided with enough room to pass bicyclists traveling in either direction on Grand Avenue. When traffic is congested (and slows down), bicyclists travel at the same speed as motorists. Pavement markings and signs, consistent with the Manual on Uniform Traffic Control Devices (MUTCD), are shown below with a proposed cross section.



Shared Lane Marking*

Typical sign assembly, Sign Type W11-1*

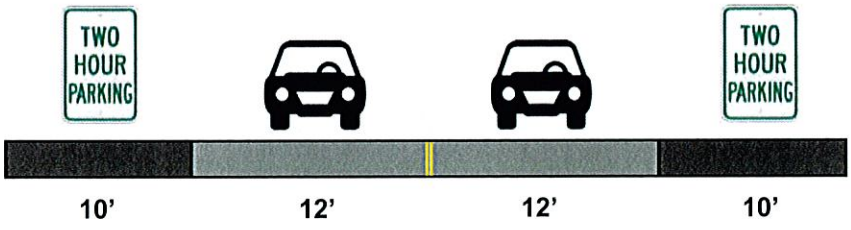
*Source: *Manual on Uniform Traffic Control Devices*

Location: Grand Avenue between Rollins Road and US Route 12

Existing Condition: Two 12-foot travel lanes and two 10-foot parking lanes

Jurisdiction: Village of Fox Lake

Existing Cross Section:



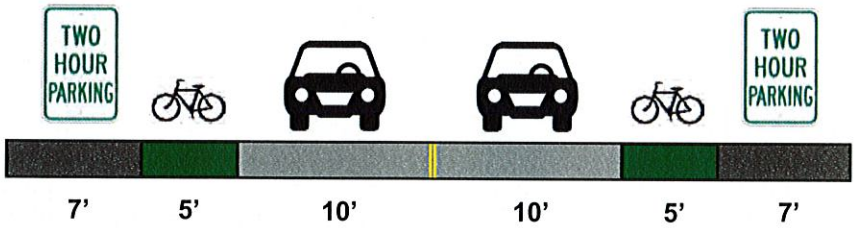
Location: Grand Avenue between Rollins Road and US Route 12

Proposed Condition: 10-foot travel lanes and, 5-foot bike lanes, and 7-foot parking lanes

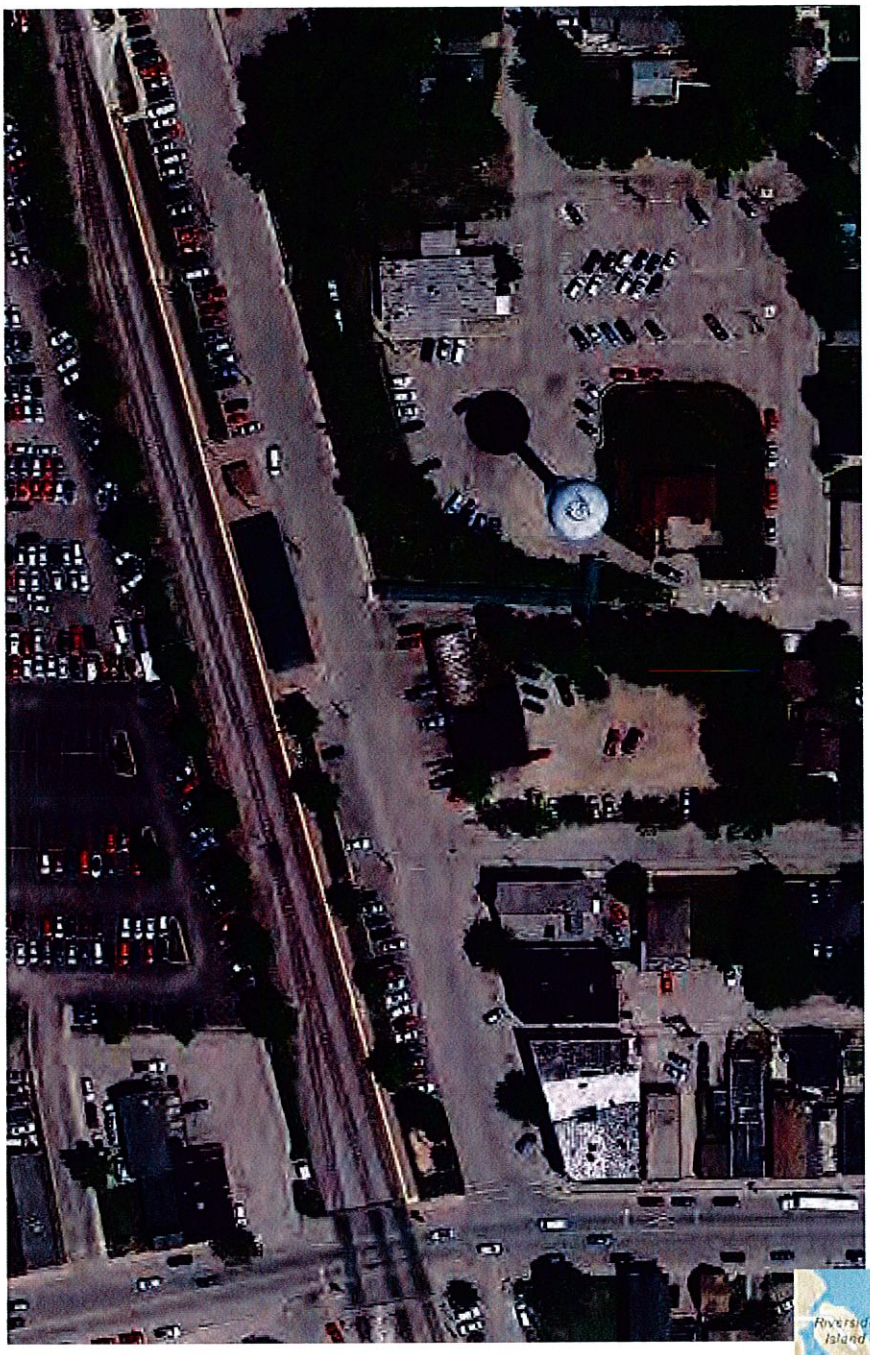
Purpose: Provide room for bike lane markings while preserving through traffic

This concept shows the proposed placement of bike lanes on Grand Avenue between Rollins Road and US Route 12. Bike lanes would continue east of Rollins Road as well without parking. Pavement markings and signs, consistent with the Manual on Uniform Traffic Control Devices (MUTCD), are shown below with a proposed cross section.

Proposed Cross Section:



Typical Bike Lane Sign Assembly.
Source: Manual on Uniform Traffic Control Devices.

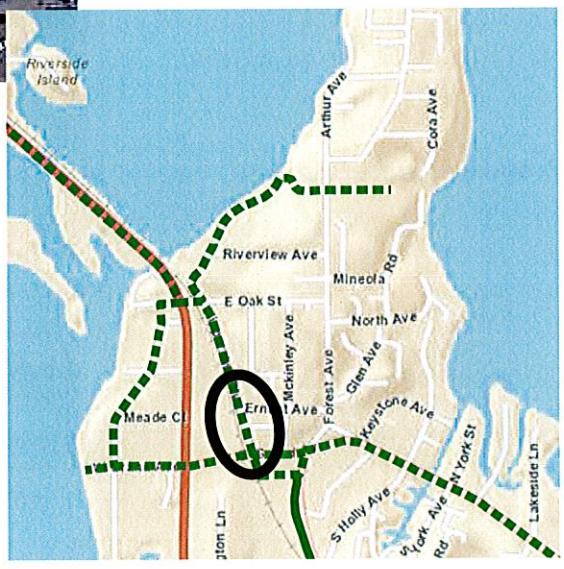


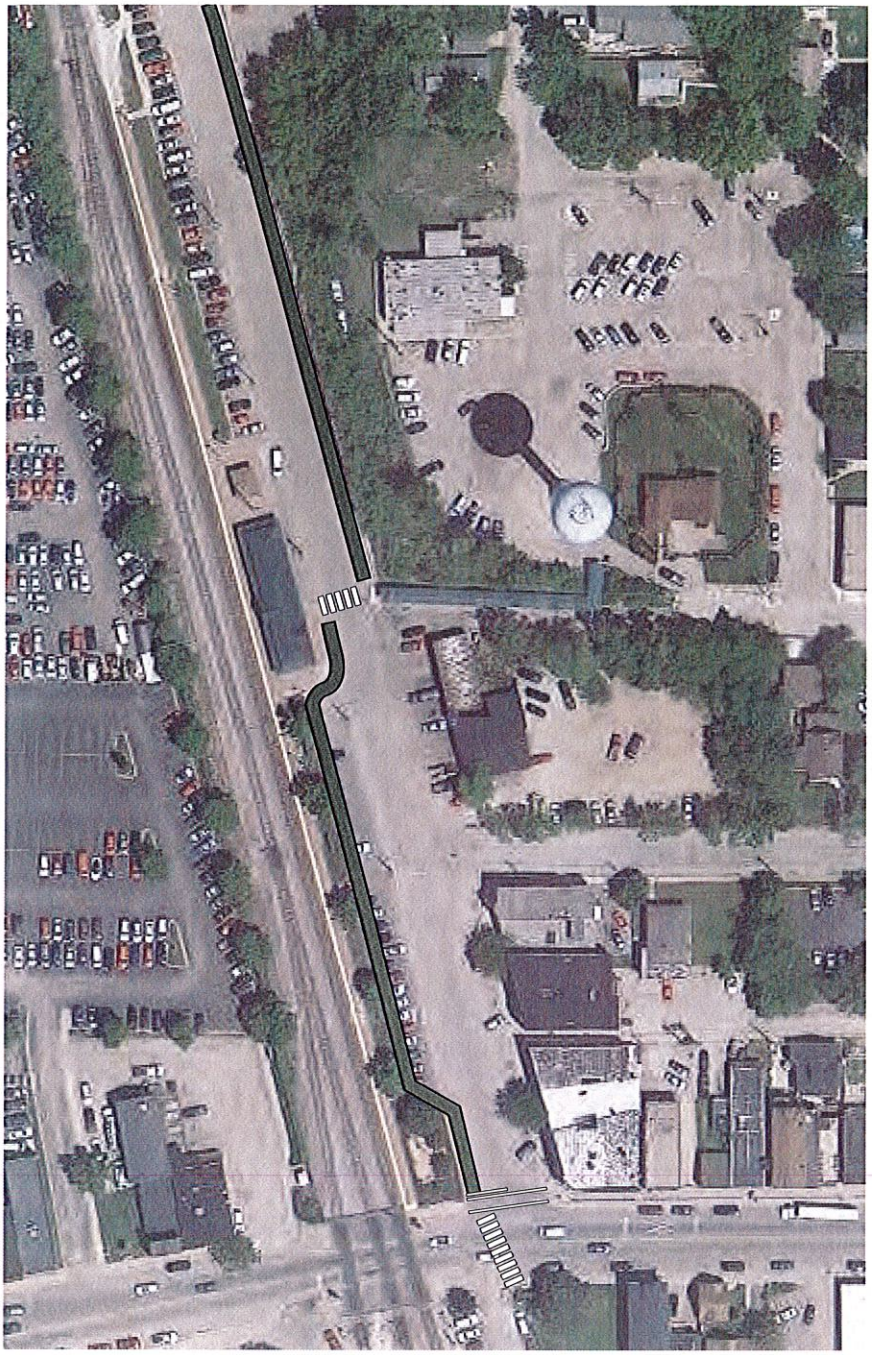
Location:
Nippersink Boulevard between Grand Avenue and Lakefront Park

Existing Condition:
One lane in each direction with on-street parking on both sides, narrows to two lanes without on-street parking at Oak Street, narrows from two lanes in each direction at State Park Road

Posted Speed: 25 mph

Jurisdiction: Village of Fox Lake





Location:
Nippersink Boulevard between Grand Avenue and Lakefront Park

Purpose:
To connect Chain O' Lakes Bike Path with Lakefront Park and Metra Station

Proposed Concept:
Two-way barrier protected path between sidewalk and parking lane on east side of Nippersink

A two-way path on Nippersink Boulevard is proposed that would connect an improved Grand Avenue crossing from the end of the existing bike path with Lakefront Park.

The width of the two-way facility is proposed to be wide enough to plow with existing equipment as it is the same width as an automobile travel lane.

Workshop attendees were enthusiastic of this concept as it provides a connection between the end of the bike path with Lakefront Park that would be attractive to families with children.

High-visibility pavement markings are proposed for the crossing on Grand Avenue as well as on Nippersink at Ernest Avenue where the path crosses to the other side of the street.

An in-roadway "State Law - Stop for Pedestrians in Crosswalk" signs also may be installed to improve motorist yielding behavior. These may be removed during winter months when bicyclist and pedestrian activity is lower to make plowing easier.

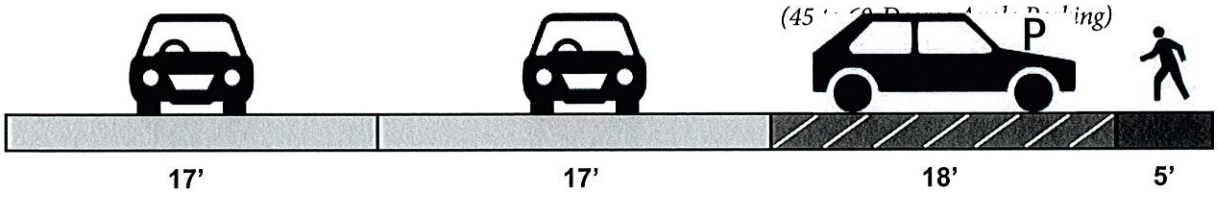
Location: Nippersink Boulevard between Grand Avenue and Lakefront Park

Existing Condition: One lane in each direction with on-street parking on both sides, narrows to two lanes without on-street parking at Oak Street, narrows from two lanes in each direction at State Park Road

Posted Speed: 25 mph

Jurisdiction: Village of Fox Lake

Existing Cross Section:



Location: Nippersink Boulevard between Grand Avenue and Lakefront Park

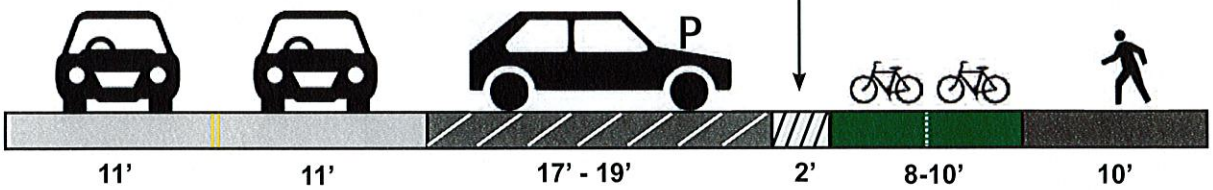
Purpose: To connect Chain O' Lakes Bike Path with Lakefront Park and Metra Station

Proposed Concept: Two-way barrier protected path between sidewalk and parking lane on east side of Nippersink. Angle parking plus a buffer provides space for a continuous curb to act as a wheel stop and allow for vehicle overhang. The 17-19' width could be further reduced if the parking angle is rotated further, to 30 degrees, if desired. The buffered bike lane would be shown in a dashed line in front of driveways and cross streets. Refer to the diagram on page 3-22 identifying these areas.

