



# Fox River Corridor in McHenry and Lake Counties



**Existing Conditions Overview**

October 2017

# Acknowledgements

## McHenry County Planning and Development

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Unless otherwise specified, all photos are by CMAP staff.

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# Chapter 1. Corridor Profile

McHenry County is creating a Corridor Plan that will outline a vision for one of its greatest natural, recreational, and cultural assets, the Fox River and recommend policies and strategies that will help stakeholders to achieve that vision. The Plan will focus on a scenic portion of the river that extends from Burtons Bridge in the north to Fox Bluff Conservation Area in the south (Figure 1.1). The Plan will allow elected officials, county and municipal staff, open space managers, residents, business owners, and civic groups to make informed decisions on land use, open space, recreation, transportation, and environmental quality throughout the Corridor. In addition to providing a roadmap to achieve the Fox River community's goals, the Plan will explore changing trends, identify emerging challenges, and promote new opportunities.

Having an accurate understanding of the existing conditions of the study area is necessary to develop an effective plan. This Corridor Profile provides an overview of the current conditions in the Fox River Corridor and is designed to provide an agreed-upon starting point from which to move forward and create a shared vision. Crafted in collaboration with McHenry County staff, the planning process will last approximately 14 months and is designed to gather input throughout from a diverse group of stakeholders including residents, recreational users, businesses, and the conservation community.

## Regional Context and Governance

The Fox River originates near Menomonee Falls in Wisconsin and flows for over 200 miles before reaching the Illinois River in Ottawa, IL. Located approximately 45 miles northwest of downtown Chicago, the Plan study area spans eight villages and unincorporated lands in southeast McHenry County and southwest Lake County (Figure 1.2). Specifically, the study area includes portions of the villages of Cary, Fox River Grove, Island Lake, Lake Barrington, Oakwood Hills, Port Barrington, Tower Lakes, and Trout Valley and is upstream of the Village of Algonquin and downstream of the City of McHenry.

Understanding the complexity of the governmental structure within the Fox River Corridor will allow plan recommendations to be crafted with local, county, and state government input and tailored to the appropriate partners and implementers. The Fox River Corridor is managed by various jurisdictions at many different levels and scales, including municipal, township, and county governments, homeowner associations, park districts, conservation and forest preserve districts, the Illinois Department of Natural Resources (IDNR), and the Fox Waterway Agency (FWA). This area is rich in environmental advocacy from organizations like Citizens for Conservation, Environmental Defenders of McHenry County, Fox River Ecosystem Partnership, Fox River Study Group, Friends of the Fox River, Illinois Paddling Council, Silver and Sleepy Hollow Creeks Watershed Coalition, and Tower Lakes Drain Coalition.



Figure 1.1 Fox River Corridor Study Area.

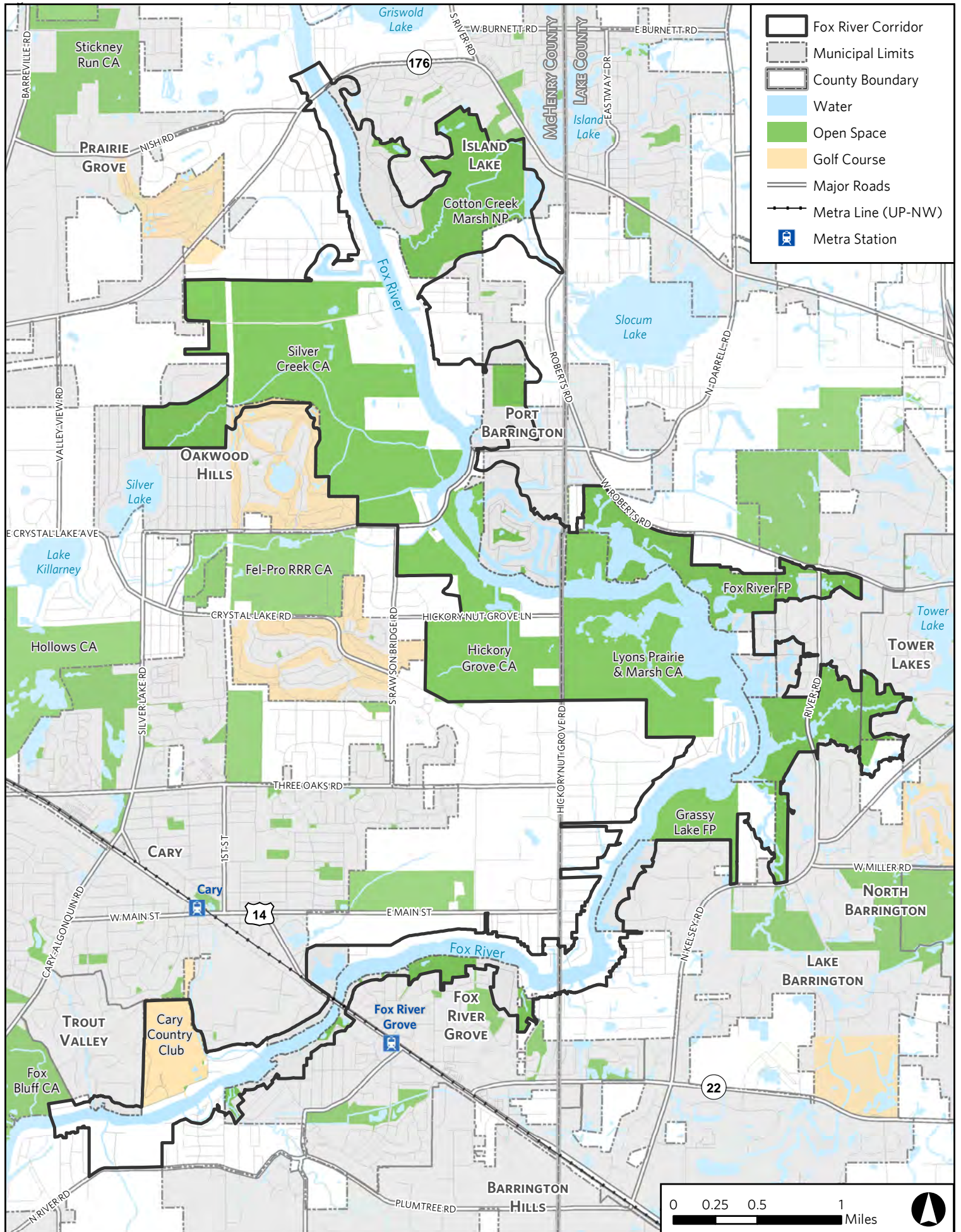
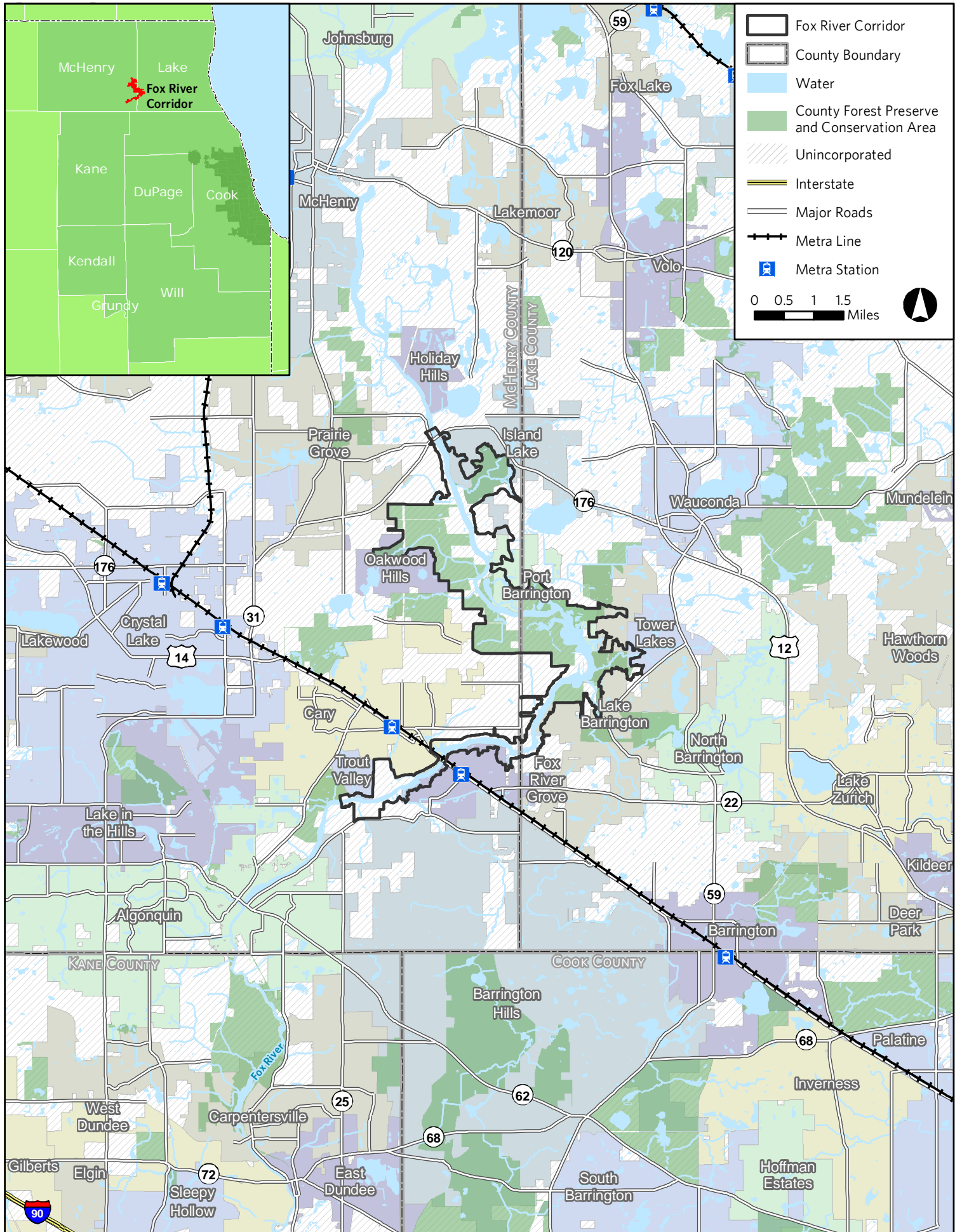




Figure 1.2 Regional Context.



## Natural Environment

The Fox River and the adjoining natural areas are some of the most valuable natural assets in the Corridor as well as the Chicago region. The river corridor and its wetland systems provide local habitat for a wide variety and number of the State's important species including birds, plants, insects, fish, and mammals. Evidence of the area's natural resource value is shown in the number of protected parcels that qualified for designation as an Illinois Nature Preserve, the highest form of land protection offered in Illinois. These resources provide a number of ecosystem services, such as clean air and water, habitat and biodiversity, flood control, and climate regulation. In addition, the river and its natural environment shape the character and identity of the communities within the Corridor and enhance quality of life for area residents. The natural resources within the Fox River Corridor exist within an even larger network of water and land resources throughout the entire Fox River Valley, thus the plans, policies, and development decisions of these communities should work in concert with these assets to achieve a sustainable and livable future.

## Green Infrastructure Vision and Open Space

The regional Green Infrastructure Vision (GIV), adopted by Chicago Wilderness, is a large-scale, multistate vision of interconnected land and water resources. The GIV identifies land that can be restored, protected, or connected through conservation and implementation of conservation design practices. The McHenry County Green Infrastructure Plan<sup>1</sup> and Lake County Green Infrastructure Model and Strategy<sup>2</sup> build on the model set forth by the regional GIV to provide a more refined green infrastructure network. McHenry County cites acquisition, zoning regulations, development design standards, and planning assistance as possible tools to implement the County's green infrastructure vision at the regional, community, and site scales. Specifically, the plan recommends conservation development, greenway connections, trails, restoration, and stormwater best management practices.

Figure 1.3 illustrates the resources identified in both plans for the Fox River Corridor. The majority of land within the Corridor is identified in the county green infrastructure plans, most of which is preserved by the McHenry County Conservation District (MCCD), Lake County Forest Preserves (LCFP), and IDNR. The green infrastructure network also includes the riparian zone, or areas adjacent and ecologically connected to waterbodies, along the Fox River and tributary streams and lakes. Based on the GIV, these lands within the study area may be providing over \$65 million of ecosystem services annually, for water purification, groundwater recharge, flood control, and carbon storage. In addition, other services are being provided, such as biodiversity, habitat, and recreation, but are not easily valued in a dollar amount.<sup>3</sup>

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<sup>1</sup> McHenry County Green Infrastructure Plan, 2012. See

<https://www.co.mchenry.il.us/home/showdocument?id=7773>

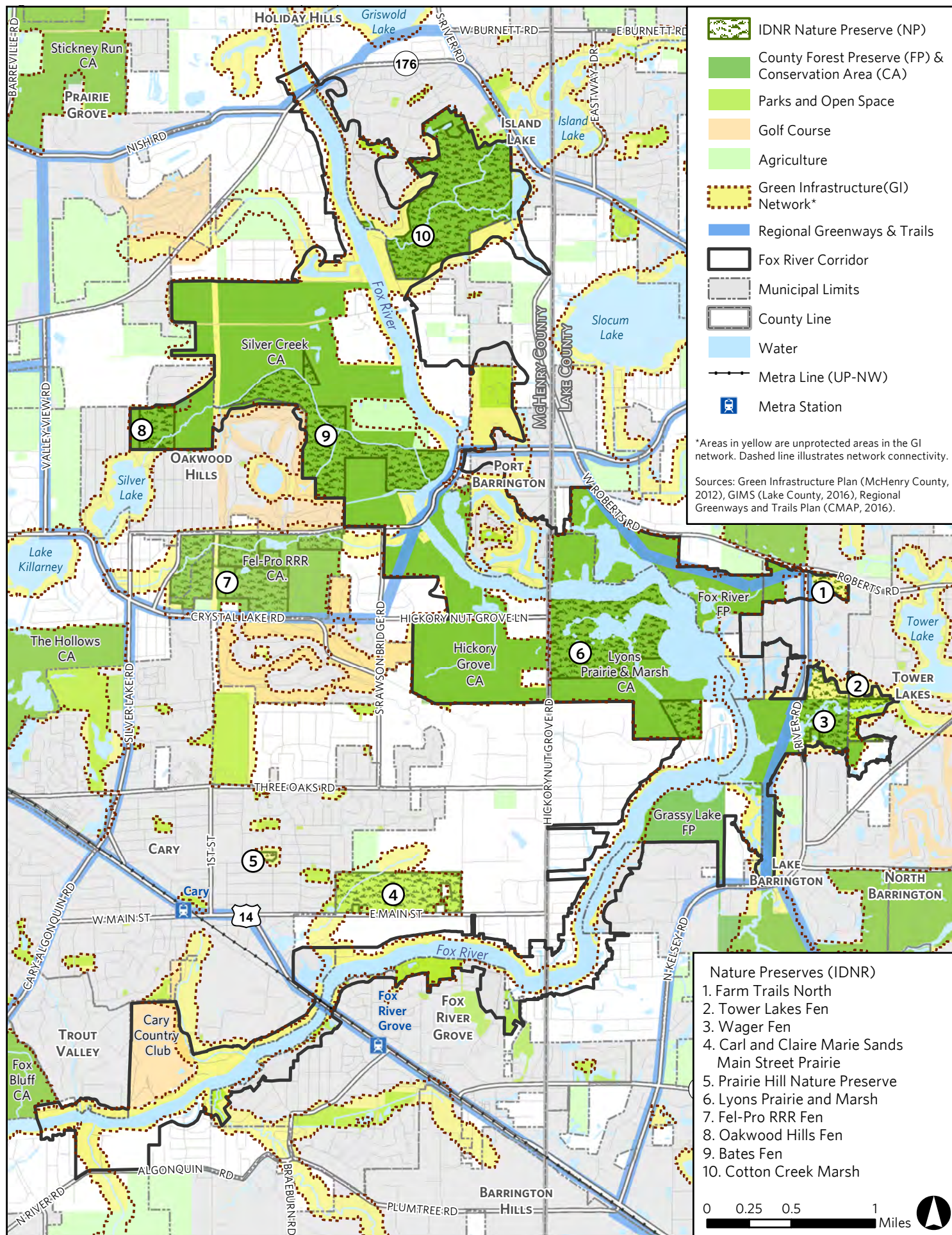
<sup>2</sup> Lake County Green Infrastructure Model and Strategy (GIMS), 2016. See

<http://www.lcfd.org/conservation/greenstrategy/>

<sup>3</sup> CMAP, GIV 2.3, 2015, which estimated the value of only four ecosystem services, flood control, groundwater recharge, water purification, and carbon storage.



Figure 1.3 Green Infrastructure Vision and open space.



Considering a majority of the open space is owned by MCCD, LCFP, IDNR, and local park districts, residents and visitors have access to a significant amount of open space totaling over 2,360 acres.<sup>4</sup> These scenic and natural open spaces offer recreational amenities, wildlife habitat, and water quality benefits. In addition to open space, developed areas of the Corridor have a sizable community forest embedded into rights of way, yards, wooded areas, and undeveloped lots, and includes all neighborhood tree canopies, parkways, and other spaces with tree canopy.

## **Watersheds**

Watersheds are areas of land that drain surface water to a specific point in the landscape, such as a river or a lake. The study area is located in the central portion of the Fox River Watershed that covers 2,658 square miles across Illinois and Wisconsin. From north to south, the study area is divided between the 9 Lakes Watershed, Silver and Sleepy Hollow Creeks Watershed, Cary Creek Watershed, Flint Creek Watershed, and Spring Creek Watershed (Figure 1.4). Several creeks flow into this section of the Fox River and even the lakes within the watersheds eventually drain to the river.<sup>5</sup> Development and land management practices that take place in one section of the watershed can affect the water quality, hydrology, and health of the downstream watershed and river basin. Pollution affects the ecosystem and aesthetics of rivers, lakes, and streams and limits their use for recreation and aquatic life. To help protect the environmental quality of the Fox River and its tributaries, watershed-based plans have been prepared in the 9 Lakes, Flint Creek, Silver Creek, Sleepy Hollow Creek, and Spring Creek watersheds.

## **Floodplains**

Floodplains are areas adjacent to waterways that are susceptible to inundation by floodwater and are based on different rainfall events. The regulatory floodplain, commonly known as the 100-year floodplain, is anticipated to flood when approximately 7.5 inches of rain falls within a 24-hour period. While flooding is a natural process, development and changing precipitation patterns due to climate change have changed the way water flows through the landscape. The regulatory floodplain in the study area is largely within protected open space (57.7 percent), though residential land makes up a significant portion of the floodplain (20.9 percent), particularly in areas adjacent to river and in Port Barrington (Figure 1.4). Each community and county within the Corridor participates in the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP), which encourages them to adopt and enforce floodplain management regulations and allows property owners to purchase federally-backed flood insurance.

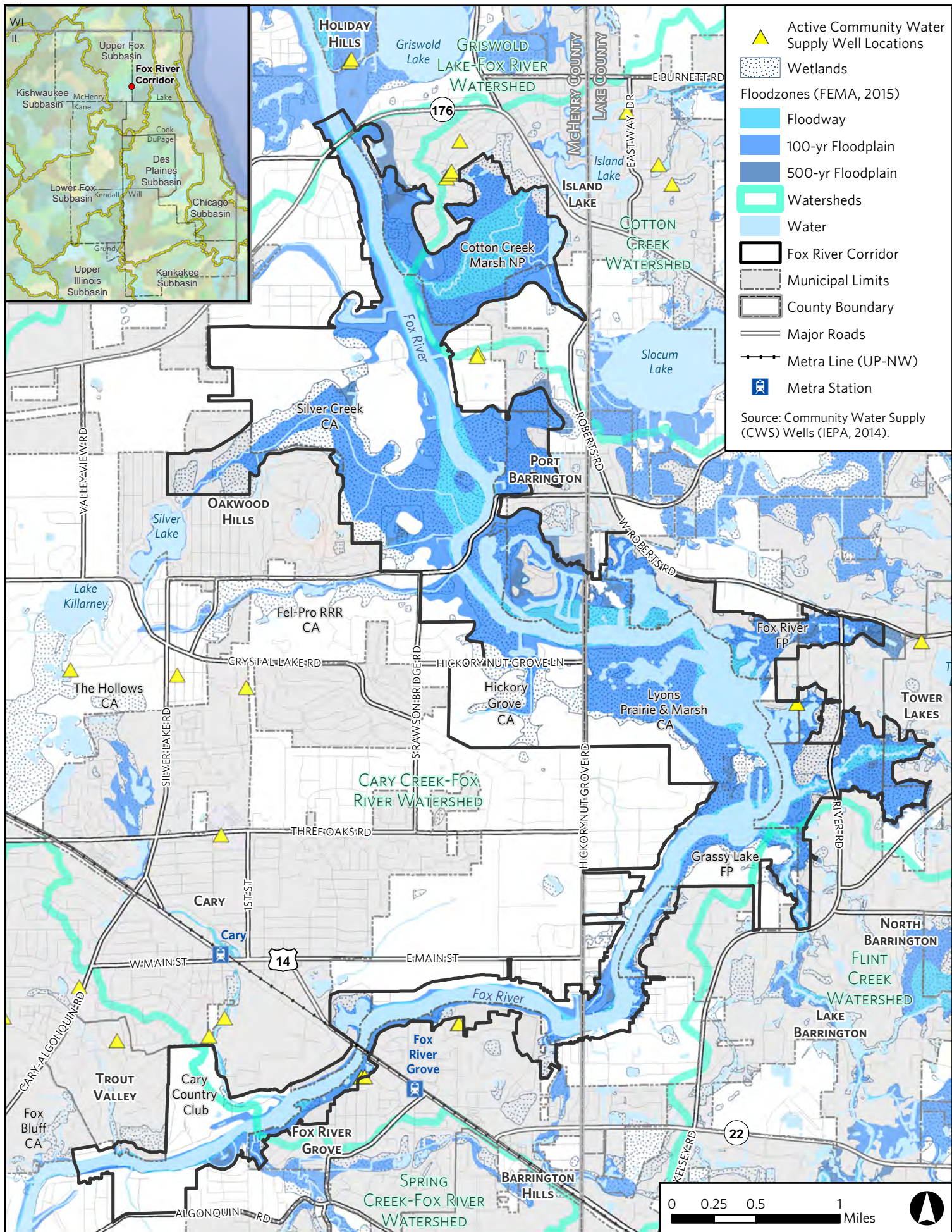
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<sup>4</sup> This number excludes Cotton Creek Marsh Nature Preserve and Oakwood Hills Fen, which are not accessible to the public.

<sup>5</sup> These creeks include Cotton Creek, Prairie Creek, Silver Creek, Fel-Pro Creek, Slocum Lake Drain/Fiddle Creek, Tower Lake Drain, Flint Creek, Cary Creek, and Spring Creek. Nearby lakes include Island, Slocum, Tower, Silver, Killarney, and Atwood.



Figure 1.4 Water resources.





## Climate

The Corridor has a humid continental climate characterized by warm summers and cold and dry winters.<sup>6</sup> The average annual temperature is approximately 47.4 degrees Fahrenheit. It has an annual, average daily high temperature of 57.1 degrees Fahrenheit and an average daily low temperature of 37.8 degrees Fahrenheit.<sup>7</sup> Summer months tend to be hot and with a relative humidity averaging at 60 percent. Summer rains and severe thunderstorms are also common with over 55 percent of the area's precipitation falling between the months of April and September.<sup>8</sup> Winter months tends to be cold and slightly drier with an average seasonal snowfall of 34.3 inches. During the months of December through March, there are approximately 11 days that receive snowfall that is equal to or above one inch in depth.<sup>9</sup> However, climate change has already begun to affect the Chicago region and will continue to bring more frequent and intense storms, increased periods of extreme heat and cold, and longer droughts. Appendix A provides more detail on climate trends and describes the local impacts that climate change may bring to Fox River Corridor.

## Land Use

A vibrant and healthy Fox River Corridor depends on a sensitive mix of land uses that protect the river's environmental quality, reduce risk of damages from flooding, and provide access and activities to draw people to the river. An assessment of the existing land use pattern in the Fox River Corridor provides a foundational understanding of the current use and character of land in the study area and insights into how those land uses could change in the future (Figure 1.5 and Table 1.1).

**Table 1.1 Existing land uses in Fox River Corridor, 2013.**

Land Use	Acres	Percent
Open Space	2717.7	58.6%
Single-family residential	848.3	18.3%
Water	736.6	15.9%
Vacant	208.5	4.5%
Commercial	53.7	1.2%
Agriculture	41.0	0.9%
Transportation/Communication/Utility/Waste	22.8	0.5%
Institutional	11.7	0.3%
Industrial	0.9	0.0%
Total	4641.3	100.0

Source: CMAP 2013 Land Use Inventory.