Proposed Cross Section:

With or Without Flexible Posts / Decorative Planters

(45 to 60-Degree Angle Parking)

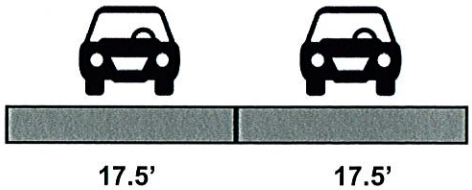


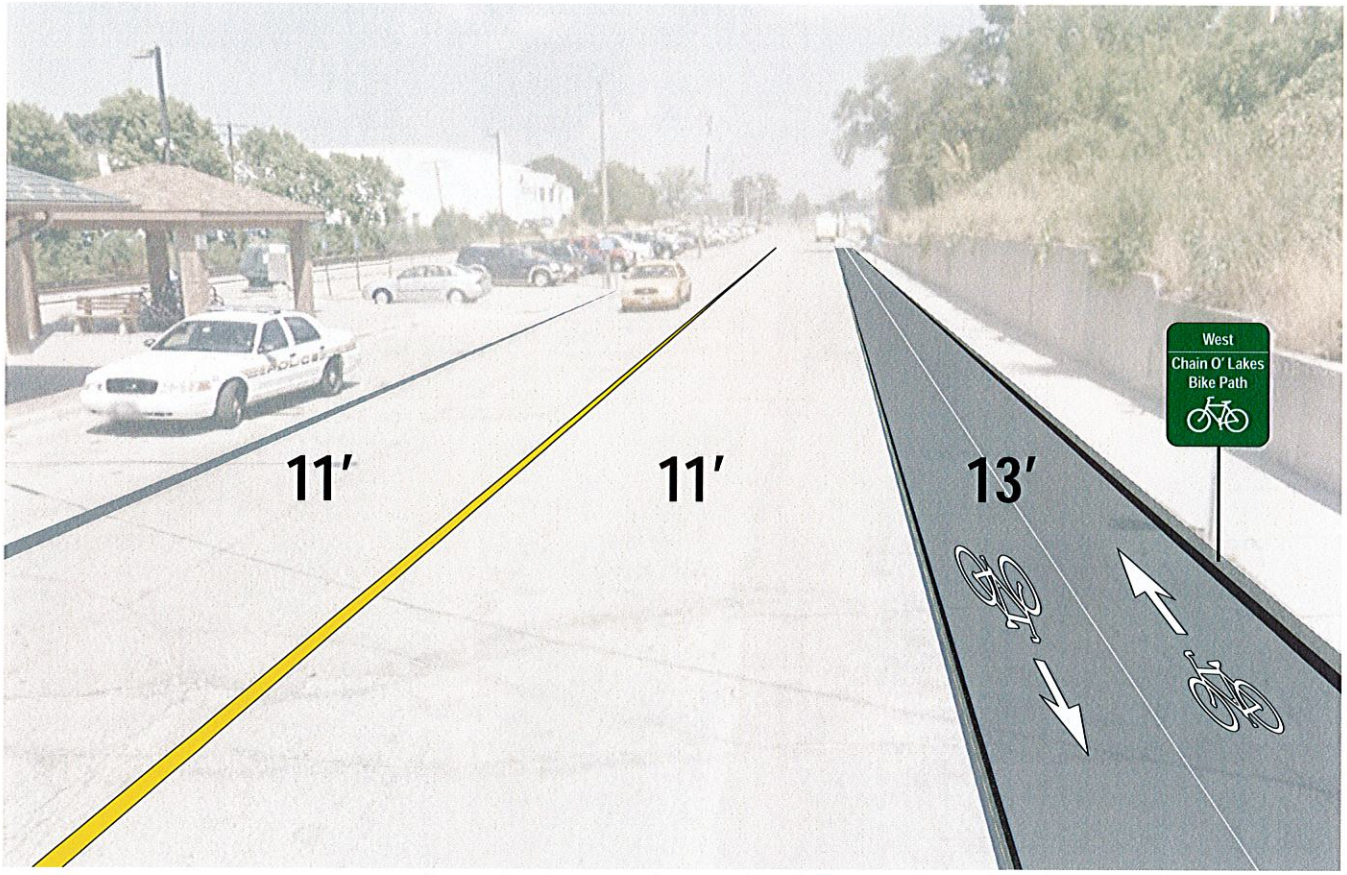
Location: Nippersink Boulevard, facing north, between Grand Avenue and Oak Street

Existing Conditions: Two travel lanes, no center line, street width ~36 feet (excluding parking).

Posted Speed: 25 mph

Existing Cross Section:



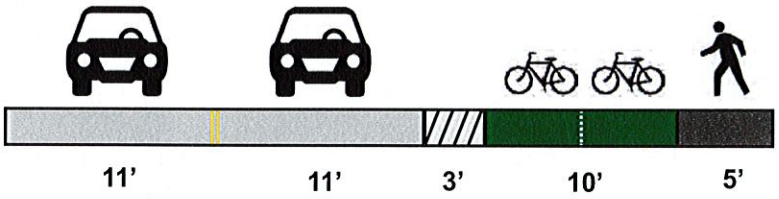


Location: Nippersink Boulevard, facing north, between Grand Avenue and Oak Street

Proposed Conditions: Shared use path

A ten-foot shared use path along the eastern side of Nippersink Boulevard continues the bike trail to Lakefront Park.

Proposed Cross Section:



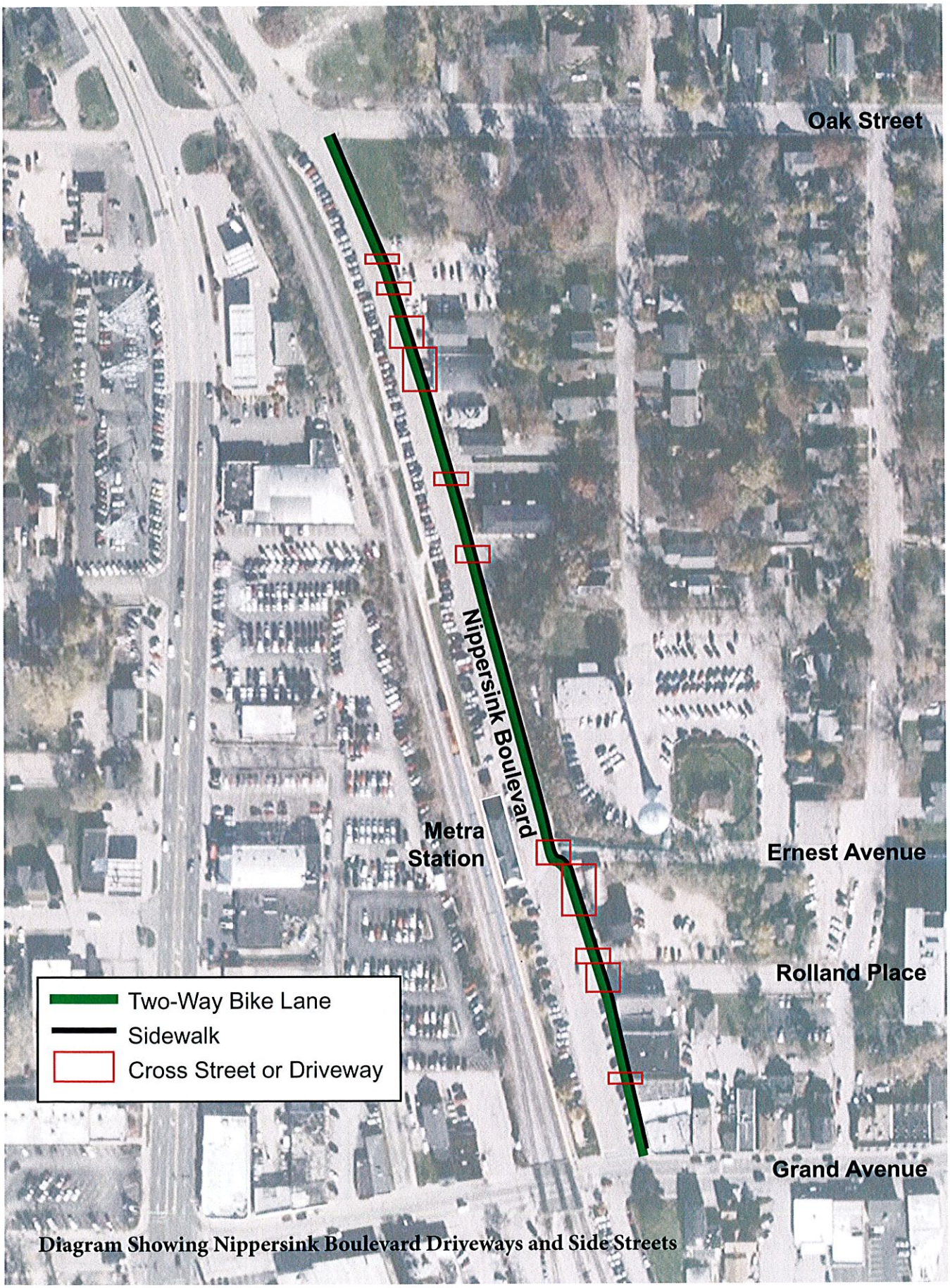
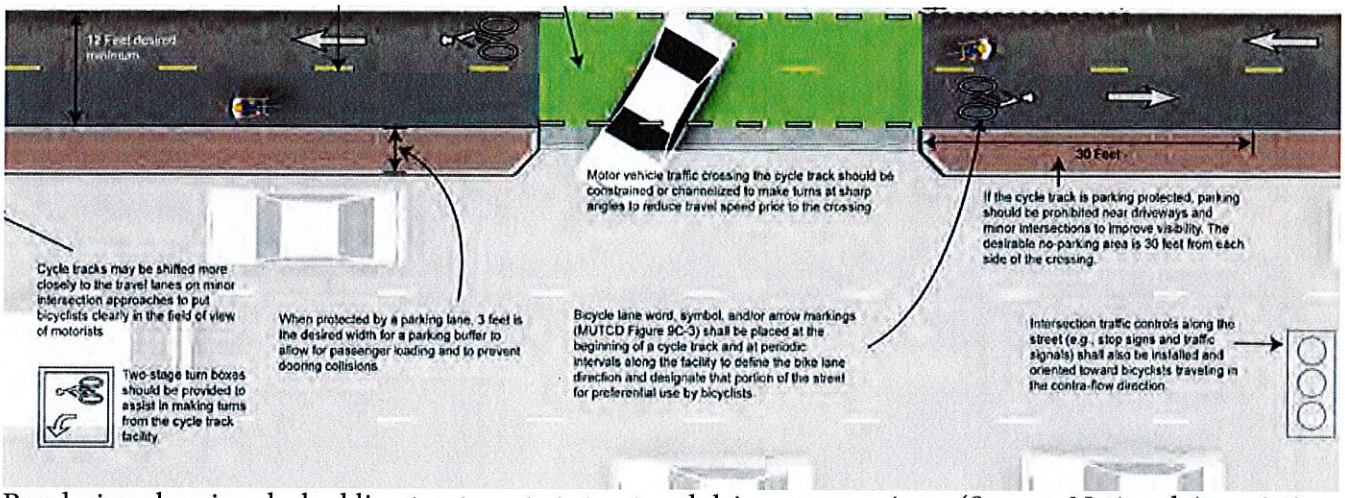
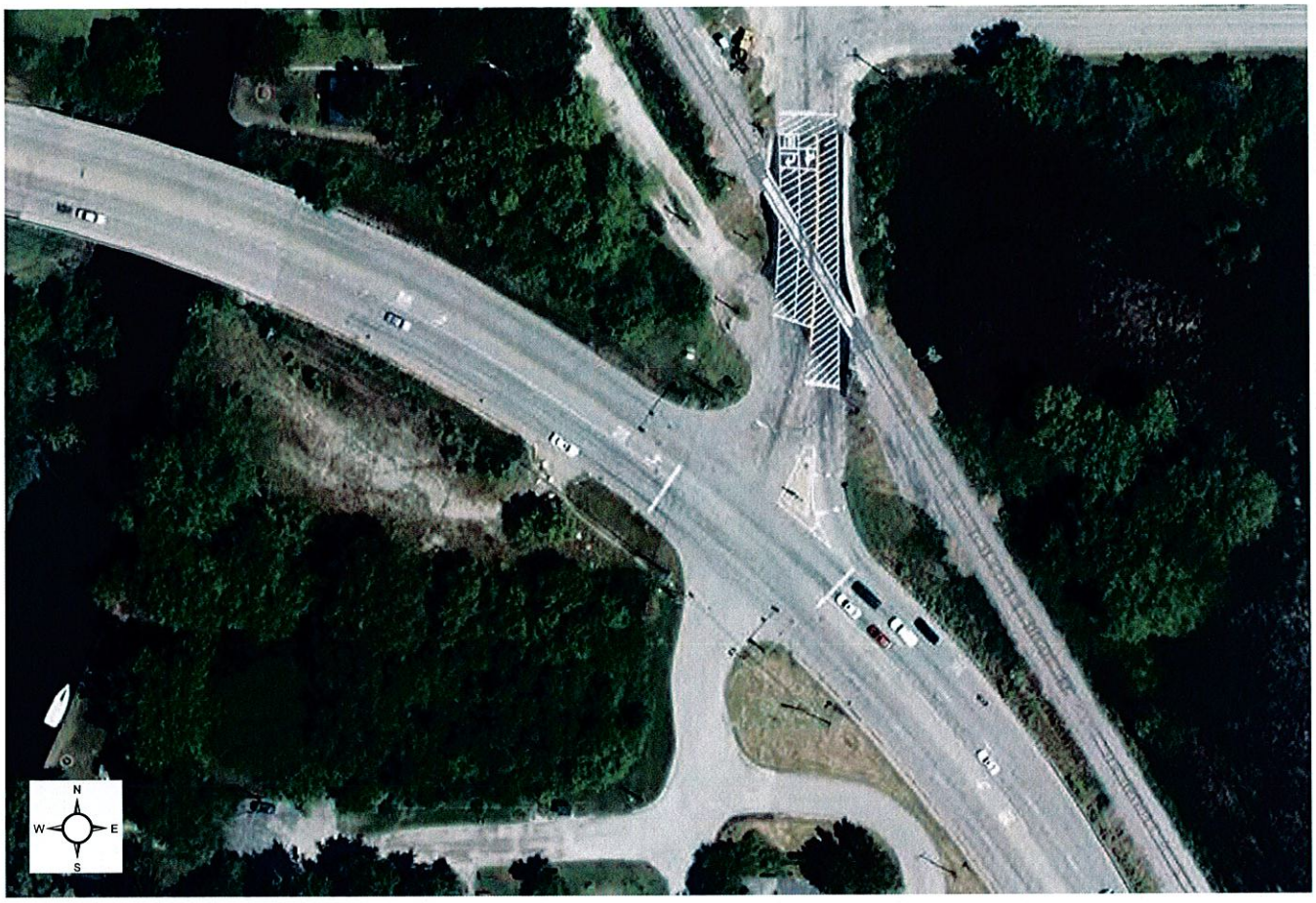


Diagram Showing Nippersink Boulevard Driveways and Side Streets



Rendering showing dashed line treatment at street and driveway crossings. (Source: National Association of City Transportation Officials (NACTO) Bike Guide.