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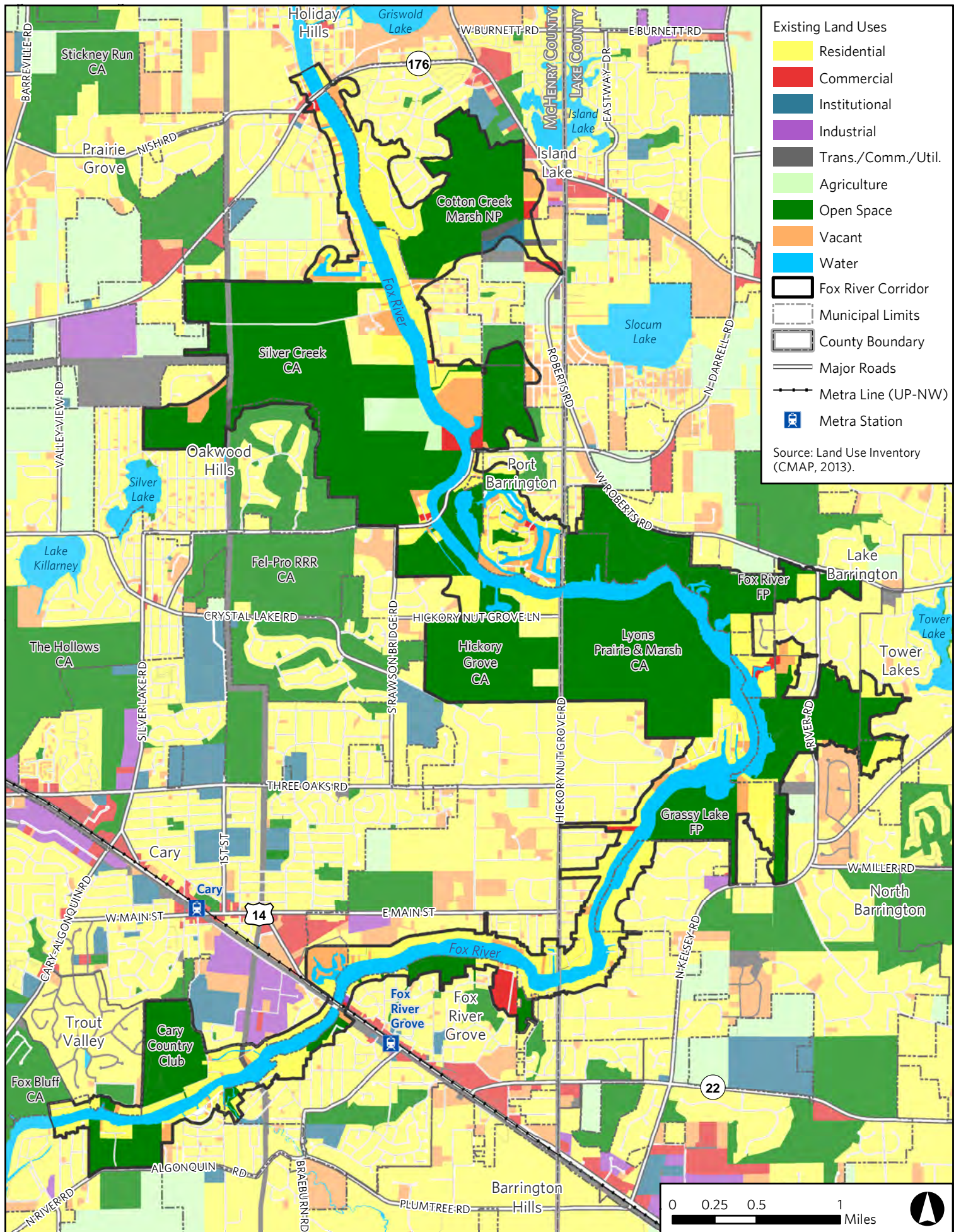
<sup>6</sup> NOAA, Koppen-Geiger Climate Classification – 2007, <https://sos.noaa.gov/datasets/koppen-geiger-climate-classification-2007/>

<sup>7</sup> Based on annual normal temperature from the McHenry County Stratton station.

<sup>8</sup> Santec and Molly O'Toole Associates, LTD, "McHenry County Natural Hazards Mitigation Plan Draft," December 2016, <https://www.co.mchenry.il.us/home/showdocument?id=68850>

<sup>9</sup> NOAA National Climatic Data Center, "Official 1981-2010 Climate Normals," <http://www.isws.illinois.edu/atmos/statecli/newnormals/normals.USC00115493.txt>

Figure 1.5 Existing land use, 2013.





The Fox River is the focal point of the Corridor, and along with several tributary lakes and streams, water makes up 15.9 percent of the study area's total land area. The flat landscape results in many wet, poorly draining areas that have historically been unsuitable for development. As such, open space makes up 58.6 percent of the total land area, mostly in the form of county conservation areas, county forest preserves, and IDNR nature preserves. Within the Corridor, the McHenry County Conservation District and Lake County Forest Preserves maintain over 1,890 acres and 526 acres of open space respectively. Over five percent of the study area is composed of vacant land, or land in an undeveloped state with no agricultural activities or protection as open space. In many cases, the land cover of vacant parcels includes prairies, wetlands, woodlands, or other natural resources with several vacant lots situated within the floodplain.

More than 18 percent of the land area in the Corridor is devoted to residential use characterized by detached single-family homes. Most residential properties on the riverbank or other waterways have direct river access via docks. These properties tend to have narrow lots with short setbacks and were analyzed as part of the McHenry County Waterfront Neighborhoods Subarea Plan.<sup>10</sup> To address issues with these nonconforming lots, McHenry County incorporated waterfront-specific regulations for unincorporated areas into the County's Unified Development Ordinance. Commercial development is dotted along the river in Burtons Bridge, Port Barrington, and Fox River Grove and primarily comprises marinas and restaurants with riverfront access. These developments tend to be unbuffered from the riverbank and contain substantial paved surfaces for vehicle parking and boat storage. Concentrations of commercial development are found just outside of the study area along Route 176 in Burtons Bridge and Route 14 in Fox River Grove. Industrial uses are situated just outside of the study area on Route 14 in Cary.

A small portion of the study area comprises streets, bridges, a ComEd electrical transmission easement, and the Northern Moraine wastewater treatment plant. A few parcels near the Silver Creek Conservation Area are actively farmed.

Zoning and other development regulations play an important role in determining the form, character, and impact of existing and future development. Updating development regulations to be consistent with the vision for a corridor can be a critical step to implementing a corridor plan.

## **Transportation**

Safe and convenient access for a variety of transportation modes is a key element of a vibrant and healthy river corridor. Areas of the Fox River Corridor are accessible by transit, bike, boat, canoe, motor vehicle, and foot. However, some areas are relatively isolated and there is generally low transportation connectivity throughout the Corridor.

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<sup>10</sup> A Zoning Approach for McHenry County's Unincorporated Waterfront Neighborhoods, 2012. See <http://www.cmap.illinois.gov/programs-and-resources/lta/mchenry-county>



Three roadway bridges exist within the study area that provide access across the river and connections to nearby communities: IL Route 176, Rawson Bridge Road, and U.S. Route 14 (Figure 1.6). Unsurprisingly, these roads carry the highest traffic volumes in the Corridor. The annual average daily traffic (AADT) for Route 176, Rawson Bridge Road, and Route 14 was measured at 16,400, 7,300, and 31,400 respectively. On Route 14, heavy traffic creates congestion through the downtowns of Cary and Fox River Grove and limits access, safety, and circulation for pedestrians and bicyclists. To improve safety and circulation in Burtons Bridge, the Illinois Department of Transportation (IDOT) has planned to install traffic signals at the intersection of IL Route 176 and Nish Road.<sup>11</sup> Route 59 is another major route that runs to the east of the study area and provides connections to U.S. Route 12 to the north and the Jane Addams Memorial Tollway (I-90) to the south. Given the heavily residential land use along the river, access to the river is varied and typically provided through public or commercial lands like nature preserves, local parks, or marinas rather than local roads.

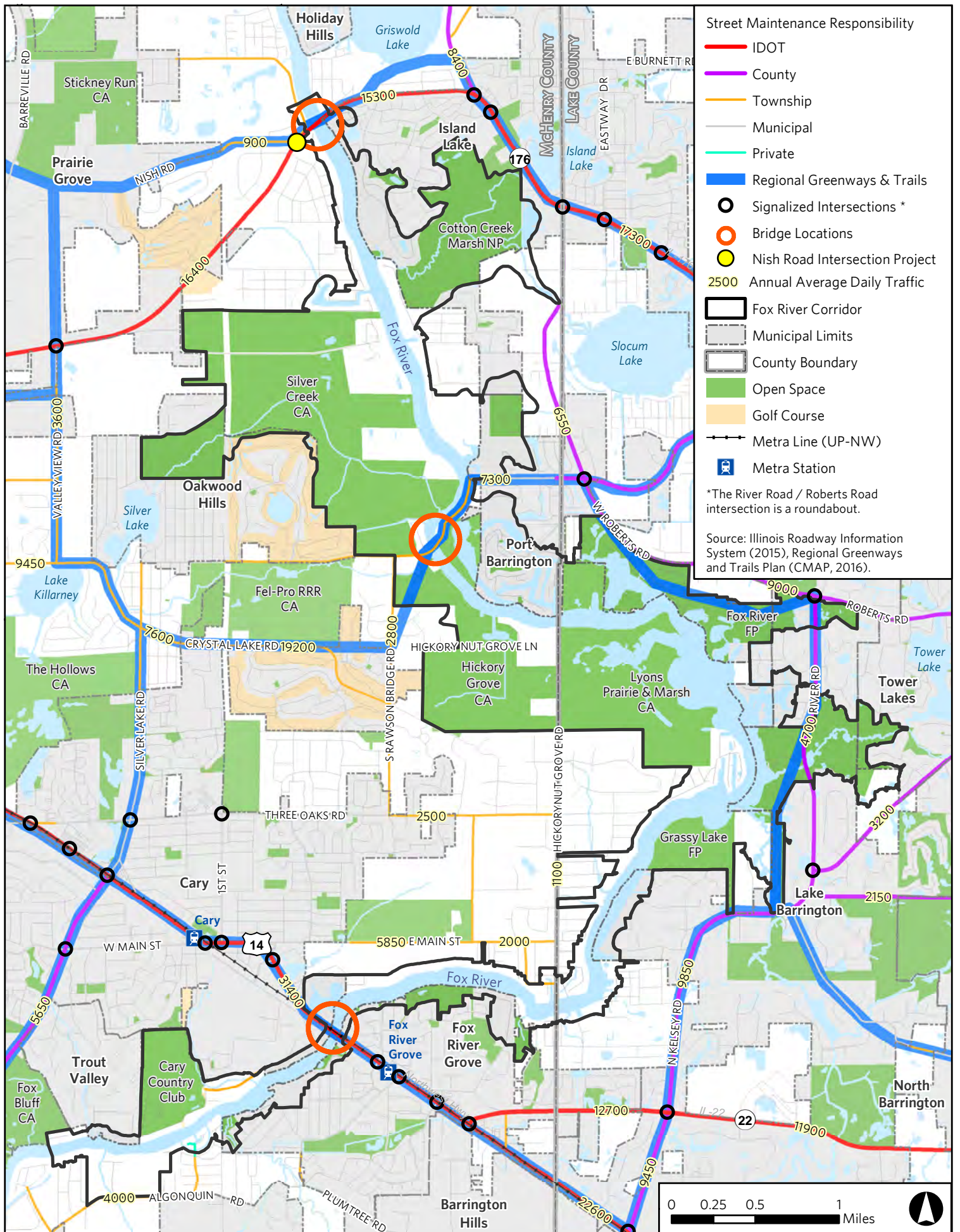
Unlike other areas of the Fox River Valley, the Corridor does not have trail access directly adjacent to the river like the Fox River Trail (Kane County) or Prairie Trail (McHenry County). There are several regional trails that connect or are recommended by Lake County Department of Transportation (LCDOT), McHenry County Division of Transportation (MCDOT) and other agencies to connect the Corridor, including the Prairie Trail-Island Lake Connector via Route 176, Rawson Bridge-Prairie Trail Connector, Union Pacific Corridor, and LCDOT and LCFPD routes through Fox River Forest Preserve and Grassy Lake Forest Preserve. Once complete, these regional trails will provide access to the Fox River Corridor from the Prairie Trail, which extends north-south from the Wisconsin border to the Fox River Trail in Kane County. Both the Prairie Trail and the Fox River Trail are parts of the Grand Illinois Trail, a network of over 500 miles of trails between Lake Michigan and the Mississippi River. Using the Grand Illinois Trail, a cyclist in the Fox River Corridor can connect to trails that lead as far as Chicago, Joliet, and the Quad Cities. In addition to these regional bikeways, the Corridor features many local trails in forest preserves such as Lyons Prairie and Marsh, Fel-Pro RRR Conservation Area, and Silver Creek Conservation Area, although they do not all connect to create a local trail network.

The Metra Union Pacific-Northwest (UP-NW) line runs adjacent to Route 14 and provides service to Cary and Fox River Grove. Both Metra stations are outside of the Corridor; however, the station in Fox River Grove is only located approximately 0.35 miles from the Fox River (Table 1.2). The land use pattern surrounding the Fox River Grove Metra Station, made of up predominantly single family residential, is likely why many travelers choose to drive to and from the station (Table 1.3). In 2003, the Village created the Fox River Grove Station Area Planning Study to guide transit-supportive development around the Fox River Grove Metra Station. Since then, Metra has installed improvements at the station in 2013 and the Village is moving forward with adjacent redevelopment.

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<sup>11</sup> A Phase I study is underway as of September 2017. See <http://www.idot.illinois.gov/projects/il-176-at-nish-road>

Figure 1.6 Trails and Traffic volumes and jurisdiction of streets.