Photo showing dashed line treatment at street and driveway crossings (Source: Bikevote.org)

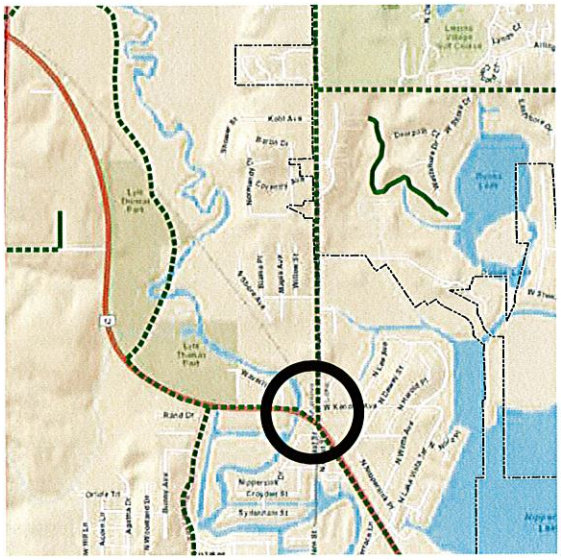


Location: US Route 12 at State Park Road

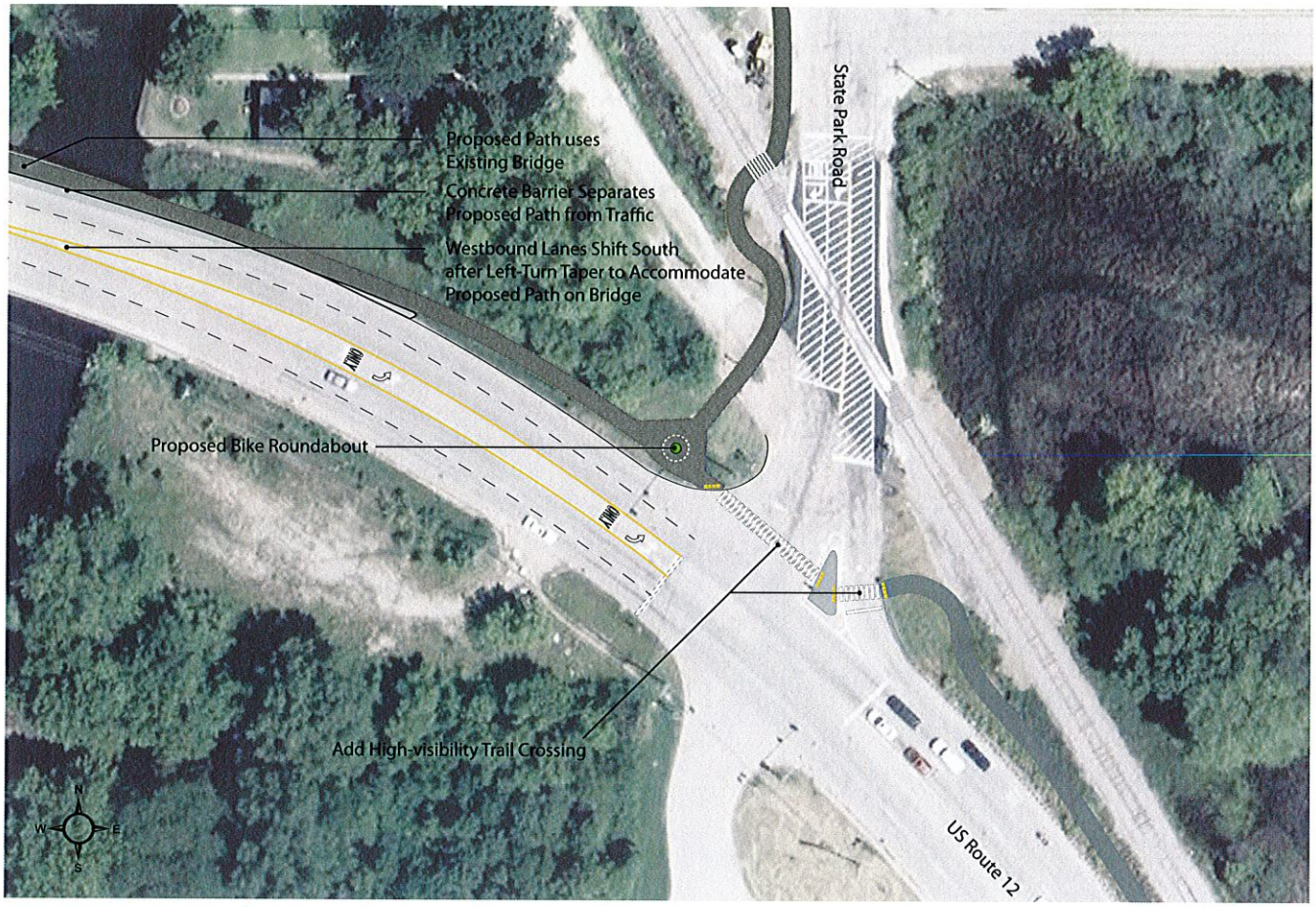
Existing Condition: Signalized intersection; Two lanes in each direction on US Route 12; One lane in each direction on State Park Road

Posted Speed: 50 mph

Jurisdiction: Illinois Department of Transportation and the Lake County Division of Transportation



This intersection was identified as a critical connection between the Town Center, Grass Lake Road, and Chain O' Lakes State Park. The Lake County Division of Transportation (LCDOT) has identified Grass Lake Road as a proposed bicycle corridor in its 3040 Bikeways Plan.



Location: US Route 12 at State Park Road

Proposed Concept: Two-way path on north and east side of Route 12 with a high visibility crossing at State Park Road. Two-way path on west side of State Park Road.

Purpose: To connect Fox Lake Town Center to Chain O' Lakes State Park trail network

The proposed paths in the concept would provide connections to the path on Grass Lake Road proposed by the Lake County Division of Transportation and west to connect to paths proposed in Nippersink Canoe Base Park by the McHenry County Department of Transportation and McHenry County Conservation District. High visibility trail crossings are proposed at the intersection.

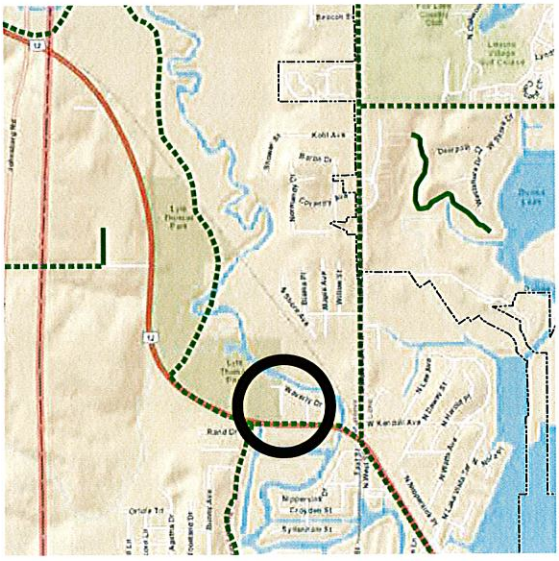
This would be an expensive project as it involves construction of a new trail. Additional signal heads also may be required in order to facilitate the trail crossing across State Park Road.

Location: US Route 12 at the Nippersink Canoe launch

Existing Condition: One lane in each direction
Narrows from two lanes in each direction at State Park Road

Posted Speed: 50 mph

Jurisdiction: Illinois Department of Transportation



Location: US Route 12 at the Nippersink Canoe Launch

Proposed Concept: Two-way Path on North Side of Route 12 (Off-street, within existing right-of-way)

Purpose: To connect Fox Lake Town Center to McHenry County trail network

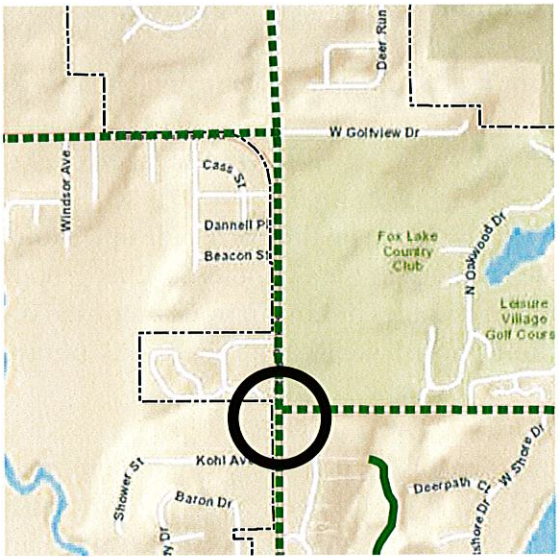
A trail is shown on the north side of US Route 12 in the above concept with a high-visibility trail crossing at the entrance to the Canoe Base. This proposed trail concept would be part of a larger regional connection, which includes linking to trails proposed in the McHenry County Bikeway Plan, a proposed bicycle facility along Grass Lake Road in the Lake County Bikeway Plan, and the proposed US Route 12 bridges concept in the Fox Lake Town Center.

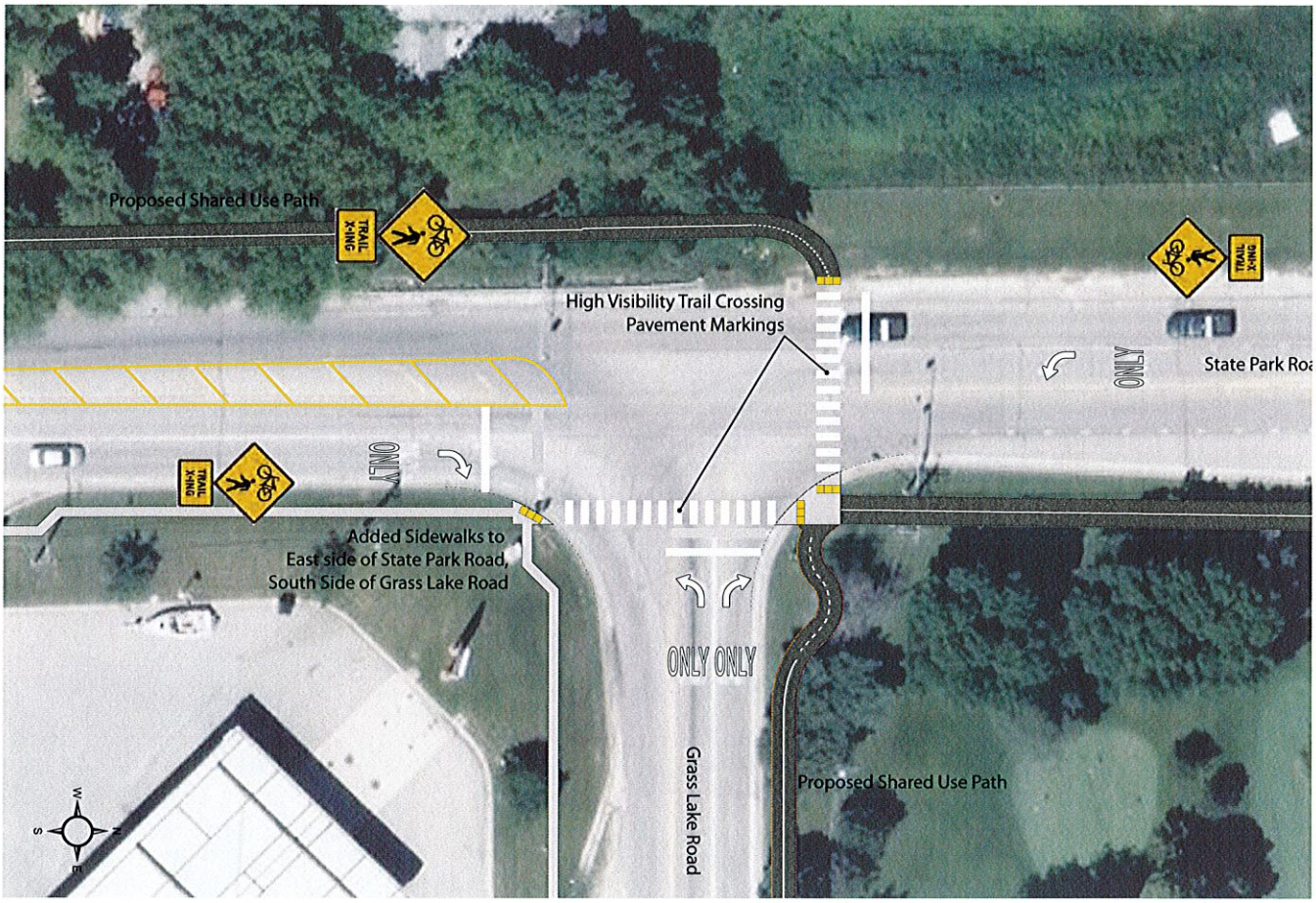
In order for the proposed trail to continue west of State Park Road, the bridge immediately west of State Park Road would need to be made accessible to bicycles. Refer to the following pages for the proposed concept that includes this bridge and the intersection of State Park Road and US Route 12.