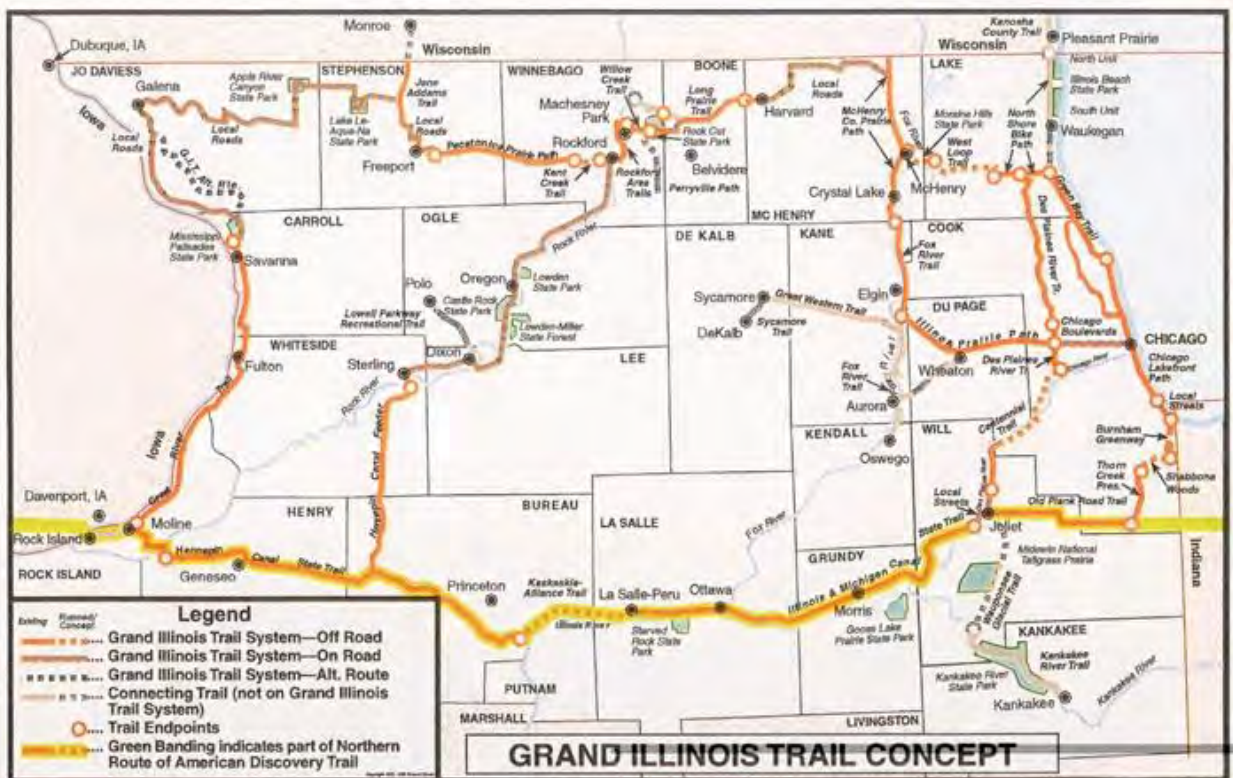
**Table 1.2 Metra Boardings, Alightings, Access and Parking at Fox River Grove Station, 2014.**

Rail Line	Boardings	Alightings	Parking Capacity	Observed Parking Utilization
UP-NW	410	411	298	78%
Source: RTAMS/ Metra 2014 Station Boarding/Alighting Counts: Train-by-Train Detail.				

**Table 1.3 Metra Mode of Access at Fox River Grove Station, 2014.**

Walked	Drove Alone	Dropped Off	Carpool	Bus	Bike	Other
14%	57%	19%	9%	0%	1%	0%
Source: Metra 2014 Origin-Destination Survey.						

**Figure 1.7 Grand Illinois Trail Concept.<sup>12</sup>**



<sup>12</sup> <http://janeaddamstrail.com/wp-content/uploads/2012/01/GIT-04-Map.jpg>



# Chapter 2. Community Outreach

In order to provide mechanisms for meaningful outreach to residents, business owners, river users, and other stakeholders in the Corridor, CMAP coordinated with McHenry County and the Steering Committee to carry out several activities, including stakeholder interviews, steering committee meetings, an interactive online survey, and a public open house. The following provides a summary of what has been done so far; outreach activities will continue during the course of the planning process. Since the start of the formal planning process, about 375 residents and stakeholders have participated, see Table 2.1.

**Table 2.1. Early Public Participation and Engagement.**

Public Engagement Activities	Number of Participants
1st Steering Committee Meeting	23
Stakeholder Interviews	35
Public Kick-off Open House	54
MetroQuest Online Survey	263
<b>Total</b>	<b>375</b>

Source: CMAP, MetroQuest.

## Summary of Outreach Activities

### Steering Committee

The Steering Committee, comprised of individuals representing a wide variety of interests and perspectives, is tasked with providing guidance and feedback on existing issues and opportunities, developing central goals, reviewing plan documents, and identifying stakeholders who should be involved. Members include:

- Jim Anderson, Lake County Forest Preservation District
- Jodie Auliff, Illinois Paddling Council and Illinois Water Trailkeepers
- Jaki Berggren, Visit McHenry County
- Lynn Caccavallo, Cary Grove Area Chamber of Commerce
- Thomas Chefalo, Lake County Planning, Building & Development
- Donna Erfort, Village of Port Barrington
- Joseph Gottemoller, McHenry County Board
- Joseph Keller, Fox Waterway Agency
- John Kremer, McHenry County Conservation District
- Kerry Leigh, Village of Oakwood Hills
- Michael Murphy, Village of Trout Valley
- Robert Nunamaker, Village of Fox River Grove
- David Raica, Cary Park District
- Nancy Schietzelt, Environmental Defenders of McHenry County
- Carolyn Schofield, CMAP Board

- Nancy Schumm, Spring and Flint Creek Watershed Group
- Brian Simmons, Village of Cary
- Cynthia Skrukrud, Fox River Study Group and Sierra Club
- Jim Thompson, Village of Lake Barrington
- Thomas Vanderpoel, Citizens for Conservation
- Eberhard Veit, McHenry County Bicycle Advocates
- Mike Warner, Lake County Stormwater Management Commission
- Nancy Williamson, Illinois Department of Natural Resources

## **Steering Committee meetings**

The first Steering Committee meeting was held on October 25, 2016 at Trout Valley Lodge to introduce members to CMAP and the planning process and begin a conversation about the specific issues and opportunities in the Fox River Corridor. The steering committee articulated their vision for the Corridor and discussed its strengths and weaknesses. Strengths of the Corridor included the beauty of the Fox River, ample protected land and habitat, recreation and entertainment opportunities, collaboration among agencies, and citizens dedicated to protecting the river. Concerns raised involved lack of river access, water quality impairments, diminished biodiversity, flood damage, low connectivity among trails and natural areas, the need for education and stewardship among landholders and river users, overuse and abuse of the river, and lack of collaboration between Illinois and Wisconsin.

The steering committee members also identified improvements that could occur in the Corridor including stormwater management and erosion control, restoration and invasive species management, bicycle network expansion, amenities for paddlers, education programming, and buyouts of flood-prone structures.

## **Stakeholder interviews**

In order to gain further insight into the issues and opportunities that exist in the Fox River Corridor, CMAP staff conducted interviews with 35 individuals representing a variety of groups with a wide range of perspectives from several communities in the Corridor. These individuals included local residents, business owners, elected officials, and other stakeholders from the following organizations:

- Barrington Area Conservation Trust
- Cary Grove Area Chamber of Commerce
- Cary Park District
- Environmental Defenders of McHenry County
- Fox Valley Sustainability Network
- Fox Waterway Agency
- Illinois Department of Natural Resources
- Illinois Paddling Council
- Lake County Bike Project
- Lake County Health Department

- Lake County Forest Preserves
- Local businesses
- McHenry County Conservation District
- McHenry County Economic Development Corporation
- Tower Lake Drain Partnership
- Village of Cary
- Village of Fox River Grove
- Village of Oakwood Hills
- Village of Port Barrington
- Village of Trout Valley
- Visit McHenry County

While the conversations were designed to be confidential in order to promote an open dialogue, several broad themes emerged that were in favor of preserving the river and adjacent natural areas, encouraging wise use, balancing a mix of activities, and providing more access to the riverfront.

### **Public Kick-Off Open House**

To initiate the public's involvement in the planning process, a public open house was held to hear from residents and stakeholders. The open house was held on March 2, 2017, at Cary Village Hall. More than 50 individuals attended the meeting, representing residents from across the Corridor, citizens groups, nonprofit organizations, local and county officials, and local businesses.

At the meeting, CMAP and McHenry County staff facilitated a series of activities that allowed participants to learn about the project and share their insights on the strengths and challenges of the Fox River Corridor. In the first activity, participants voted for their priorities by placing stickers next to broad planning categories and improvements for each category. For the broad categories, Environmental Quality received the most votes (26), followed by Parks and Recreation (19), Business and Activities (13), and Bicycling and Walking (12). Figure 2.1 displays the voting results for improvements. The remaining activities involved table discussion and mapping exercises where attendees could identify key locations that require improvements or present opportunities to build on. There were three themed tables focused on transportation, natural resources, and business, tourism, and recreation. All map points and corresponding comments were digitized for use in this report and to inform the plan.



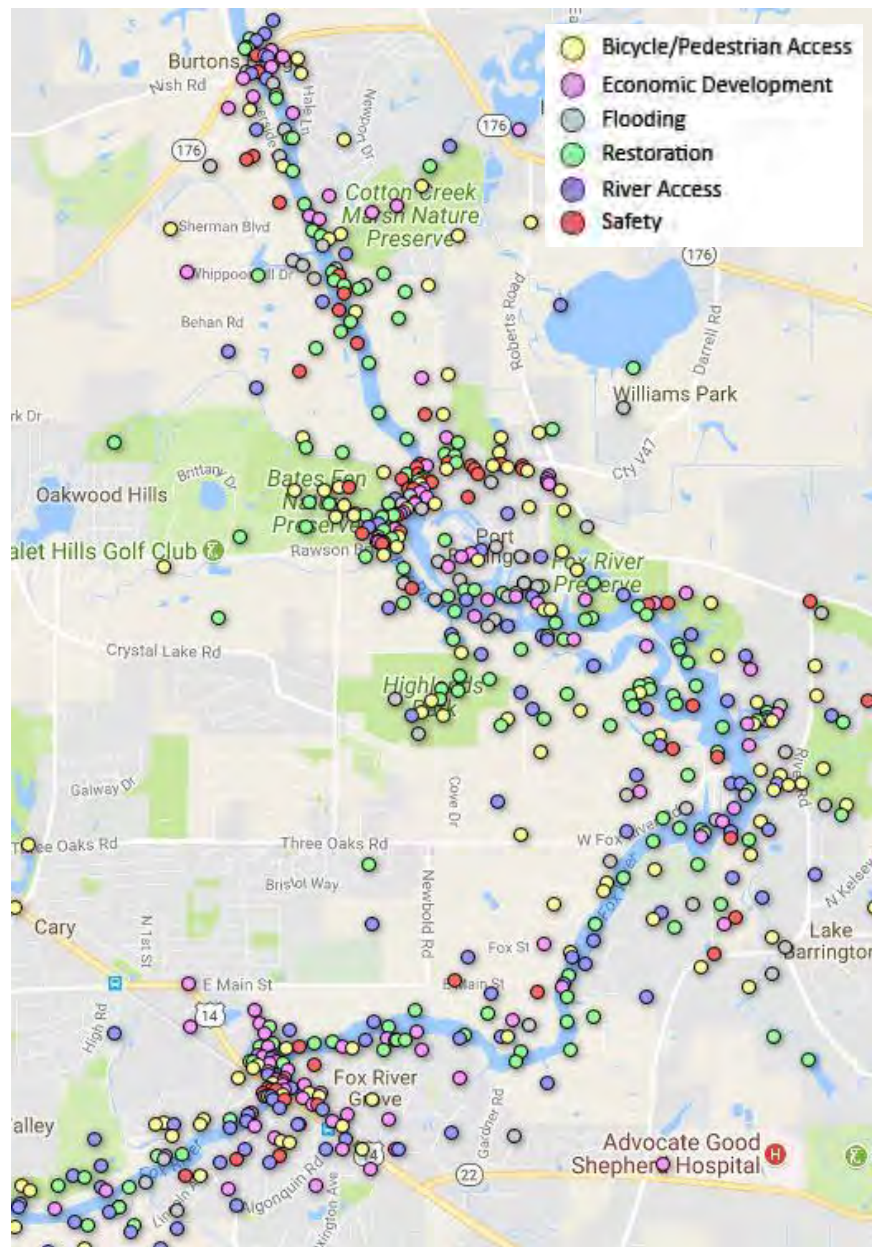
**Figure 2.1 Results from priority activity at open house.**



### Interactive Online Survey (MetroQuest)

An interactive online surveying tool was created to encourage residents and stakeholders to provide their feedback on priorities and improvements for the Fox River Corridor on topics such as accessibility, environmental quality, recreation, and commerce along the river or nearby. The survey consisted of questions and an interactive map for participants to identify assets and challenges. The interactive map allowed participants to place markers pertaining to six topics: river access, bicycle/pedestrian access, flooding, restoration, safety, and economic development (Figure 2.2). At the end of the engagement period, 252 participants had taken the survey. When asked to rank their top three priorities from five options, Environmental Quality was ranked highest, followed by Parks & Recreation, Bicycling & Walking, Business & Tourism, and Stakeholder Coordination.

Figure 2.2 MetroQuest map points identified.