Location: Grass Lake Road at State Park Road

Posted Speed: 40 mph

Jurisdiction: Lake County Division of Transportation





Location: Grass Lake Road at State Park Road

Proposed Concept: Two-way trail on west side of State Park Road until Grass Lake Road, crossing improvements at the existing signal, trail continues north on east side of State Park Road to Chain O' Lakes State Park

Purpose: To connect the Fox Lake Town Center to Chain O' Lakes State Park

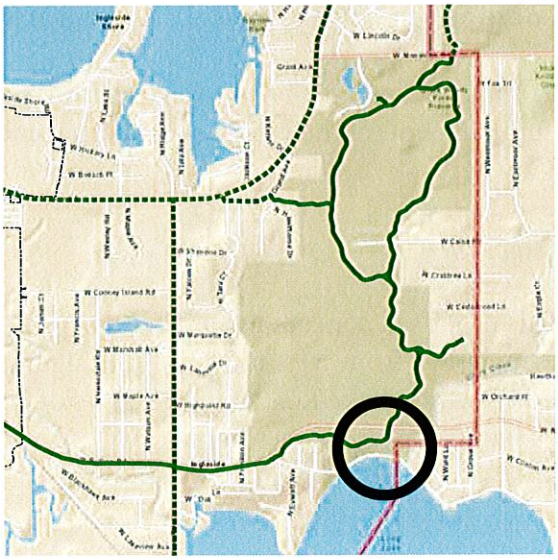
This proposed concept includes a two-way path on the north side of Grass Lake Road and a two-way path that crosses from west to east at this signalized intersection. Proposed sidewalks are shown on the south side of Grass Lake Road and the east side of State Park Road for when development continues in the area and a sidewalk becomes necessary.

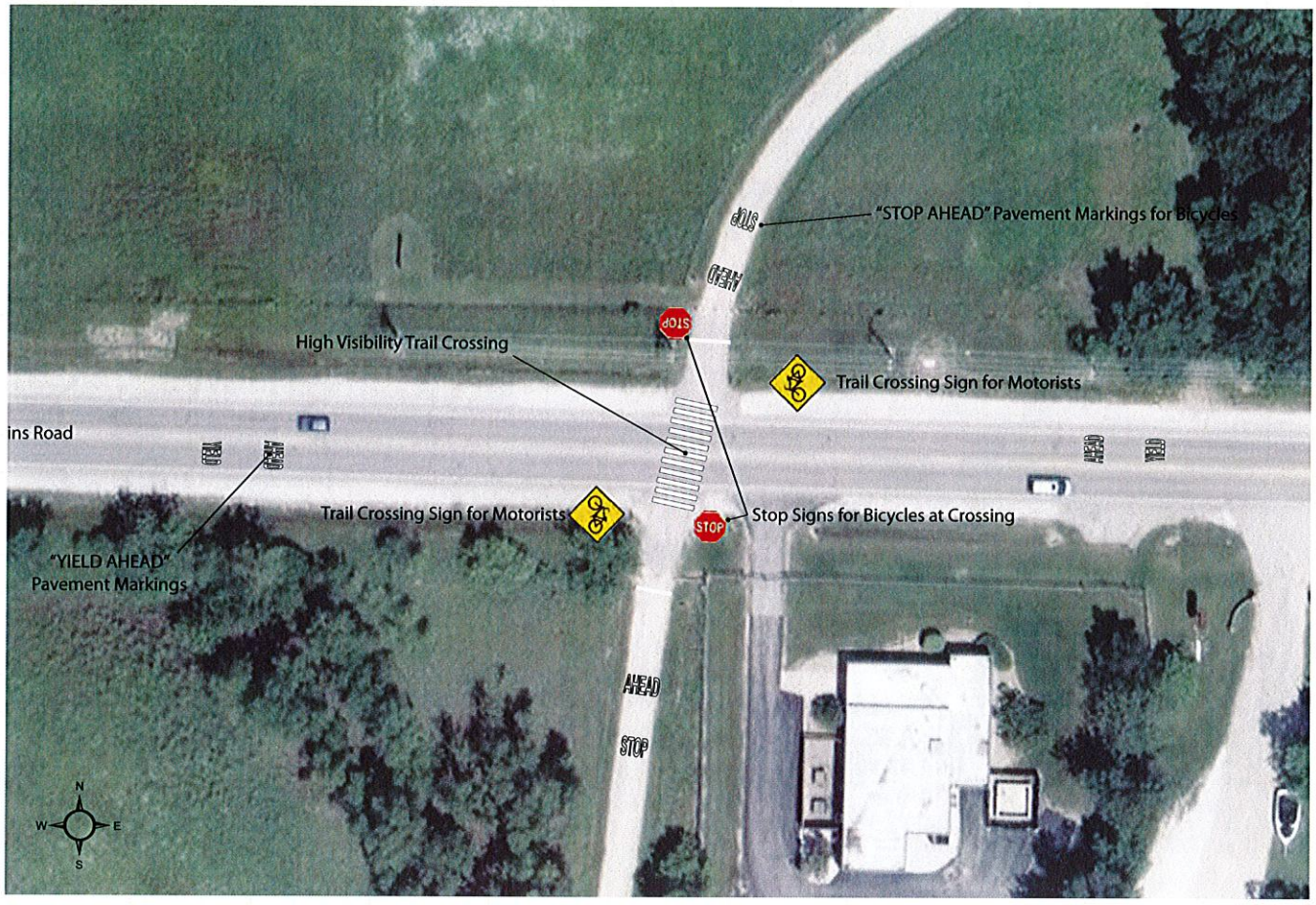
Location: Grant Woods Forest Preserve at Rollins Road

Existing Conditions: Two-lane road with trail crossing

Posted Speed: 40 mph

Jurisdiction: Lake County Division of Transportation and the Lake County Forest Preserve District





Location: Grant Woods Forest Preserve at Rollins Road

Proposed Concept: Improved trail crossing markings and signs

Purpose: To improve the existing trail crossing for Grant Woods Forest Preserve

Generally, attendees stated that improving the existing trail crossing for better visibility as indicated on the concept would be helpful. "Trail Crossing" signs should be placed in advance of the crossing in both directions. Based on the amount of traffic at this location on Rollins Road, some attendees stated that the rectangular rapid flashing beacon (RRFB) would not be necessary at this crossing.

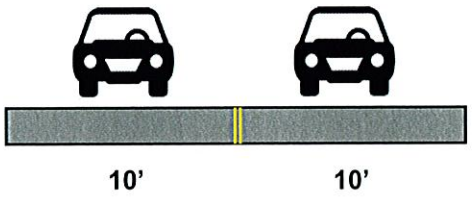
Location: Nippersink Road, facing northwest, between Fish Lake Road and Brandenburg Road

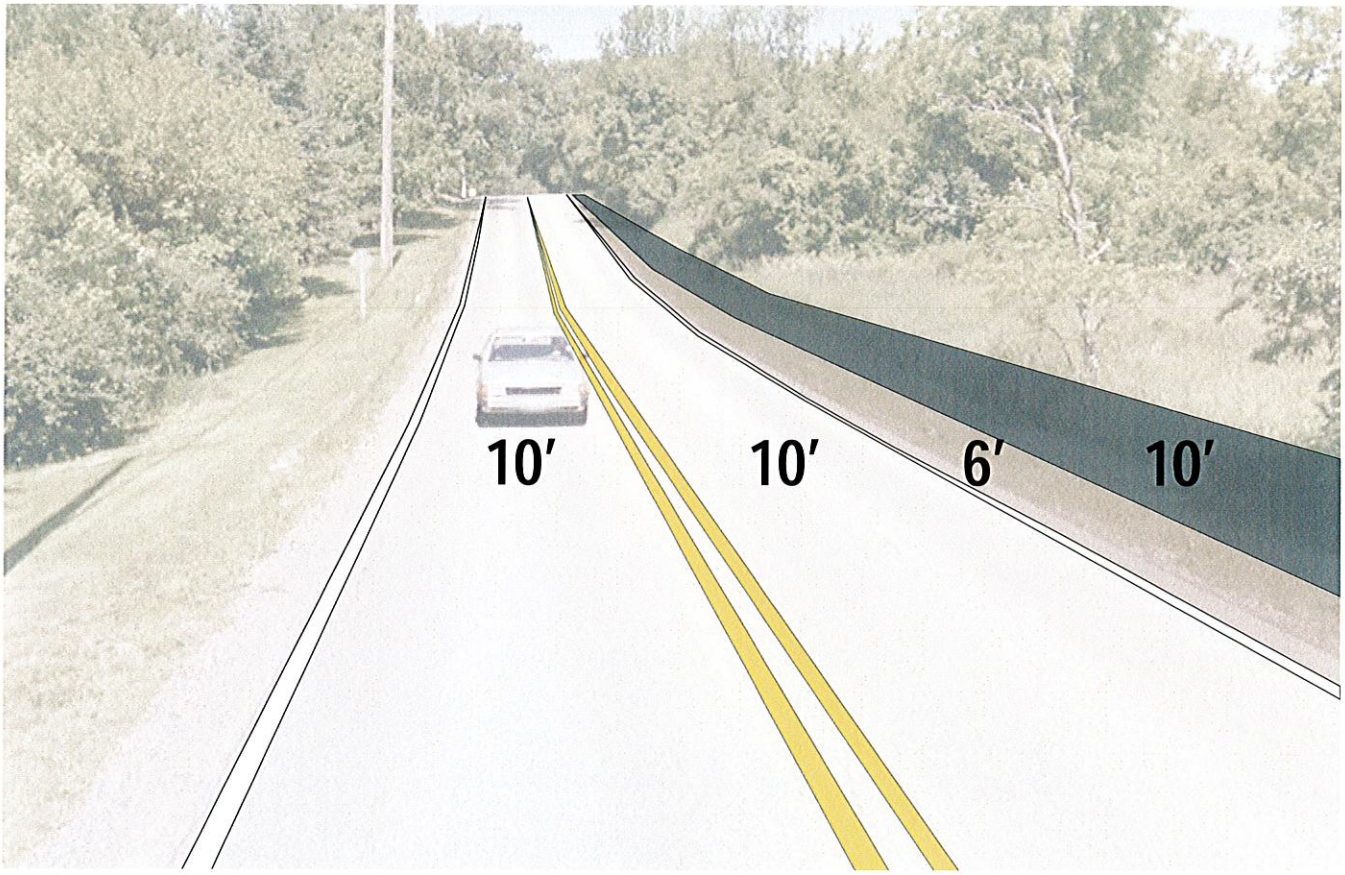
Existing Conditions: Two 10-foot travel lanes

Posted Speed: 45 mph

Jurisdiction: Grant Township Highway Department

Existing Cross Section:





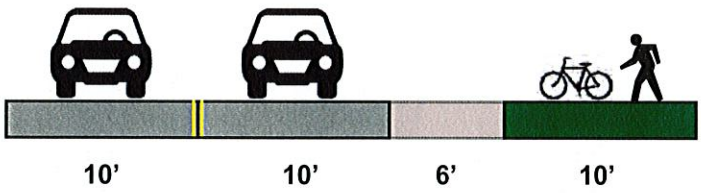
Location: Nippersink Road, facing northwest, between Fish Lake Road and Brandenburg Road

Proposed Conditions: 10-foot shared use path on the north side of Nippersink Road separated from the roadway by a gravel shoulder.

Purpose: To connect neighborhoods southeast of Fox Lake to IL 59 and the Chain O' Lakes Bike Path along Rollins Road.

A proposed shared use path on the north side of Nippersink would provide a connection along a roadway under the jurisdiction of the Grant Township Highway Department, which has a good working relationship with the Village of Fox Lake. This proposed trail would connect neighborhoods in southeast Fox Lake with the Chain O' Lakes Bike Path along Rollins Road, which would provide access to the Town Center and Lakefront Park.