A screenshot of map comments submitted via MetroQuest. Source: CMAP.



## Chapter 3. Water Quality and Flooding

The Fox River and its tributary streams and backwaters support a multitude of aquatic and terrestrial flora and fauna and their habitats, as well as a variety of recreational activities. The river is also important to cities that currently rely on it for their water supply, like Elgin and Aurora, or communities that may depend on it in the future. Pollution affects the ecosystem and aesthetics of rivers, lakes, and streams and is a key concern of stakeholders in the Fox River Corridor. Flooding is also a key concern, particularly for residents and business owners in flood prone areas that suffer property damage, loss of quality of life, and economic hardship.

### **Issue: Water pollution affects aquatic life and limits recreation.**

The Fox River is impaired along its entire length in Illinois based on metrics used by the Illinois Environmental Protection Agency (IEPA) that pertain to water chemistry, aquatic organisms, and physical habitat. According to IEPA's list of impaired waters for 2016,<sup>13</sup> the Fox River is failing to meet state standards for water quality and is impaired for multiple designated uses (Table 3.1 and Figure 3.1). Of the tributaries that enter the Fox River within the Corridor, Slocum Lake Drain/Fiddle Creek and Flint Creek were also assessed and are considered impaired. Each segment listed in Table 3.1 is identified as "medium" priority for the development of a total maximum daily load (TMDL).<sup>14</sup> Impairments are associated with a number of causes and sources of pollution in and upstream of the Fox River Corridor that contaminate or diminish the quality of water in the river. Upstream dams, habitat modification, stormwater runoff, wastewater discharges, and other sources all contribute to water quality impairments.

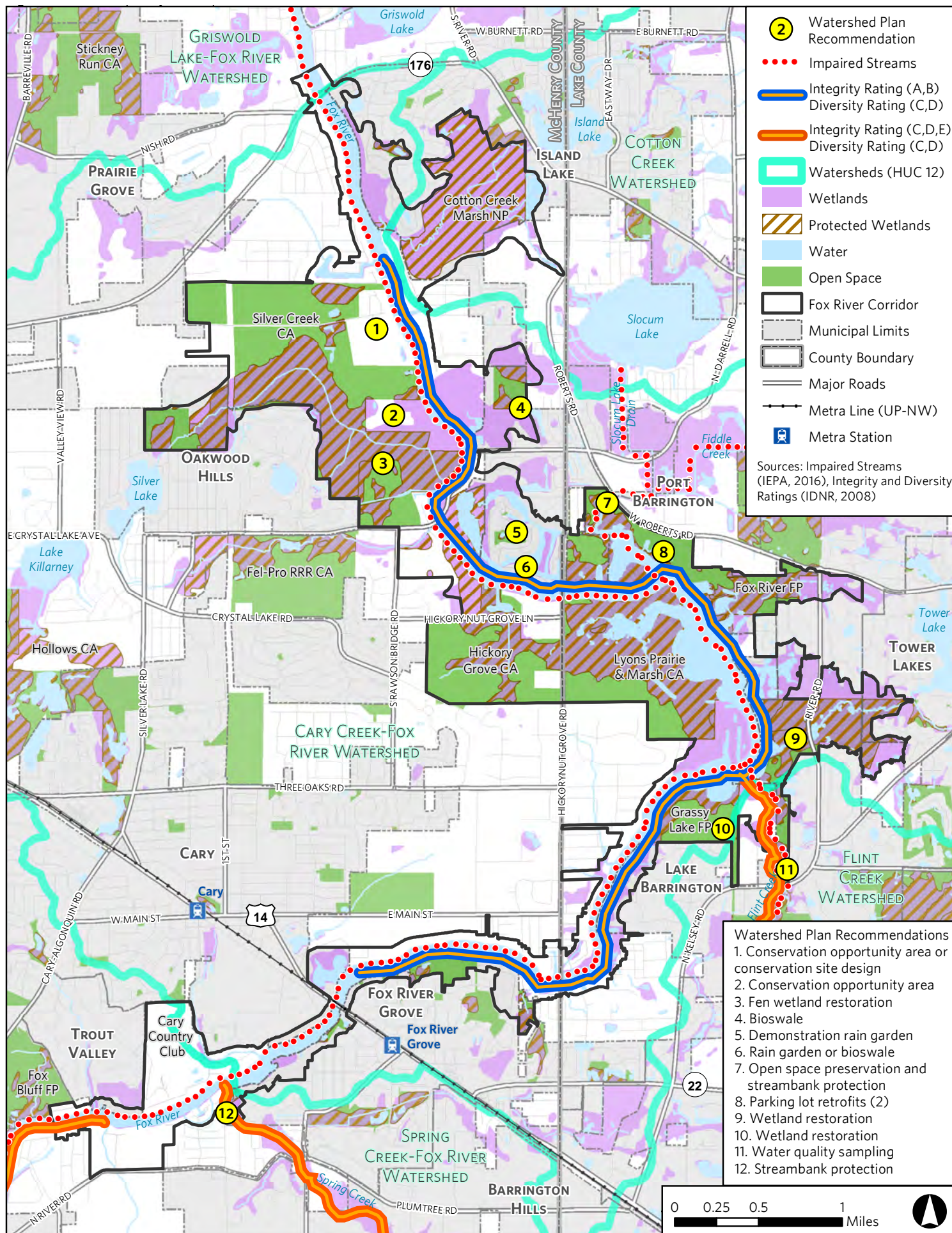
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<sup>13</sup> IEPA, Integrated Water Quality Report and 303d List, 2016. See

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/tmdls/303d-list/index>

<sup>14</sup> TMDLs investigate the source of impairing pollutants and prepare a corresponding implementation plan for reducing those pollutants. TMDLs can be viewed as "pollution budgets" – if the pollutant loads meet or are below the thresholds set by the TMDLs, the waterbody would be in compliance with its water quality standards.

Figure 3.1 Water quality and aquatic health.





**Table 3.1 Water Quality Impairments in Assessed Stream Segments within the Fox River Corridor, 2016.**

Stream Segment	Designated Use	Cause of Impairment	Source of Impairment
Fox River IL_DT-22 (from confluence of Lake Defiance outlet channel to Flint Creek confluence)	Aquatic life	Alteration in streamside or littoral vegetative covers	Habitat modification - other than hydromodification; Impacts from hydrostructure flow regulation/modification
		Aquatic algae	Dam or impoundment; Impacts from hydrostructure flow regulation/modification
		Chloride	Highway/Road/Bridge runoff (non-construction related); Urban runoff/storm sewers
		Copper	Urban runoff/storm sewers
		Other flow regime alterations	Dam or impoundment; Impacts from hydrostructure flow regulation/modification; Urban runoff/storm sewers
	Sedimentation/ Siltation	Impacts from hydrostructure flow regulation/modification; Urban runoff/storm sewers	
	Fish consumption	Polychlorinated biphenyls (PCBs)	Source unknown
Primary contact recreation	Fecal Coliform	Source unknown	
Fox River IL_DT-06 (from Flint Creek confluence to Crystal Creek confluence)	Aquatic life	Alteration in streamside or littoral vegetative covers	Streambank modifications/ destabilization
		Aquatic algae	Dam or impoundment; Impacts from hydrostructure flow regulation/modification
		Dissolved oxygen	Dam or impoundment; Impacts from hydrostructure flow regulation/modification
		Other flow regime alterations	Dam or impoundment; Impacts from hydrostructure flow regulation/modification
	Fish consumption	Polychlorinated biphenyls (PCBs)	Source unknown
	Primary contact recreation	Fecal Coliform	Source unknown
Slocum Lake Drain IL_DTR-W-C3, from Fiddle Creek confluence to Fox River	Aquatic life	Changes in stream depth and velocity	Channelization
		Dissolved oxygen	Source unknown
		pH	Channelization; Dam or impoundment
		Sedimentation/ Siltation	Urban runoff/storm sewers; Source unknown
		Total phosphorus	Municipal point source discharges

Stream Segment	Designated Use	Cause of Impairment	Source of Impairment
Flint Creek <i>IL_DTZS-01</i> from <i>Hawthorn</i> Lake outlet to <i>Fox River</i>	Aquatic life	Aquatic algae	Upstream impoundments
		Dissolved oxygen	Dam or impoundment; Urban runoff/storm sewers
		Other flow regime alterations	Dam or impoundment; Upstream impoundments
		Total phosphorus	Municipal point source discharges; Urban runoff/storm sewers
	Primary contact recreation	Fecal coliform	Source unknown
Sources: Illinois EPA, Illinois Integrated Water Quality Report and Section 303(d) List – Volume I: Surface Water – 2016 ( <a href="http://www.epa.illinois.gov/topics/water-quality/watershed-management/tmdls/303d-list/index">http://www.epa.illinois.gov/topics/water-quality/watershed-management/tmdls/303d-list/index</a> ); Nicole Vidales, IEPA-Bureau of Water, Des Plaines, via e-mail communication, Oct. 20, 2016; and Roy Smogor, IEPA-Bureau of Water, Springfield, via e-mail communication, Jan. 24, 2017. Note: Other Fox River tributaries within the Corridor, including Cotton Creek (IL_DTI) and Spring Creek (IL_DTH), have not been assessed by IEPA.			

## Impacts to Water Quality

The extensive land area in Illinois and Wisconsin draining to this section of the Fox River contributes high loads of sediment, nutrients (phosphorus, nitrogen), chloride (salt), and fecal coliform bacteria from urban and agricultural runoff. Sediment degrades aquatic habitat, thereby depleting dissolved oxygen levels needed to sustain aquatic life. Sedimentation also impedes recreational access for boaters and paddlers, as described in more detail in Chapter 5. Nutrients contribute to algal blooms that can create odor problems, unpleasant views, dissolved oxygen depletion, and adversely affect adjacent property values. Stakeholders noted that algal blooms are a particular concern in backwater areas that become stagnant over the summer. Another suspected source of nutrients, as well as fecal coliform, is older, potentially failing septic systems that were built to serve vacation homes and were never intended for routine use. High fecal coliform concentrations are a public health concern and restrict recreation such as swimming and water skiing. The Village of Port Barrington switched from septic to a sanitary sewer system in an effort to protect water quality. To protect Tower Lakes from pollution caused by failing septic systems, the Village of Tower Lakes passed an ordinance that requires residents to have their system tested every five years. The Barrington Area Council of Governments (BACOG) also runs a private water testing program for private wells and septic systems that is promoted by member communities like the Village of Lake Barrington.

Streambank erosion along the tributaries and in the main stem of the river also contributes to high sediment and nutrient loads. Stakeholders identified several areas in need of stabilization including Nielson’s Channel, Silver Creek Conservation Area, and south of Port Barrington Motor Sports. Two principal causes of erosion are inadequate stormwater management and frequent and high wakes from motor boats on the Fox River. These impacts require maintenance to stabilize the banks and prevent further erosion, but routine maintenance can be



difficult to achieve. Because much of the shoreland is privately owned, streambank maintenance requires stewardship and cooperation among individual property owners, many of whom live in unincorporated areas. Streambank restoration projects may also require approval by the U.S. Army Corps of Engineers (USACE), which could be onerous for property owners to achieve individually. The Fox River Grove Harbor Team is a unique example of how to pool resources for shoreland and streambank restoration. In exchange for restoring the Fox River shoreline along Lions Park over a five-year period, the Village of Fox River Grove allowed them to build a small harbor. The Illinois Clean Marina Initiative<sup>15</sup> is a voluntary program that encourages marina operators and recreational boaters to adopt operating and maintenance procedures that protect water quality. Funded through IDNR's Coastal Management Program, available resources are also relevant to Fox River marinas and boaters.

Land use and management decisions are important considerations in protecting water quality in the Fox River Corridor. Local improvements in landscaping and lawn care practices, stormwater best management practices (BMPs), and fostering stewardship through programs like Conservation@Home<sup>16</sup> can have a positive effect on reducing nutrient loads to waterbodies. Some subdivisions adjacent to the river, backwaters, or streams were built without stormwater management systems, causing untreated runoff to flow directly into the waterbodies. Several communities in the Corridor are working to educate homeowners on ways to protect local water resources. For example, the Tower Lakes Drain Partnership successfully obtained IEPA Section 319 funding to construct two rain gardens in the community that demonstrate ways residents can manage stormwater on their own property and improve the quality of water entering Tower Lakes.

The use of road salt for de-icing by IDOT, counties, townships, municipalities, and property owners contributes to high chloride levels in the Fox River and its tributary streams and lakes. Chlorides enter waterbodies when road salt is exposed to runoff from rain or melting snow and ice. Once in the water, chloride can be toxic to aquatic life and impacts vegetation and wildlife. Unlike sediments and nutrients, BMPs cannot treat or filter out chlorides; the only way to decrease chlorides is to reduce road salt use and encourage proper application and management. Both McHenry County<sup>17</sup> and Lake County<sup>18</sup> promote and host workshops on sensible salting practices, which cover several topics including application rates, methods, and alternative anti-icing and de-icing products, such as mixtures with beet juice near ecologically sensitive areas.