Proposed Cross Section:

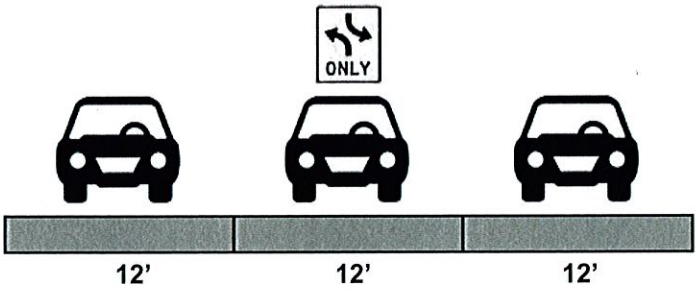


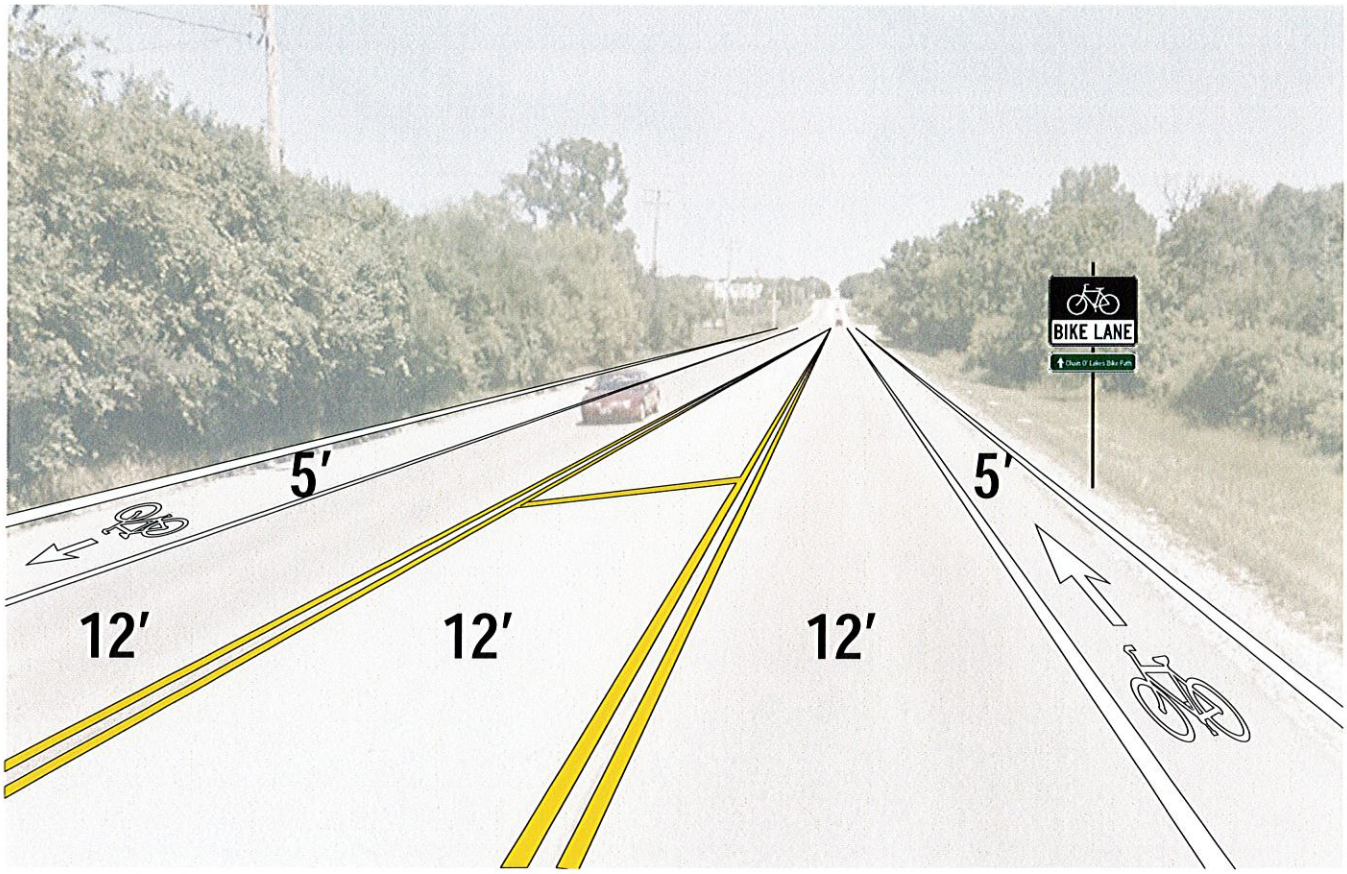
Location: Wilson Road, facing north, between Nippersink Road and IL 134

Existing Conditions: Two travel lanes with center turn lane (36 feet white line to white line, ~44 feet total pavement).

Posted Speed: 45 mph

Existing Cross Section:





Location: Wilson Road, facing north, between Nippersink Road and IL 134

Proposed Conditions: Bike lanes on both side of the road

A bike lane is proposed on Wilson Road between Nippersink Road and IL 134. The existing shoulder currently is not wide enough to accommodate a bike lane but could be considered during the next roadway resurfacing or reconstruction to accommodate a bike lane.

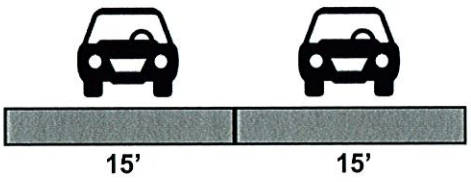
Proposed Cross Section:

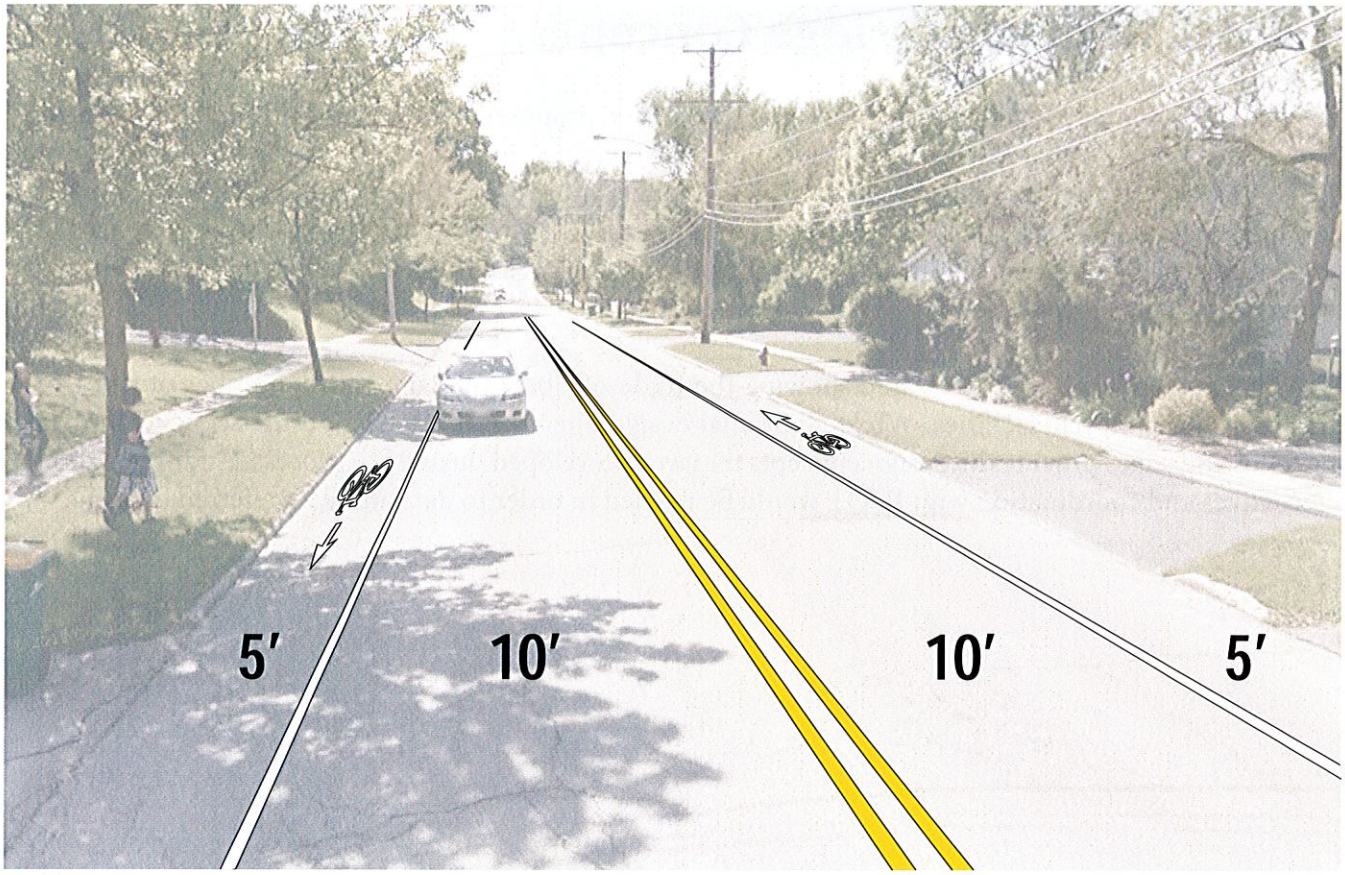
Location: Grand Avenue, facing west, between Nippersink Boulevard and Washington Street

Existing Conditions: Two travel lanes ~30 feet curb to curb

Posted Speed: **30 mph**

Existing Cross Section:



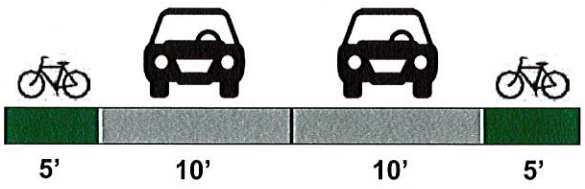


Location: Grand Avenue, facing west, between Nippersink Boulevard and Washington Street

Proposed Condition: 10-foot travel lane and 5-bike lane in each direction.

Purpose: To provide an on-street bicycle facility on Grand Avenue between Washington Street and the Town Center.

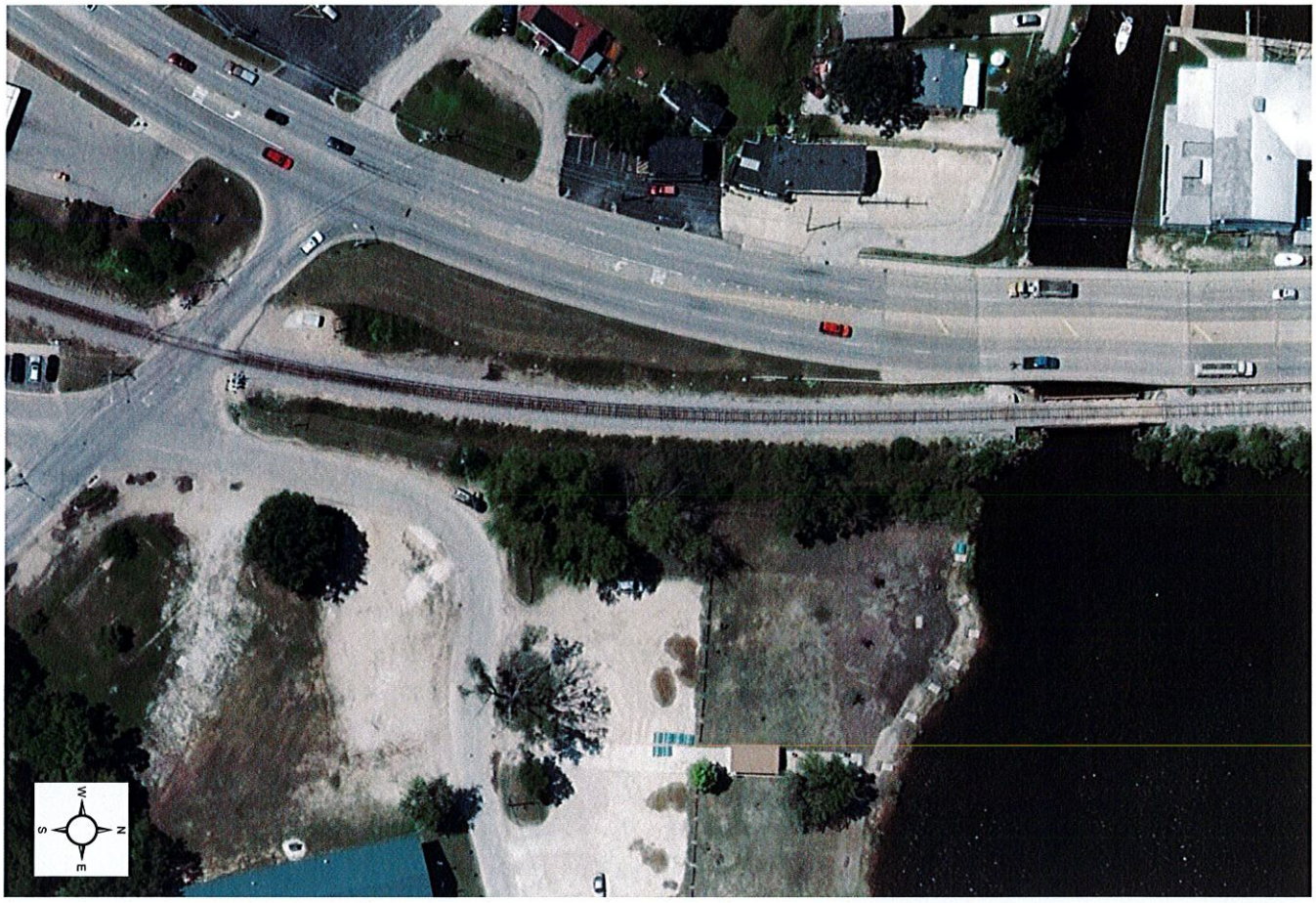
Proposed Cross Section:



3.3 U.S. Route 12 Bridge Concepts

The Village presented the following concepts to IDOT for a proposed bikeway on the U.S. Route 12 bridge that crosses the Nippersink Lake Channel in Fox Lake. While U.S. Route 12 is under the jurisdiction of IDOT, it is seen as an important link in the Fox Lake bikeway network. The width of the bridge limits the type of bicycle facility that can fit on the bridge, and the roadway's current design and travel speeds make it difficult to provide on-street facilities without including some type of buffer, which adds additional width to any proposed concept.

The following concepts were prepared showing the trade-offs between lane width, number of lanes, and the provision of bicycle facilities. While additional design alternatives are beyond the scope of the Plan, the following pages provide the design concepts that were developed during the process. Additional design alternatives and coordination with IDOT would be needed in order to determine a preferred concept.

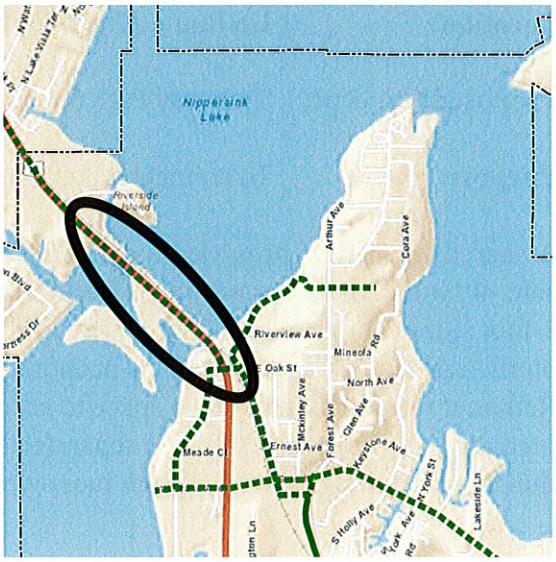


Location: US Route 12 at Nippersink Lake Bridge

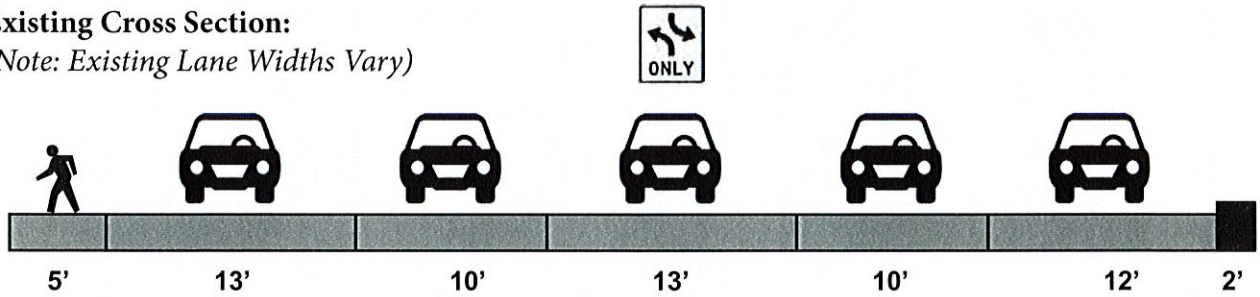
Existing Conditions: Five-lane road; four travel lanes, two-way left-turn lane in center

Posted Speed: 40 mph

Jurisdiction: Illinois Department of Transportation



Existing Cross Section:
(Note: Existing Lane Widths Vary)



Proposed Design Concept Alternative 1: Five-Lane Option

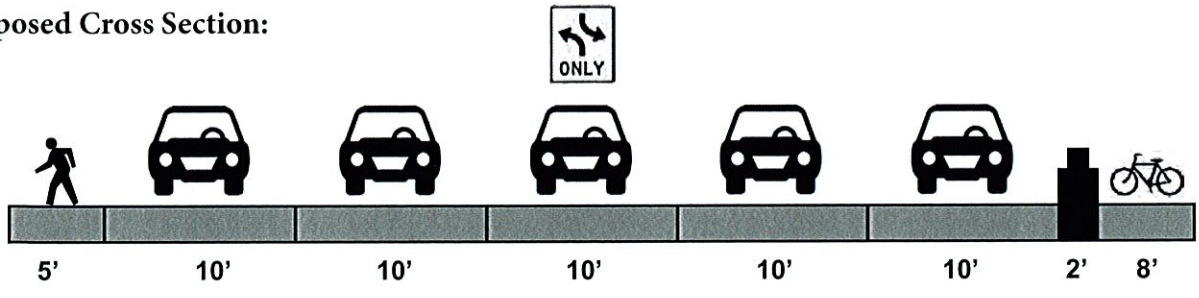
Location: US Route 12 at Nippersink Lake Bridge

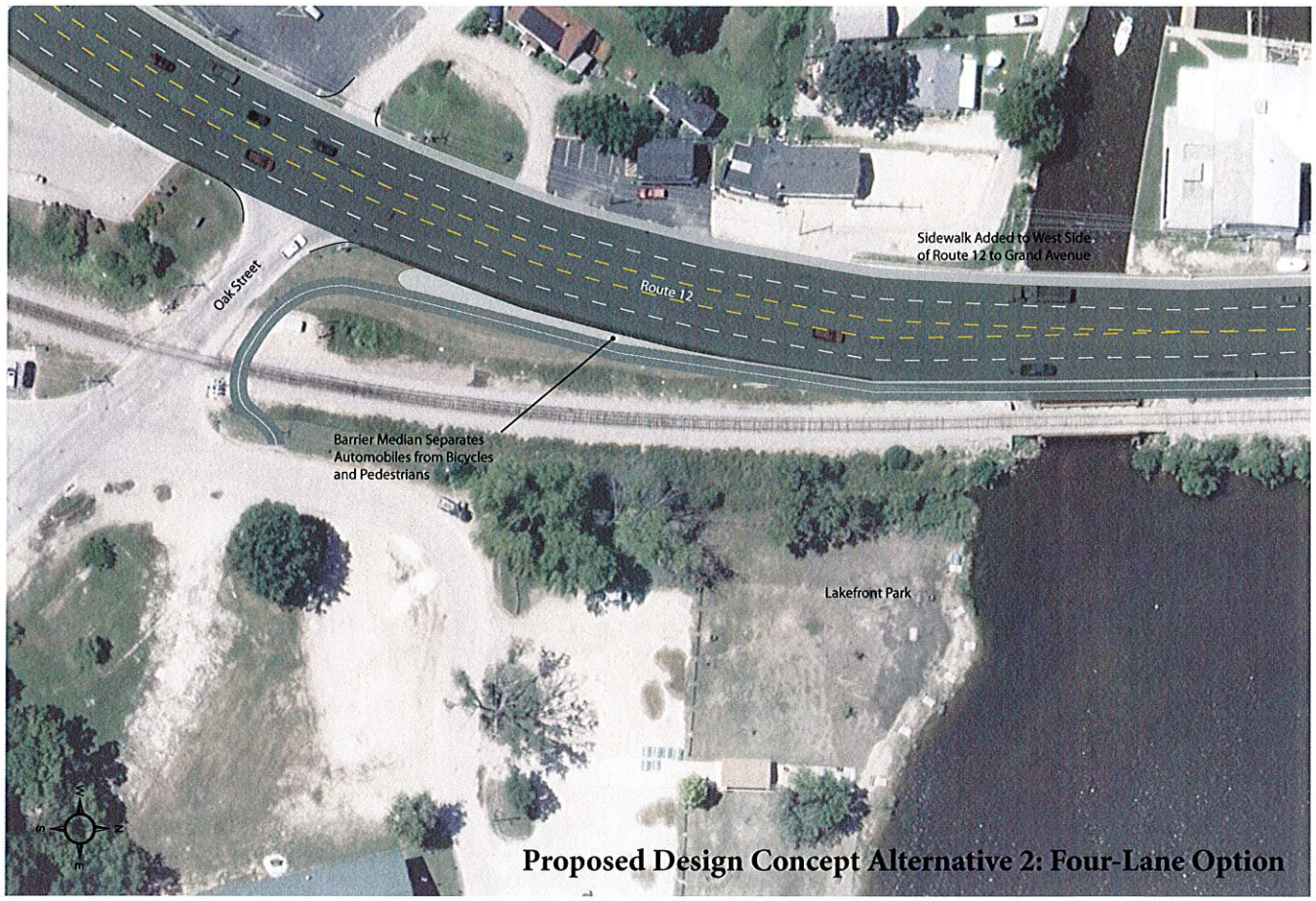
Proposed Concept: Two-way Path on east Side of US Route 12 (Off-street, within existing right-of-way)

Purpose: To connect Lakefront Park to State Park Road

A shared use path is proposed for the east side of US Route 12 between Lakefront Park and the opposite side of Grass Lake. The proposed design concept shows a five-lane cross section, preserves the existing 5-foot sidewalk on the west side of the bridge, and proposes a 2-foot barrier with an 8-foot two-way path on the east side of the bridge. This proposed design concept does not change the total width of the bridge. Rather, it reassigns the existing space to accommodate bicycles. Northwest of the bridges, the right-of-way increases, allowing the path to be separated by a grass parkway. Additional considerations must be given to the proposed design of travel lanes narrower than 11 feet on IDOT roads and bridges.

Proposed Cross Section:





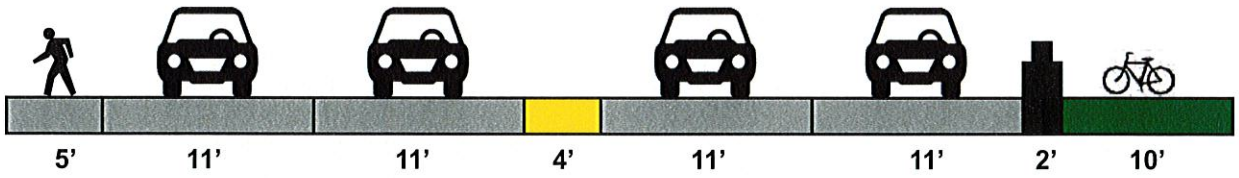
Location: US Route 12 at Nippersink Lake Bridge

Proposed Concept: Two-way Path on east Side of US Route 12 (Off-street, within existing right-of-way)

Purpose: To connect Lakefront Park to State Park Road

This prposed concept incluedes a 10-foot path on the east side of the bridge. This is achieved by resizing the travel lanes to 11 feet in both directions, and reducing the width of the median from 11 feet to 4 feet. This preserves the buffer between opposing lanes of traffic. In review of the four-lane concept, IDOT stated that the elimination of the center turn lane is not desirable as it would eliminate the turn lane that currently is used by northbound motorists that turn left into any of the three driveways on the bridge. These turns are infrequent; however, the impact that these turning movements have on traffic flow should be considered as this design is further developed.

Proposed Cross Section:



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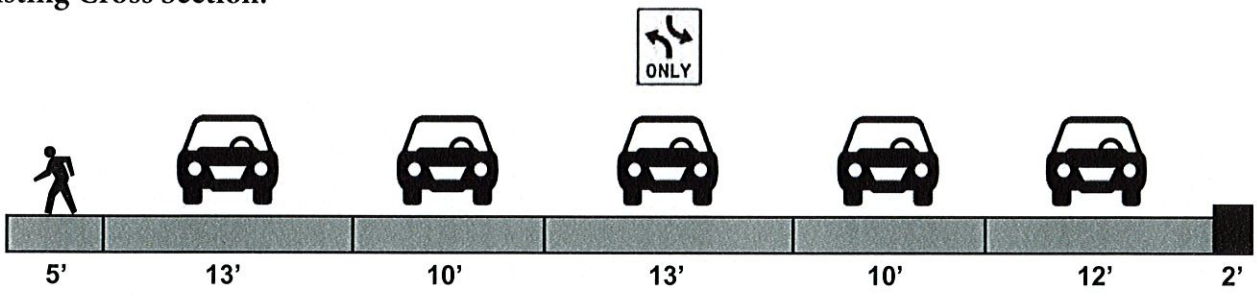
Location: US Route 12, facing northwest, bridge over Nippersink Lake Channel

Existing Conditions: Four travel lanes and center turn lane. 60 feet of roadway and 5 feet of sidewalk.

Posted Speed: 40 mph

Existing Cross Section:



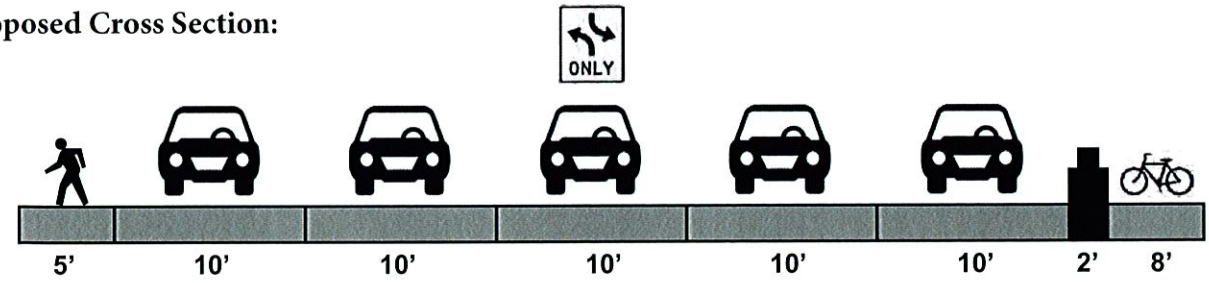
Proposed Design Concept Alternative 1: Five-Lane Option

Key Location: US Route 12, facing northwest, bridge over Nippersink Lake Channel

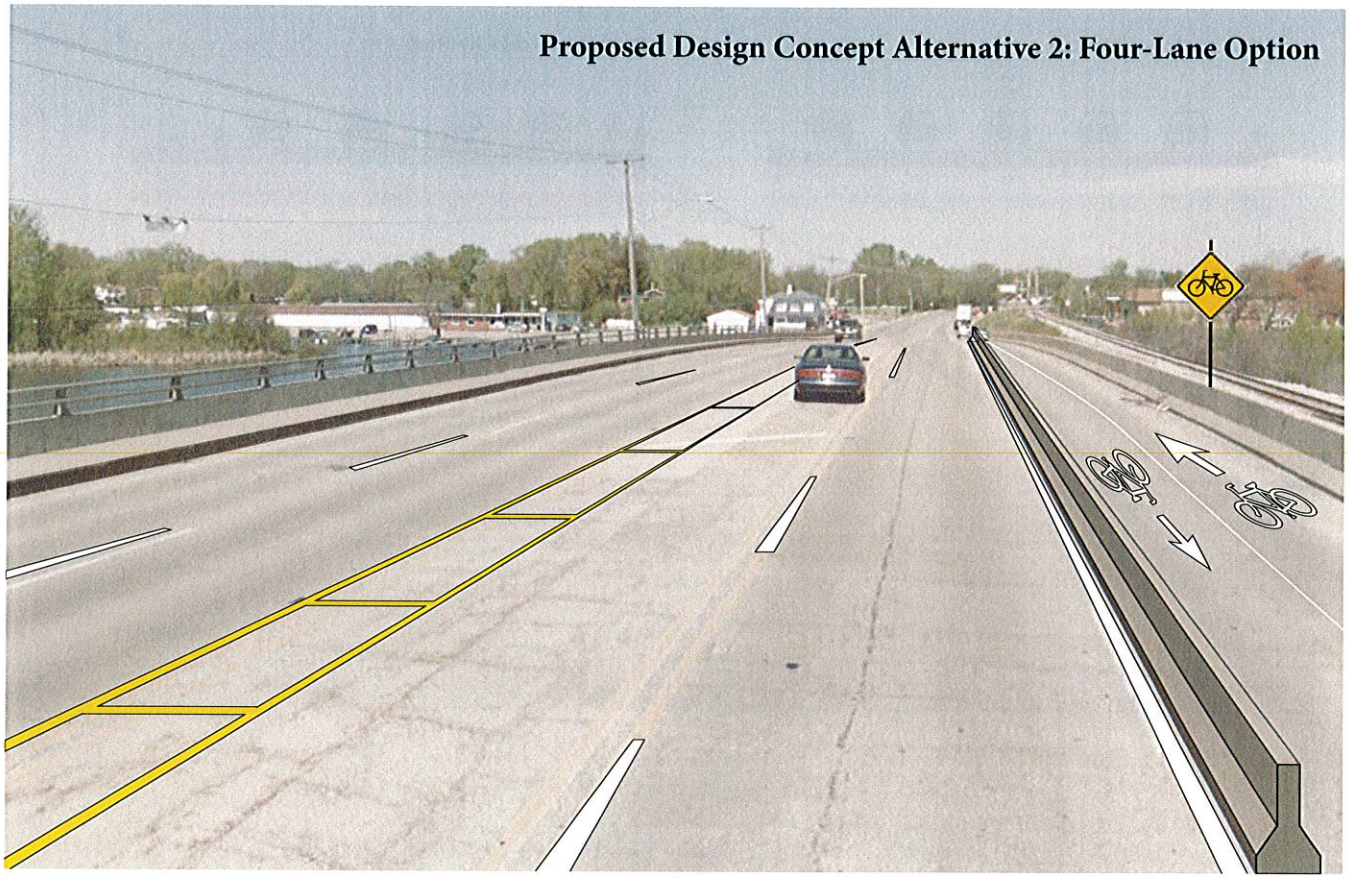
Proposed Condition: Barrier-separated shared use path along east side of bridge, five lanes reduced to four to cross both bridges, retuning to five lanes after the bridges.