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<sup>15</sup> <https://www.dnr.illinois.gov/cmp/Pages/IllinoisCleanMarina.aspx>

<sup>16</sup> For residents/businesses in Lake County, <http://www.conservelakecounty.org/conservationhome/natural-landscaping-native-gardening-with-native-plants> or McHenry County, <http://www.conservemc.org/conservation-programs/conservation-home>

<sup>17</sup> <https://www.co.mchenry.il.us/county-government/departments-j-z/planning-development/divisions/water-resources/snow-and-ice-removal>

<sup>18</sup> <https://www.lakecountyil.gov/2284/Winter-Maintenance-Best-Practices>

## Effects on Aquatic Species

All of the water quality impacts described in this chapter degrade the aquatic habitat of the Fox River and its tributary streams and lakes. In 2008, IDNR assessed the Fox River and certain creeks for biological diversity and integrity (Figure 3.1 and Table 3.2).<sup>19</sup> Biological diversity is based on the presence of fish, macroinvertebrate, mussel, crayfish, and threatened and endangered species. On an A-to-F scale, much of the central section of the Fox River in the Corridor received a “C” for biological diversity and the southern portion was assigned a “D.” Biological integrity describes the system’s ability to support organisms and processes relative to other “least disturbed” communities. The central section of the Corridor received a “B” for biological integrity and the southern section received a “C.” These ratings indicate a general lack of healthy habitat present in the Corridor for aquatic species to thrive.

Stakeholders noted that aquatic vegetation has increased over the years, providing habitat for sportfish species like largemouth bass and bluegill in the Fox River and northern pike in Cotton Creek and Flint Creek. Ellipse mussels (*Venustaconcha ellipsiformis*), which require clean streams to survive, have been found in Spring Creek, just upstream of the Corridor.<sup>20</sup> Invasive aquatic species, including common carp, zebra mussels, and rusty crayfish, are present in the river; however, their populations appear to have not dramatically disrupted the ecosystem.

However, the Fox River is still lacking healthy wetland habitat that could support non-game fish species like darters and minnows. IDNR has conducted fish community sampling to assess the species diversity in the Fox River Basin. The 2012 study documents 20 species present and a fish index of biotic integrity (fIBI)<sup>21</sup> of 29 at Burtons Bridge, and 31 species present and a fIBI of 42 at Algonquin Road.<sup>22</sup> The discrepancy in fIBI at these two locations is related to the physical characteristics of the river. Through the Corridor, the Fox River is flat with slow moving, deeper, lake-like conditions that support less diverse fish communities and exhibit lower numbers of stream-specific fish species. In contrast, the section downstream of the Algonquin Dam is characterized by riffles and runs with a greater variety of depths and flows that support more diverse fish communities. Despite exhibiting a low fIBI, IDNR described the fish population in the Corridor as being more stable than the segment upstream of the Stratton Dam in the City of McHenry. Low fIBIs in Flint Creek are due to several instream impoundments.

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<sup>19</sup> IDNR, 2008. Integrating Multiple Taxa in a Biological Stream Rating System. See <https://www.dnr.illinois.gov/conservation/biologicalstreamratings/Pages/default.aspx> and <https://www.dnr.illinois.gov/conservation/BiologicalStreamratings/Documents/StreamRatingReportSept2008.pdf>

<sup>20</sup> Ellipse mussels are a species in greatest need of conservation by IDNR and is a priority animal species of Chicago Wilderness. Illinois Natural History, Data on *Venustaconcha ellipsiformis* from 2001 and 2012.

<sup>21</sup> An index of biotic integrity is a tool used to measure human influence by comparing the organisms found in a stream to those organisms that are expected to be present.

<sup>22</sup> IDNR, Status of Fish Assemblages and Sport Fishery in the Fox River Watershed: Results of 2012 Basin Survey. See <http://www.foxriverstudygroup.org/pdfs/Docs/FoxRiverBasinReport2012%20.pdf>



**Table 3.2 Biological Stream Rating and Fish IBI Scores within the Fox River Corridor.**

Stream Segment	Diversity Rating	Integrity Rating	fIBI (2007)	fIBI (2012)
Fox River (IL_DT-22)	C	B	30	29
Fox River (IL_DT-06)	C	B	41	42
Cotton Creek (IL_DTI)	---	---	---	---
Flint Creek (DTZS-01)	D	C	21	13
Silver Creek (DTZZB-01)	---	---	---	29
Spring Creek (IL_DTH-01)	C	C	---	---
Source: IDNR. Status of Fish Assemblages and Sport Fishery in the Fox River Watershed: Results of 2012 Basin Survey. Region II, Fisheries Streams Program, Plano. Note: Another round of Fox River Basin fish surveys are being conducted by IDNR in 2017.				

## **Issue: Groundwater contamination and depletion are threats to water supply and aquatic habitat.**

Clean groundwater is essential for communities reliant on wells for their water supply, as well as the overall health of the Fox River. Public and private wells draw from shallow aquifers to supply water to communities throughout the Fox River Corridor, including the Villages of Fox River Grove, Lake Barrington, Port Barrington, Oakwood Hills, Tower Lakes, and Trout Valley and unincorporated areas of McHenry and Lake Counties. The Villages of Cary and Island Lake rely on groundwater from a mix of shallow and deep aquifer wells. Shallow groundwater also provides the baseflow of the Fox River and streams, and contributes water to wetlands, lakes, and ponds. Overconsumption can diminish the available water supply for a community and reduce groundwater levels, thus reducing stream baseflow required to sustain aquatic life.

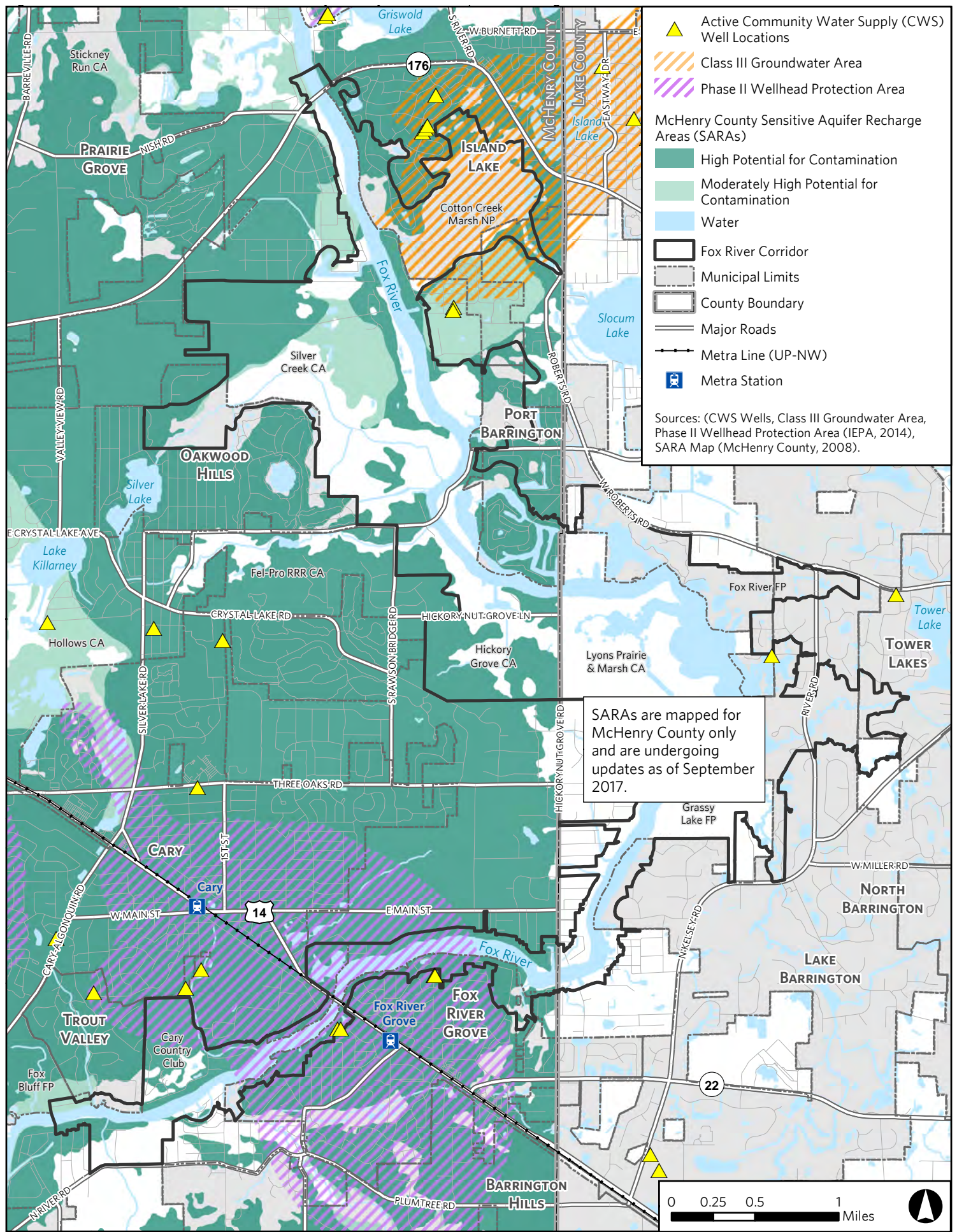
### **Sensitive Recharge Areas**

Although shallow aquifers are capable of providing safe, clean sources of potable water, they are sensitive to depletion, drought, contamination, and loss of recharge. Recharge is the process by which rainwater or snowmelt infiltrates into the ground and re-supplies groundwater aquifers. Groundwater recharge is commonly lost when development replaces natural ground with pavement, buildings, or other impervious surfaces. According to a 2006 study on groundwater resources in McHenry County, water withdrawals in Algonquin Township may have the potential to exceed the recharge rate of the aquifer, which can cause water supply shortages and have a negative effect on stream baseflow.<sup>23</sup> Increasing chloride concentrations in shallow aquifers have been linked to conventional road salting practices and water softener discharges, which increases the cost of treating groundwater before distribution to residents.<sup>24</sup> To reduce contamination of the community’s well-based water supply, the Village of Port Barrington provides ongoing education to residents advising against the use of pesticides.

<sup>23</sup> Baxter & Woodman, Inc., Report 2: Groundwater Resources Information for Planning, Groundwater Resources Management Plan, 2006. See <https://www.co.mchenry.il.us/home/showdocument?id=8620>

<sup>24</sup> ISWS, Shallow Groundwater Sampling in Kane County, 2015. See <http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2016-04.pdf>

**Figure 3.2 Groundwater resources and McHenry County Sensitive Aquifer Recharge Areas.**







Municipalities or counties served by community water systems (CWS), which includes all of the communities in the Fox River Corridor, as well as Nunda Township, are subject to the Groundwater Protection Act (IGPA)<sup>25</sup> (Figure 3.2). The IGPA requires the establishment of a minimum setback zone around all CWS wells to minimize the potential for aquifer contamination by restricting certain land use activities. The IGPA also allows for a voluntary, two-phase wellhead protection program to enhance groundwater protection. Phase I authorizes counties and municipalities to establish an ordinance requiring a maximum setback zone, up to 1,000 feet, around their well(s). Phase II delineates a 5-year recharge area for wells, which typically extends well beyond the 1000 feet of a Phase I protection zone. A Phase II wellhead protection area intersects the Corridor and includes portions of the Villages of Cary, Trout Valley, and Fox River Grove.

There are many resources that make the Fox River Corridor area special including the presence of wetland fens. According to the Illinois Natural Areas Inventory, only 353.84 acres of high quality fens remain in Illinois. Fens support a diverse population of plants and animals because they are fed by alkaline-rich groundwater that provides unique hydrological conditions for unusual native plants and animals to thrive. Like all wetland systems, they help reduce flooding, maintain nearby water tables, recharge aquifers, and improve water quality. Given their uniqueness, Class III Special Resource Groundwater designations are used as a tool to help protect groundwater recharge areas associated with groundwater-dependent wetlands (fens) and other aquatic ecosystems.<sup>26</sup> Of the fens within and around the Corridor planning area, Cotton Creek Marsh Nature Preserve has Class III Special Resource status. Locally, communities can implement groundwater protection measures to protect fen groundwater recharge areas. For example, McHenry County's Ground Water Action Plan,<sup>27</sup> Green Infrastructure Plan,<sup>28</sup> and Unified Development Ordinance<sup>29</sup> include provisions aimed at minimizing harmful impacts to natural recharge functions.

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<sup>25</sup> Illinois General Assembly, Illinois Groundwater Protection Act (IGPA; P.A. 85-0863). See <http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1595&ChapterID=36>

<sup>26</sup> *Class III: Special Resource Groundwater. Ill. Adm. Code 35 (1997)*, Subtitle F, Chapter 1, Part 620, Section 230. See <http://www.ilga.gov/commission/jcar/admincode/035/035006200B02300R.html>

As part of its Ground Water Action Plan implementation activities, McHenry County developed a Sensitive Aquifer Recharge Areas (SARA) map<sup>30</sup> in response to the County's reliance on shallow aquifers as a source of drinking water in light of population growth and land use change. SARAs are areas containing highly permeable soils and geology that promote groundwater recharge but are thereby also susceptible to contamination. Land development within SARAs can reduce groundwater recharge to shallow aquifers and increase the potential for aquifer contamination. The SARA map identifies key areas for groundwater protection and is intended to guide local land use planning decisions, support watershed planning efforts, and support efforts to develop a countywide wellhead protection program and groundwater protection ordinance. As shown in Figure 3.2, the Corridor includes areas identified with high and moderately high potential for aquifer contamination. The Barrington Area Council of Governments (BACOG) also developed a recharge sensitivity map for its jurisdiction and the surrounding area (Figure 3.3). BACOG uses the map to consider sensitive aquifer areas in development proposals and to prioritize sensitive areas for protection as dedicated open space.<sup>31</sup> Like the SARA map, BACOG's recharge analysis shows the majority of the Fox River Corridor classified from moderately sensitive to highly sensitive.

### **Northwest Water Planning Alliance**

The Northwest Water Planning Alliance (NWP) is a voluntary coalition of 70 communities and their five county governments collaboratively planning for and managing shared groundwater resources in the Fox River Basin. Both McHenry and Lake Counties and the Villages of Cary, Fox River Grove, Lake Barrington, Island Lake, and Trout Valley are active NWP members. NWP aims to provide a sustainable water supply that supports the region's people, economy, and environment. Member organizations have developed outreach materials to help individuals and communities conserve water resources through household appliance repairs as well as water-wise watering and landscaping practices.<sup>32</sup>

### **Opportunity: Many citizen groups are working to improve water quality in the Fox River.**

The Corridor benefits from the actions and dedication of several citizen groups formed to protect the Fox River through education, stewardship, and advocacy. These groups include the Fox River Ecosystem Partnership, Fox River Study Group, Friends of the Fox River, Environmental Defenders of McHenry County, Sierra Club, Flint Creek/Spring Creek Watershed Partnership, Silver and Sleepy Hollow Creeks Watershed Coalition, and Tower Lakes Drain Partnership. The Integrated Management Plan for the Fox River in Illinois, Fox

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<sup>30</sup> The SARA map incorporates data from the USDA-NRCS Soil Survey and the Illinois State Geological Survey. See <https://www.co.mchenry.il.us/county-government/departments-j-z/planning-development/divisions/water-resources/waterresactplancbapprove>

<sup>31</sup> BACOG, Development of a Groundwater Monitoring System Protocol and Determination of Baseline Surface and Groundwater Water-Level Conditions, 2014. See page 29 [http://bacog.org/wp-content/uploads/2014/01/GWL-Report-KOTECI\\_BACOG\\_February-2015-FINAL.pdf](http://bacog.org/wp-content/uploads/2014/01/GWL-Report-KOTECI_BACOG_February-2015-FINAL.pdf)

<sup>32</sup> <http://www.cmap.illinois.gov/livability/water/resources/lawn-to-lake>



River Implementation Plan, and several watershed-based plans are just a few of the resources that have come out of these collaborative efforts.

### **Fox River Ecosystem Partnership – Integrated Management Plan**

Fox River Ecosystem Partnership (FREP)<sup>33</sup> is a coalition of local stakeholders – private landowners, businesses, scientists, environmental organizations, recreational enthusiasts, and policy makers – that aims to enhance and protect the Fox River watershed through ecosystem-based management. FREP’s territory comprises the entire Fox River watershed in Illinois. Established in 1996, the group developed the Integrated Management Plan for the Fox River in Illinois, which identified numerous critical factors, recommendations, and action strategies addressing recreation, habitat, land use, water quality, stormwater, and education. FREP continues to convene a network of stakeholders, assist in creating watershed plans, and help members seek funding for environmental projects. FREP has assisted watershed stakeholders in securing millions of dollars in state Conservation 2000 and federal Nonpoint Source Pollution Control Program “Section 319” funds to support numerous implementation projects throughout the Fox Basin. Several FREP members sit on the steering committee for the Fox River Corridor Plan.

### **Fox River Study Group – Fox River Implementation Plan**

Formed in 2001, the Fox River Study Group (FRSG) is a multi-stakeholder coalition that includes representatives from local governments along the river, state agencies (IEPA, IDNR), environmental advocacy groups (Sierra Club, Friends of the Fox River), and water reclamation districts including those in Elgin and Aurora. The FRSG formed in response to IEPA’s impaired aquatic life use designation of several segments of the Fox River due to low levels of dissolved oxygen and excessive algal growth. The FRSG’s mission is to create an implementation plan for watershed management that addresses the river’s water quality issues through a collaborative process that incorporates sound science and stakeholder input.

The FRSG worked with the Illinois State Water Survey (ISWS) on a four-phase work plan to guide sustainable growth and improve water quality in the Fox River, below Straton Dam down to its confluence with the Illinois River, addressing dissolved oxygen, total phosphorus, and nuisance algae. The work culminated in the Fox River Implementation Plan (FRIP),<sup>34</sup> a guide for decision makers that will quantify the necessary pollutant discharge reductions and include specific project proposals for meeting reduction targets. The FRIP guides decision makers in the watershed by defining the necessary reductions in pollutant discharges and identifying in-stream projects to meet those goals.

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<sup>33</sup> Established in 1996, IDNR initially funded FREP as one of 41 ecosystem partnerships through the State’s Partners for Conservation program. See <http://www.foxriverecosystem.org/about.htm>

<sup>34</sup> FRSG, Fox River Implementation Plan, 2015. See <http://www.foxriverstudygroup.org/plan.htm>

## Watershed Plans

Watershed planning is an important step to improve and protect the water quality of the Corridor. Using a collaborative and multi-objective planning approach, watershed-based plans develop strategic recommendations to help restore impaired waters, and protect and maintain the quality of unimpaired or threatened waters. Formed as part of the planning process, watershed groups made up of stakeholders are particularly important to continue to educate, promote, and implement urban and agricultural best management practices. However, funding to sustain watershed groups is scarce, and engaging all of the communities within the watershed can be a struggle.

Four watershed-based plans pertain to the Fox River Corridor study area: 9 Lakes, Flint Creek, Silver-Sleepy Hollow Creeks, and Spring Creek (Figure 3.4). Each of these plans meets requirements as defined by the U.S. Environmental Protection Agency (USEPA) and, thus, is eligible to receive funding through Section 319 of the Clean Water Act to assist with plan implementation. IEPA establishes 319 funding priorities by watershed for plan development and plan implementation. The Corridor is part of the Upper Fox River subbasin, which will be a funding priority in FFY 2019 (plan development) and FFY 2021 (plan implementation).<sup>35</sup>

Figure 3.1 and Table 3.3 outline site-specific watershed plan recommendations for the four plans within the Fox River Corridor.

**Table 3.3 Watershed-Based Plan Recommendations in Fox River Corridor.**

Plan Name	Watershed Group	Location	BMP Type	Landowner	Map Marker
9 Lakes	Tower Lakes Drain Partnership	Fox River Forest Preserve	Streambank protection	LCFP	7
		Fox River Forest Preserve	Parking lot retrofits with permeable pavement, bioswales/bioretenion, and/or infiltration trenches	LCFP	8
		Fox Trail Park	Bioswale	Village of Port Barrington	4
		Grassy Lake Forest Preserve	Wetland restoration	LCFP	9
		Port Barrington Village Hall	Rain garden for education and demonstration	Village of Port Barrington	5
		Ray Pregonzer Park and Beach	Bioswale or rain garden	Village of Port Barrington	6

<sup>35</sup> Applications are due on August 1 of the previous year (i.e., 2018 and 2020, respectively). See Nonpoint Source Pollution Control Priority Watersheds, <http://www.epa.illinois.gov/Assets/iepa/water-quality/watershed-management/Priority%20Watersheds%202016.pdf>

Plan Name	Watershed Group	Location	BMP Type	Landowner	Map Marker
Flint Creek	Flint Creek/ Spring Creek Watershed Partnership	Grassy Lake Forest Preserve	Wetland restoration	LCFP	10
		Kelsey Road	Water quality sampling site	Watershed / BACOG	11
Silver Creek and Sleepy Hollow Creek	Silver and Sleepy Hollow Creeks Watershed Coalition	Nunda Twp.	Conservation opportunity area or conservation site design	Private	1
		Nunda Twp.	Conservation opportunity area	Private	2
		Silver Creek CA	Fen wetland restoration	MCCD	3
Spring Creek	Flint Creek/ Spring Creek Watershed Partnership	Between Lincoln Avenue and the Fox River	Open space preservation and streambank protection	Private	12

Sources: 9 Lakes Watershed-Based Plan (2014), Flint Creek Watershed-Based Plan (2007), Silver Creek and Sleepy Hollow Creek Watershed Action Plan (2011), Spring Creek Watershed-Based Plan (2017).

### **9 Lakes Watershed-Based Plan (2014)**

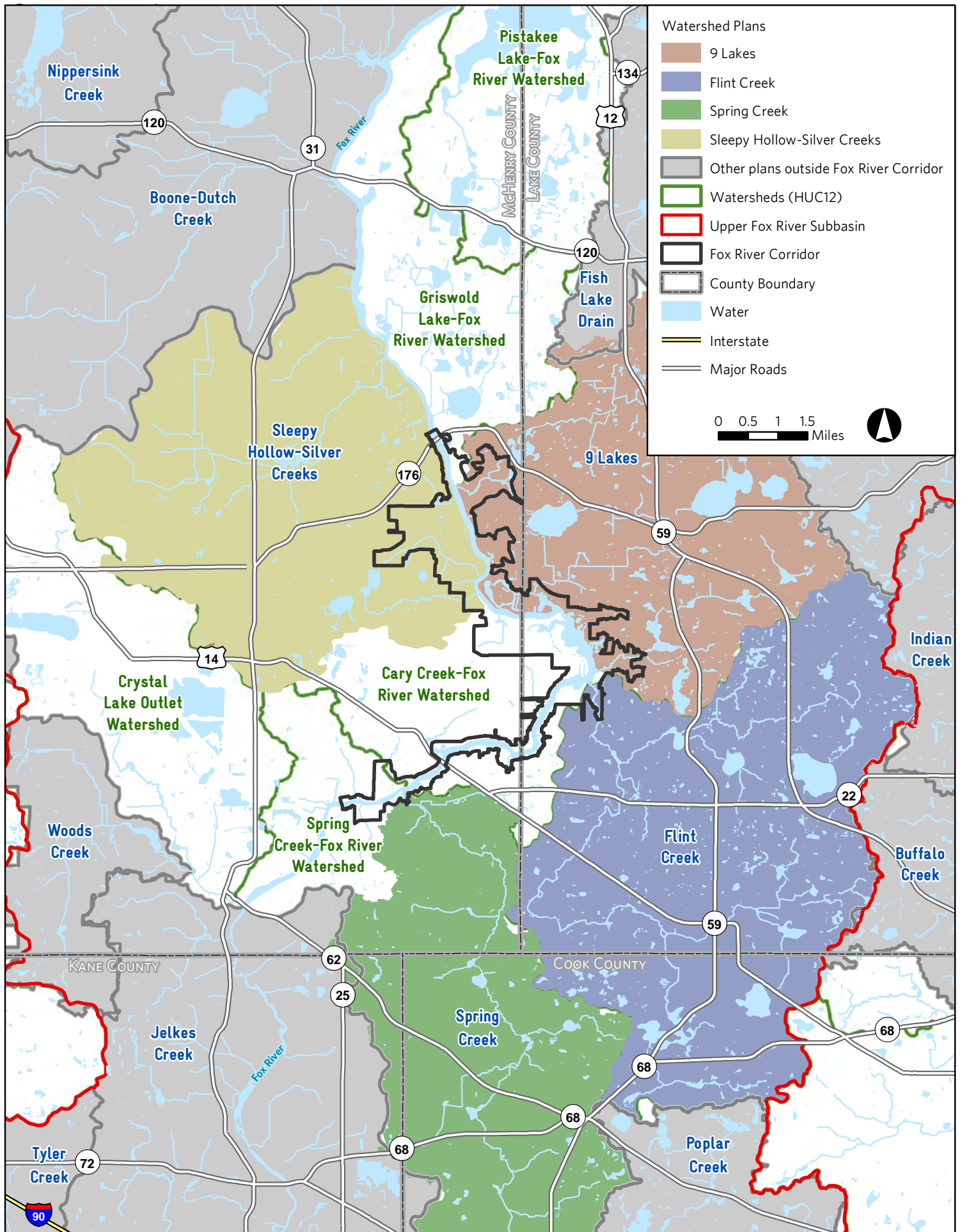
CMAAP, with the assistance of the Fox River Ecosystem Partnership, Lake County Stormwater Management Commission, and Lake County Health Department - Lakes Management Unit, began this watershed-based planning project in spring 2012, supported by Clean Water Act funding provided through the Illinois EPA's Bureau of Water. The 29 square mile planning area includes three Fox River tributary subwatersheds – Cotton-Mutton Creek, Slocum Lake Drain/Fiddle Creek, and Tower Lakes Drain – and an area of direct discharge to the Upper Fox River primarily within southwestern Lake County with a portion in southeastern McHenry County. Dubbed the 9 Lakes area, the focus was on addressing water quality impairments in the following nine lakes: Island, Woodland, Napa Suwe, Ozaukee, Slocum, Bangs, Tower, Barrington, Fairview, and Timber. Among the municipalities in the 9 Lakes planning area, the Villages of Island Lake, Port Barrington, Tower Lakes, and Lake Barrington fall within the Corridor.