Purpose: To provide an on-street facility connection between the Town Center and State Park Road.

Proposed Cross Section:



Proposed Design Concept Alternative 2: Four-Lane Option

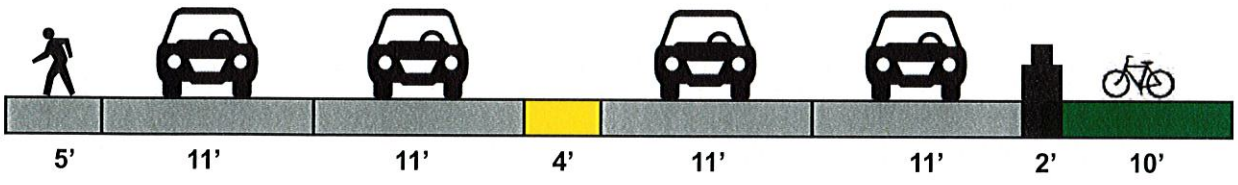


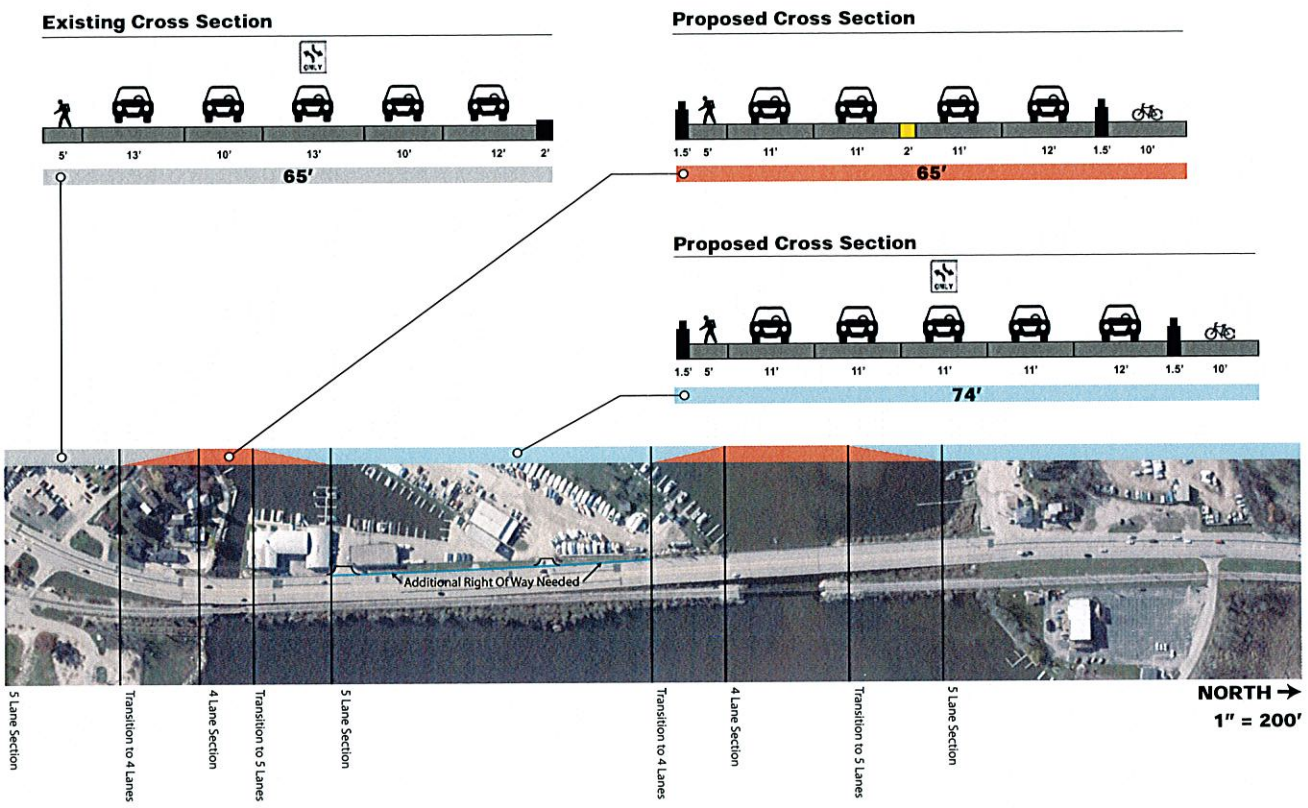
Key Location: US Route 12, facing northwest, bridge over Nippersink Lake Channel

Proposed Condition: Barrier-separated shared use path along east side of bridge, five lanes reduced to four to cross both bridges, retuning to five lanes after the bridges.

Purpose: To provide an on-street facility connection between the Town Center and State Park Road.

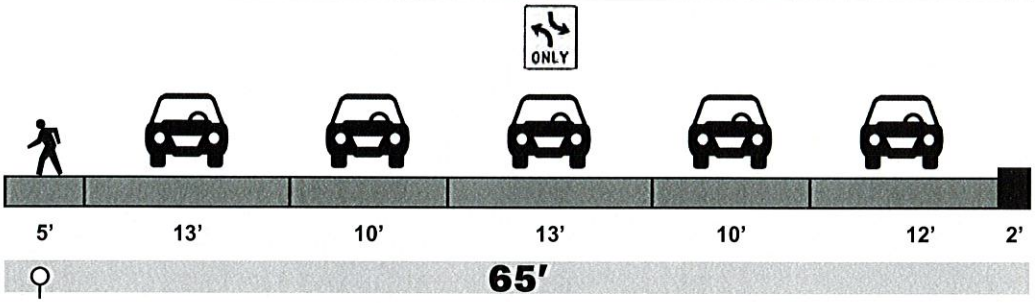
Proposed Cross Section:



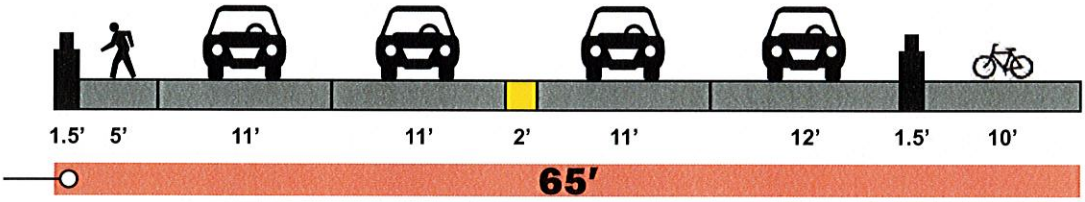


A revised concept was prepared after the IDOT meeting that provides for two cross sections; a five-lane cross section that preserves the turn lane and access to property on the west side of the roadway between bridges, and a four-lane cross section that accommodates the bicycle facility on the east side of the bridge structure. The cross sections are shown below and the diagram on the following page shows the approximate transition areas between proposed cross sections. The diagram shows that it may be possible to preserve the turn lanes as well as provide a bicycle facility. However, right-of-way may be needed on the island between the bridges in order to make the 74-foot cross section feasible.

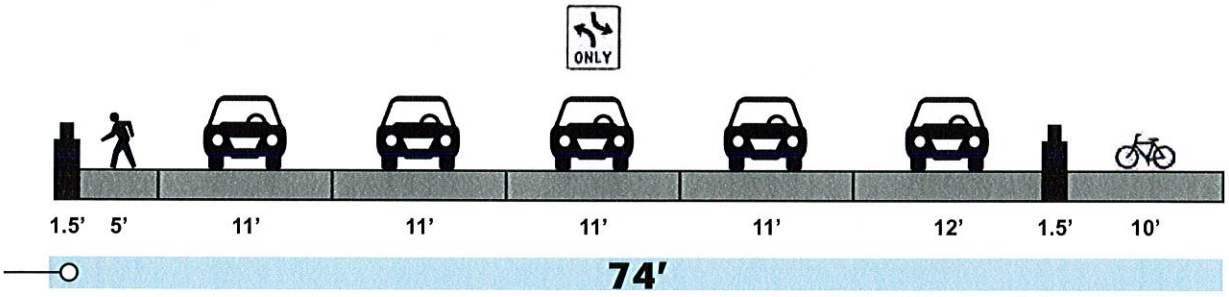
Existing Cross Section



Proposed Cross Section



Proposed Cross Section



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Part 4 Finance and Implementation

Fox Lake Greenways and Bikeways Plan

Table 4.1 Fox Lake Proposed Capital Improvement Program

Segment Name	From	To	Length (feet)	Length (miles)	Facility Type	Planning Estimate
Devlin Road	Rollins Road	Grand Avenue	3,235	0.6	Shared Lane Marking	$8,208.00
Frontage Road East	Kings Road	IL 59	4,670	0.9	Shared Lane Marking	$13,492.80
Frontage Road West	Kings Road	Big Hollow Road	7,740	1.5	Shared Lane Marking	$21,700.80
Grand Avenue East	Nippersink Boulevard	Washington Street	7,380	1.4	Bike Lane	$97,001.58
Grand Avenue West	US Route 12	Dockers Restaurant	907	0.2	Shared Lane Marking	$2,923.20
Nippersink North	Rollins Road	Oak Street	2,270	0.4	Two-way Protected Bike Lane	$53,631.14
Nippersink South (Fox Lake portion)	IL 59	Terra Springs Drive	8,885	1.7	Shared Use Path	$483,104.24
Pistakee Lake / Oak	Grand Avenue	Forest Avenue	4,044	0.8	Warning and Guide Signs	$4,312.50
Sayton North	US Route 12	Rollins Road	1,805	0.3	Bike Lane	*Project to be included as part of Sayton Road improvements*
Sayton South	Rollins Road	Kings Road	2,165	0.4	Bike Lane	
Washington Street	Rollins Road	Grand Avenue	3,520	0.7	Bike Lane	$47,104.46
		Total Length	**46,621**	**8.8**		**$731,478.72**
*** Cost detail provided in Section 4.7**						

Table 4.2 Proposed Capital Improvements - Other Agencies

Segment Name	From	To	Length (feet)	Length (miles)	Facility Type	Planning Estimate
Big Hollow	Baywater Lane	Nippersink Road	10,840	2.1	Trail	$589,426.84
Grass Lake - 1	State Park Road	Grass Lake Road Bridge	9,090	1.7	Trail	$494,004.44
Grass Lake - 2	Grass Lake Road Bridge	Planning Area Boundary	10,640	2.0	Trail	$578,792.49
IL 134	Nippersink Road	Wilson Road	7,400	1.4	Buffered Bike Lane	$145,909.01
IL 59 - 1	IL 134	Rollins Road	7,430	1.4	Buffered Bike Lane	$146,451.70
IL 59 - 2	Rollins Road	Washington Street	3,410	0.6	Buffered Bike Lane	$67,147.93
IL 59 - 3	Washington Street	Wilson Road	4,520	0.9	Buffered Bike Lane	$90,169.43
IL 59 - 4	Wilson Road	Planning Area Boundary	11,110	2.1	Buffered Bike Lane	$219,954.87
Main Street	State Park Road	Wilmot Road	5,265	1.0	Bike Lane	$69,362.77
Nippersink South - Grant	Terra Springs Drive	Wilson Road	7,920	1.5	Trail	$416,570.25
Ringwood	Planning Area Boundary	US Route 12	7,030	1.3	Bike Lane	$92,972.56
State Park - 1	US Route 12	Grass Lake Road	5,610	1.1	Trail	$305,409.02
State Park - 2	Grass Lake Road	Chain O' Lakes State Park	9,420	1.8	Trail	$511,551.11
US Route 12 - Lake	State Park Road	Oak Street	6,425	1.2	Trail	$348,743.97
US Route 12 - McHenry	Wilmot Road	State Park Road	12,135	2.3	Trail	$659,470.16
Wilmot - 1	Main Street	James Road	10,215	1.9	Bike Lane	$88,018.13
Wilmot - 2	James Road	Gander Mountain	10,300	2.0	Bike Lane	$135,728.06
Wilson - 1	Nippersink Road	IL 134	6,630	1.3	Bike Lane	$88,018.13
Wilson - 2	IL 134	Rollins Road	4,490	0.9	Bike Lane	$58,620.45
Wilson - 3	Rollins Road	Grand Avenue	4,730	0.9	Bike Lane	$62,854.29
	Total Length, Other Agencies		**154,610**	**29.3**		**$5,169,175.56**
	Total Length, Fox Lake		**46,621**	**8.8**		
	Grand Total		**201,231**	**38.1**		

*** Refer to Figure 2.3 in Part 2 for Regional Segment Map; Cost detail provided in the Appendix**

4.4 Funding Sources

Funding sources for the design and construction of bicycle facilities are available as part of local funds and grant programs that are administered through regional and state agencies including CMAP and IDOT. A brief description of relevant funding sources for implementing bicycle facilities is provided below.

General Funds
The Village of Fox Lake recently completed its roadway improvement plan, identifying roadways for improvement in the short term. Roadway resurfacing and reconstruction projects are good candidates for incorporating bicycle facilities at minimal cost. General funds also may be used to construct bicycle facilities on Village roads and install bike parking.

Congestion Mitigation Air Quality (CMAQ)
The CMAP Bicycle and Pedestrian Task Force identifies projects of regional significance in advancing the goals, objectives and action areas of the GO TO 2040 Plan. These projects are considered on an annual basis by the CMAQ Project Selection Committee.

Project applications must provide information in the following three areas:

- Descriptive: An understanding of how the project provides non-motorized access to transit, to community facilities, and to activity centers. The descriptive elements also indicated whether the project was a "complete streets" project, part of a regional trail or subregional corridor, or a barrier crossing.

- Supportive: Data should be analyzed for the project area taking into account transit boardings, population and employment totals, and the appropriateness of the project. Appropriateness of the project refers to assuring that capital improvements such as sidewalks serve arterial and collector streets, rather than local streets, and that bikeway proposals improve bicyclist level of service and connectivity.

- Plan Consistency: The project understanding should state the project specifically addresses a need identified in an adopted plan or planning process. In addition, project readiness should be addressed in the discussion.

Project applications shall demonstrate that one or more regional indicators would be improved by the project. The project should demonstrate that it would encourage users to change transportation habits and positively impact one or more of the following:

- Percent of work trips by mode;
- Pedestrian level of service and bicycle level of service;
- Percent of regional trails plan completed.

The *GO TO 2040* plan also supports policy-based efforts to improve the bicycle and pedestrian systems, such as the use of Complete Streets principles to accommodate non-motorized travel in roadway design. The projects should promote implementation of the *CMAP Regional Greenways and Trails Plan*.

The CMAQ call for projects generally occurs at the end of January each year. In the 2013 program year, municipalities are required fund the project development report or Phase I study for the project in order to be considered for funding.

Motor Fuel Tax

Motor Fuel Tax funds can be used for bicycle capital projects. In July 2012, IDOT released *Motor Fuel Tax Funds - Source, Distribution, and Uses; Municipality* to "provide local public agencies officials with a quick reference to the source, distribution and uses of Motor Fuel Tax funds." Section 605 ILCS 5/7-202.20 permits the use of Motor Fuel Tax funds for "bicycle signs, paths, lanes, or bicycle parking facilities."

Transportation Alternatives Program (TA)

Formerly known as the Transportation Enhancements Program, the Illinois Department of Transportation (IDOT) administers the Transportation Alternatives Program, which is a federal program to provide funding for bicycle projects in Illinois. In July, 2012, new Federal legislation as part of the Moving Ahead for Progress in the 21st Century Act (MAP-21) restructured this program under Transportation Alternatives Program. Program rules are still in development but the program will continue to be administered by IDOT. The program is an 80/20 match, requiring a local contribution of 20% of the total cost of the project.

Illinois Trails Grant Program

The Illinois Department of Natural Resources (IDNR) Recreational Trails Program (RTP) provides funding assistance for acquisition, development, rehabilitation and maintenance of non-motorized recreation trails. More information can be found on the IDNR RTP webpage.

Public Private Partnerships

Public private partnerships are situations where the Village works with private agencies for the purposes of developing Village projects, which potentially reduces the cost to the Village. Installing bike parking is a project well suited to public private partnership. The Village can develop a program for bike parking installation to be paid for with advertising from local businesses. The Village also could develop a partnership with local businesses to provide startup and maintenance funding for the bike share program.

4.5 Project Coordination with Other Agencies

Most of the proposed bicycle improvements are located on or along roads under the jurisdiction of other agencies. For these projects, it is important to coordinate with these agencies to ensure that bicycle facility improvements can be included with township, county, and state roadway improvement programs.

For projects that are within the Village but on roadways under the jurisdiction of other agencies, the Village may contribute financial resources or staff assistance in helping another agency prepare preliminary or Phase I engineering services for a roadway improvement project. Additionally, the Village may work with other agencies to pursue grants in the interest of regional coordination.

There are five agencies the Village will need to coordinate with in the implementation of this plan: IDOT, LCDOT, MCDOT, IDNR, and Grant Township.

The Village can work with IDOT to develop the U.S. Route 12 Bridge, IL Route 59, and IL Route 134 as bikeways.

LCDOT works with municipalities in implementing regional bikeways on Lake County highways as part of its *Policy on Infrastructure Guidelines for Non-Motorized Travel Investments*. If a proposed bicycle facility is part of a Village plan, the County will work to incorporate the proposed facility as part of a project, provided the project is feasible and funds are available.

The Village also can work with MCDOT to include bike facilities on McHenry County highways. The McHenry County 2030 Bikeways Plan shows the County's support for the development of regional bicycle connections.

The Village can work with IDNR to acquire grant funding for the development of trails to connect Fox Lake to Chain O' Lakes State Park.

The Village can coordinate with Grant Township to help connect bike facilities from within Fox Lake into unincorporated areas along major routes, including Nippersink Boulevard south of IL 134. Grant Township could provide Fox Lake residents with bicycle access to recreational facilities located southeast of the Village.

4.6 Project Phasing and Implementation Strategies

Project phasing and implementation is dependent upon funding and its availability. The Village is poised to implement the plan using grants, local funds and public-private partnerships. The Village will pursue grant funding as a priority. The Village also is willing to use local funding, as necessary, to complete the system. A commitment to local funds was not made since grant funding will be the primary funding source. While the Village is confident that much of the network can be implemented through grant funding, it will take time and effort to secure the grants. The amount of time and availability of funding will depend on circumstances that are beyond the control of the Village. This plan provides the Village with the documentation necessary to apply for grants.

Based on criteria established by the Village and summarized in the beginning of this section, the following priorities have been established for capital projects.

High	Medium	Low
Nippersink North	Sayton Road	Devlin Road
Grand Avenue – East and West		East/West Frontage Road
Washington Street		Nippersink South
		Pistakee Lake / Nippersink / Oak

The CMAQ, TA, and RTP grants are potential sources for the above projects, except for Sayton Road. Sayton Road is planned for improvements in the near future. When that effort is undertaken, bicycle facilities will be included in the project. The extent of the roadway and bicycle improvements has not been determined yet. Sayton Road is identified as a medium priority project as it involves a roadway that is slated for reconstruction within the next few years.

Public-private partnerships also provide an opportunity for implementation of such elements as bike sharing and bicycle parking.

Other Agency Projects

Much of the proposed bikeway network is located on roads under the jurisdiction of other agencies. The Village has taken a leadership role in developing a plan for a regional bicycle network that will support the Village and surrounding communities. The Village will emphasize coordination and support for other agencies in the implementation of these projects.

One agency project that is of importance to the Village is the connection from Downtown to the Chain O'Lake State Park. The bicycle connection between Downtown and the Chain O' Lakes State Park involves U.S. Route 12, State Park Road, and the path into the Chain O' Lakes State Park. The project would require coordination with IDOT, LCDOT, and IDNR. The Village is willing to take a leadership role and pursue a grant that would involve all these agencies to work together towards the implementation of this project. The IDNR Recreational Trails Program (RTP) is a good candidate for making trail connections to the Chain O' Lakes State Park and Lakefront Park.

Applications for grant assistance through the RTP must be received by IDNR by March 1 each year. Applications are evaluated on a competitive basis according to criteria set by IDNR. The Village has suggested that it would like to take a leadership role in securing RTP grant funding and working with the other agencies to design and implement this connection.

4.7 Detailed Cost Estimates

Village of Fox Lake Cost Estimates

Proposed Master Plan - Village of Fox Lake Devlin (Rollins to Grand)				
Assumptions				
Type	**Shared Lane Marking**			
Project Length (FT)	**3235**			
Shared lane marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Shared lane Markings (50% contingency)	234	SF	$5.00	$1,170.00
Signage (every 1000' both sides) 50% cont	9	Each	$250.00	$2,250.00
			Subtotal	$3,420.00
			Contingency (50%)	$1,710.00
			Construction Subtotal	$5,130.00
Completed by: DJ				
Date 01-28-13			**Phase 2 Engineering (30%)**	$1,539.00
			Phase 3 Engineering (30%)	$1,539.00
				$ 8,208.00

Proposed Master Plan - Village of Fox Lake Frontage Road East (Kings Road to IL Route 59)				
Assumptions				
Type	**Shared Lane Marking**			
Project Length (FT)	**4670**			
Shared lane marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Shared lane Markings (50% contingency)	374	SF	$5.00	$1,872.00
Signage (every 1000' both sides) 50% cont	15	Each	$250.00	$3,750.00
			Subtotal	$5,622.00
			Contingency (50%)	$2,811.00
			Construction Subtotal	$8,433.00
Completed by: SM				
Date 02-13-13			**Phase 2 Engineering (30%)**	$2,529.90
			Phase 3 Engineering (30%)	$2,529.90
				$ 13,492.80

Proposed Master Plan - Village of Fox Lake Frontage Road West (Kings Road to Big Hollow Road)				
Assumptions				
Type	**Shared Lane Marking**			
Project Length (FT)	**7740**			
Shared lane marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Shared lane Markings (50% contingency)	608	SF	$5.00	$3,042.00
Signage (every 1000' both sides) 50% cont	24	Each	$250.00	$6,000.00
	Subtotal			$9,042.00
	Contingency (50%)			$4,521.00
	Construction Subtotal			$13,563.00
Completed by: SM				
Date 02-13-13	**Phase 2 Engineering (30%)**			$4,068.90
	Phase 3 Engineering (30%)			$4,068.90
				$ 21,700.80

Proposed Master Plan - Village of Fox Lake Grand Avenue East (US Route 12 to Washington Street)				
Assumptions				
Type	**Bike Lane**			
Project Length (FT)	**7380**			
Bike Lane Marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Shared lane Markings (50% contingency)	562	SF	$5.00	$2,808.00
Signage (every 1000' both sides) 50% cont	21	Each	$250.00	$5,250.00
6" Thermoplastic Stripe (10% cont)	16,236	FT	$2.00	$32,472.00
4" Thermoplastic Stripe (10% cont)	16,236	FT	$1.50	$24,354.00
	Subtotal			$64,884.00
	Contingency (15%)			$9,732.60
	Construction Subtotal			$74,616.60
Completed by: DJ				
Date 01-28-13	**Phase 2 Engineering (15%)**			$11,192.49
	Phase 3 Engineering (15%)			$11,192.49
				$ 97,001.58

Proposed Master Plan - Village of Fox Lake Grand Avenue West (US Route 12 to Dockers Resturant)				
Assumptions				
Type	**Shared Lane Marking**			
Project Length (FT)	**907**			
Shared lane marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Shared lane Markings (50% contingency)	94	SF	$5.00	$468.00
Signage (every 1000' both sides) 50% cont	3	Each	$250.00	$750.00
			Subtotal	$1,218.00
			Contingency (50%)	$609.00
			Construction Subtotal	$1,827.00
Completed by: DJ				
Date 01-28-13			**Phase 2 Engineering (30%)**	$548.10
			Phase 3 Engineering (30%)	$548.10
				$ 2,923.20

Proposed Master Plan - Village of Fox Lake Nippersink North (Rollins Road to Oak Street)				
Assumptions				
Type	**Two-Way Protected Bike Lane**			
Project Length (FT)	**2270**			
Bike Lane Marking				
(Every 500' Both lanes)	**15.6**	**SF**		
Signage every 500' (one side)				
Collapsible Traffic Posts spacing	**6**	**Ft**		
% of length where posts are placed	**50%**			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
Bike Lane Markings (50% contingency)	187	SF	$5.00	$936.00
Signage (every 500' one side) 50% cont	8	Each	$250.00	$1,875.00
3' Thermoplastic Stripe (10% cont)	2,497	FT	$7.50	$18,727.50
4" Thermoplastic Stripe (10% cont) (skip dash)	824	FT	$1.50	$1,236.02
Collapsible Traffic Posts (10% cont)	208	Each	$40.00	$8,316.00
			Subtotal	$31,090.52
			Contingency (15%)	$4,663.58
			Construction Subtotal	$35,754.09
Completed by: DJ				
Date 01-28-13			**Phase 2 Engineering (25%)**	$8,938.52
			Phase 3 Engineering (25%)	$8,938.52
				$ 53,631.14

Nippersink South - Fox Lake Portion (IL 59 to Terra Springs Drive)				
Assumptions				
Type	**Shared Use Path**			
Project Length (FT)	**8885**			
Average Path Width (FT)	**10**			
Thickness of Pavement (IN)	**3**			
Thickness of Aggregate	**6**			
Asphalt Density (lbs/sq-in)	**115**			
Average Earthwork depth (ft)	**1.5**			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
HMA Pavement	1,703	Ton	$60.00	$102,177.50
Aggregate Base	2,288	Ton	$25.00	$57,197.19
Earthwork	4,936	Cu YD	$25.00	$123,402.78
Striping	10,662	Ft	$1.50	$15,993.00
Signage (2 signs every 1000' *50% cont)	27	Each	$250.00	$6,750.00
Drainage allowance (10%)				$30,552.05
Completed by: DJ			**Subtotal**	$336,072.51
Date 01-28-13			**Contingency (15%)**	$50,410.88
Note: Path cost calculated as part of a road reconstruction project with dirt work drainage and design completed with the primary project.			**Construction Subtotal**	$386,483.39
			Phase 2 Engineering (10%)	$38,648.34
			Phase 3 Engineering (15%)	$57,972.51
				$ 483,104.24

Proposed Master Plan - Village of Fox Lake Pistakee Lake / Oak Street				
Assumptions				
Type	**Directional Signs**			
Project Length (FT)	**4044**			
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL**
HMA Pavement	0	Ton	$60.00	$0.00
Aggregate Base	0	Ton	$25.00	$0.00
Earthwork	0	Cu YD	$25.00	$0.00
Striping	0	Ft	$1.50	$0.00
Signage (2 signs every 1000' *50% cont)	12	Each	$250.00	$3,000.00
Drainage allowance (10%)				$0.00
Completed by: DJ			**Subtotal**	$3,000.00
Date 01-28-13			**Contingency (15%)**	$450.00
			Construction Subtotal	$3,450.00
Note: Path cost calculated as part of a road reconstruction project with dirt work drainage and design completed with the primary project.				
			Phase 2 Engineering (10%)	$345.00
			Phase 3 Engineering (15%)	$517.50
				$ 4,312.50

Proposed Master Plan - Village of Fox Lake Washington (Rollins Road to Grand Avenue)				
Assumptions				
Type	**Bike Lane**			
Project Length (FT)	**3520**			
Bike Lane Marking				
(Every 600' Both sides)	**15.6**	**SF**		
Signage every 1000' both sides				

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Shared lane Markings (50% contingency)	281	SF	$5.00	$1,404.00
Signage (every 1000' both sides) 50% cont	12	Each	$250.00	$3,000.00
6" Thermoplastic Stripe (10% cont)	7,744	FT	$2.00	$15,488.00
4" Thermoplastic Stripe (10% cont)	7,744	FT	$1.50	$11,616.00
			Subtotal	$31,508.00
			Contingency (15%)	$4,726.20
			Construction Subtotal	$36,234.20
Completed by: DJ				
Date 01-28-13			**Phase 2 Engineering (15%)**	$5,435.13
			Phase 3 Engineering (15%)	$5,435.13
				$ 47,104.46