The 9 Lakes Watershed-based Plan<sup>36</sup> provides pollutant load reductions that can be achieved through 200 site-specific best management practice (BMP) projects which include bioswales, bioinfiltration facilities, dry detention basin retrofits, permeable pavement, wetland restoration, agricultural and urban filter strips, and shoreline stabilization. It also outlines recommendations at the watershed scale for streambank stabilization, bioswales, green roofs, and agricultural field borders, as well as policy and program related activities including ordinance updates and education campaigns. The Tower Lakes Drain Partnership (TLDP) promotes implementation of Plan recommendations and has implemented several water quality protection projects, including raingardens, and streambank and shoreline stabilization.

<sup>36</sup> 9 Lakes Watershed-based Plan, 2014. See <http://www.cmap.illinois.gov/livability/water/water-quality-management/watershed-planning>.



Figure 3.4 Watershed-based Plans in the Fox River Corridor.



### ***Flint Creek Watershed-Based Plan (2007, update 2017)***

The Flint Creek Watershed-Based Plan was initiated, in 2005, by the Partnership comprised of 14 public and private stakeholders who share in the funding and continuation of the partnership.<sup>37</sup> The 36.5-square mile watershed spans Lake County, northwest Cook County, and a small portion of McHenry County. Some of the challenges that the watershed faces include loss of open space, stormwater runoff and flooding, water pollution, and degradation of natural areas. The goal of the watershed plan is to improve water quality, reduce flooding, and preserve and restore natural features through education and building partnerships around projects. The watershed plan provides recommendations at the watershed and site scales for stormwater best management practices and retrofits, green infrastructure, groundwater recharge, water quality monitoring, and information and education.

Flint Creek enters the Fox River Corridor in Lake Barrington near the Grassy Lake Forest Preserve. This ecologically significant portion of the study area comprises wetlands and floodplains. Given these features, the watershed plan designates this area as a high priority for open space/green infrastructure and a moderate recharge area. Education recommendations include targeting riparian landowners on how to improve shoreline conditions and informing all homeowners on how to maintain septic systems. Surrounding Villages have begun to implement the plan by adopting septic ordinances to improve water quality and education of homeowners along riparian corridors, and partnering with the Lake County Forest Preserve to protect and purchase the Hurd farm along the Fox at Grassy Lake forest Preserve.

### ***Silver Creek and Sleepy Hollow Creek Watershed Action Plan (2011)***

Partnering with the Environmental Defenders of McHenry County and the Fox River Ecosystem Partnership, CMAP initiated this planning project in 2010 with the support of Clean Water Act funding provided through the Illinois EPA's Bureau of Water. The 31 square mile planning area includes four named tributaries to the Upper Fox River, namely Stickney Run, Sleepy Hollow Creek, Silver Creek, and Fel-Pro Creek. Areas common to both the Silver-Sleepy Hollow Creek planning area and the Corridor include portions of the City of Cary, the Village of Oakwood Hills, and unincorporated McHenry County.

Stakeholders identified several areas of concern including degraded stream conditions, sensitive natural areas like fens, lake quality, biodiversity, the quantity and quality of groundwater, public education, and funding to support protection and restoration efforts. The plans goals are to maintain/achieve healthy surface waters; protect groundwater quality and quantity; protect and restore natural areas and increase native species diversity; and increase public awareness, knowledge, and implementation of watershed protection practices. To achieve these goals, stakeholders identified numerous on-the-ground urban and agricultural BMPs, policy and planning recommendations, and education and outreach strategies. Following plan completion

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<sup>37</sup> Flint Creek Watershed-Based Plan, 2007. See [http://www.flintcreekwatershed.org/watershed\\_plan.html](http://www.flintcreekwatershed.org/watershed_plan.html).

in 2011,<sup>38</sup> the Silver and Sleepy Hollow Creeks Watershed Coalition was formed, which continues to convene stakeholders to facilitate collaboration, encourage plan implementation, and host field tours and restoration work days.

### ***Spring Creek Watershed-Based Plan (2012)***

The Spring Creek Watershed-Based Plan was developed by Applied Ecological Services in partnership with the Spring Creek Watershed Partnership and Citizens for Conservation.<sup>39</sup> The 26.9 square mile watershed spans portions of McHenry, Lake, Kane, and Cook Counties. Most of the land in the watershed is in private ownership with low density development, with nearly 3,600 acres of Cook County Forest Preserve District in the center. These unique characteristics contribute to very high water quality in Spring Creek, which makes protection particularly important. The primary goal of the watershed plan is to improve water quality by reducing nonpoint source pollution with secondary goals of protecting open space, improving habitat, reducing flooding, increasing stakeholder communication, and implementing education strategies. The watershed plan provides recommendations at the watershed scale as well as site-specific recommendations for stormwater retrofits; wetland, stream, and riparian area restoration; priority protection areas; and an education strategy.

Spring Creek enters the Fox River Corridor at Lincoln Avenue east of Keystone Court in Fox River Grove. The plan recommends that residents restore and maintain the stream buffer between Lincoln Avenue and the Fox River by removing invasive species and planting native vegetation. While the plan does not specify measures for other sites in the Corridor, it recommends upstream areas for detention basin, pond, lake, and wetland retrofits; wetland restoration; and priority protection areas, among other measures. The education plan recommends actions to educate riparian landowners on best practices, funding sources, and qualified contractors.

### **Total Maximum Daily Loads (TMDLs)**

Upstream of the Corridor, the Illinois EPA is developing phosphorus TMDLs for lakes within the Upper Fox River/Chain O'Lakes watershed and the Upper Fox River/Flint Creek watershed. Once fully implemented, the aim of the TMDLs is to decrease total phosphorus concentrations to meet the 0.050 mg/L state standard for lakes. The respective TMDL implementation plans are expected to rely largely on the project recommendations identified in the above noted watershed-based plans.

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<sup>38</sup> Silver Creek and Sleepy Hollow Creek Watershed Action Plan, 2011. See

<http://www.cmap.illinois.gov/livability/water/water-quality-management/watershed-planning>.

<sup>39</sup> Spring Creek Watershed-Based Plan, 2012. See <http://www.epa.illinois.gov/Assets/iepa/water-quality/watershed-management/watershed-based-planning/2016/springcrwbp.pdf>.



## **Issue: Flooding impacts residents, businesses, and water quality.**

The Fox River Corridor most commonly experiences riverine flooding, which occurs when the river exceeds its capacity and overflows its banks into the floodplains. While flooding is a natural process, prior to modern day floodplain and stormwater management regulations, development in the Corridor and throughout the Chicago region occurred in flood prone areas, such as floodplains, wetlands, and other low-lying areas. Before these flood prone areas were developed, they provided natural flood control in the watershed. The development of these lands not only places homes, businesses, and people in harm's way, but it also reduces the land's natural flood control, thus pushing the water to areas that may not have flooded previously. The State, MCCD, LCFP, and local governments preserved the majority of the Corridor's floodplains as open space (57.7 percent). However, residential development still comprises over 21 percent of the floodplains. In addition to homes constructed in the floodplain, riverfront businesses and marinas experience property damage from flooding, as well as a decrease in business revenue during times when the river is closed to boaters. Larger areas at particular risk of riverine flooding include the Fox River Shores development in Island Lake, east and southeast unincorporated Cary, the north side of Fox River Grove, and Port Barrington (Figure 1.4).

In July 2017, rainfall caused the Chain O'Lakes to rise six inches overnight. The Stratton Dam reached its second highest crest on record at 7.60 feet, slightly below the record crest of 7.62 feet in 2013.<sup>40</sup> The floods of July 2017 far exceeded the 10-year storm, the largest storm that can be mitigated by the Stratton Dam, and caused widespread damage to homes and businesses. The Fox River Waterway Agency closed the Fox River for boating from the Algonquin Dam to the Chain O'Lakes for several weeks during the height of the busy season.

Flooding also increases pollution that impairs water quality and habitat in the Fox River and its tributaries. Stormwater runoff carries non-point source pollutants from streets and lawns into waterways. Not only does flooding impact surface water quality, but it also degrades the quality of groundwater and can lead to increasing treatment costs for community water suppliers. Due to naturally high groundwater levels, flooding in the Fox River Corridor can cause septic systems to fail, which can pollute groundwater supplies and cause basement backups.

Expected increases in the frequency and severity of rain events will mean continued issues with flooding in the coming years. Between 1979 and 2009, the Chicago region experienced 40 percent more precipitation than the prior 30-year period. Storm events are also getting bigger: up to 40 percent of total annual precipitation in recent years came from the top 10 rainiest

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<sup>40</sup> Northwest Herald, "McHenry County braces for 'unprecedented' Fox River flood," July 15, 2017. See <http://www.nwherald.com/2017/07/14/mchenry-county-braces-for-unprecedented-fox-river-flood/ayihf5a/>.

days.<sup>41</sup> This has important implications for flooding as heavier and more frequent rain events reduce the amount of rainwater that can be absorbed by soils or handled by drainage system.

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<sup>41</sup> IDNR, Report for the Urban Flooding and Awareness Act, 2015. See [https://www.dnr.illinois.gov/waterresources/documents/final\\_ufaa\\_report.pdf](https://www.dnr.illinois.gov/waterresources/documents/final_ufaa_report.pdf).

# Chapter 4. Open Space, Habitat, and Recreation

The sheer amount of open space, protected land, wildlife habitat, recreational opportunities, and dedicated conservation groups are just a few of the strengths of the Fox River Corridor. Pockets of the area allow people to explore the woodland and prairie ecosystems that once dominated the region before it was developed. Along with providing valuable flood retention and water quality enhancements, the protection and enhancement of the green infrastructure network benefits the flora and fauna of the Corridor, just as much as it preserves the passive and active recreational opportunities that many residents and visitors cherish.

## **Opportunity: Open space provides ecosystem benefits.**

Parks, conservation areas, and forest preserves are some of the most significant assets within the Fox River Corridor. Collectively, they support diverse ecosystems and offer a variety of recreational amenities for residents and users. However, stakeholders voiced a need to address habitat loss and invasive species to ensure these environmental assets are available for future generations. In light of these impending threats, there are opportunities to increase restoration and mitigate future damage or losses to these vital resources through the promotion of stewardship and environmental education.

## **Land Cover**

Conservation areas, forest preserves, and state nature preserves within the Corridor primarily consist of deciduous forests, prairies, and wetlands (Figure 4.1). More than 50 percent of the deciduous forest comprises oak trees, which are considered to be the foundation of a rich and diverse ecosystem. Healthy oak tree canopies provide shelter while also allowing light to filter through, which supports a diverse composition of groundcover vegetation. All of these ecological characteristics and conditions create ideal habitat for a wide range of species.<sup>42</sup> Historically, oak savannas and woodlands were prevalent across northeastern Illinois. However, as development and agricultural uses increased over the last couple of centuries, oak-dominated communities declined significantly and became severely fragmented. Among the oak-dominated ecosystems that still exist, there are 362 acres within the Fox River Corridor.<sup>43</sup>

Undeveloped land in the Corridor also offers the opportunity to enhance the benefits of the wetland ecosystems. The Corridor is made up of nearly 2,820 acres of wetlands, which accounts

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<sup>42</sup> Chicago Wilderness, Oak Ecosystems Recovery Plan, 2015. See <https://www.dnr.illinois.gov/conservation/IWAP/Documents/Chicago%20Wilderness%20Oak%20Ecosystem%20Recovery%20Plan.pdf>.

<sup>43</sup> Calculations based on data, obtained from Chicago Wilderness and Morton Arboretum, depicting oak ecosystems in 2010.



for over 60 percent of land area. According to the Illinois Wildlife Action Plan,<sup>44</sup> this area comprises part of a Conservation Opportunity Area known as the Lake-McHenry Wetland Complex and is a State preservation priority area. Similar to oak ecosystems, wetlands support complex and biologically diverse habitat. Aside from the Fox River, three types of wetlands that are present in the Corridor are freshwater ponds, emergent wetlands, and freshwater forested/shrub wetlands. Emergent wetlands are the most abundant and are most commonly found within the Corridor's protected open space, but they also cover a large portion of vacant land zoned for residential. This pattern is particularly evident in and around the Village of Port Barrington where there are over 70 acres of vacant land containing emergent wetlands. Although the land is zoned residential, the Village regulates development under its Lowland Conservancy Overlay District Ordinance<sup>45</sup> to ensure the protection of wetlands and other sensitive natural resources. The McHenry County Green Infrastructure Plan recommends connecting isolated wetlands and woodlands in the Lower Fox and Spring Creek area.<sup>46</sup> Across the Corridor, these areas are opportunities to protect and restore wetlands that once existed or have been compromised and improve water quality, as described in more detail in Chapter 3.

## **Biodiversity**

The variability of land cover in the Corridor supports a wide range of habitats for native flora and fauna. Fens are particularly sensitive and diverse habitats that are prominent throughout the study area. Oakwood Hills and Bates Fens in McHenry County as well as Tower Lakes and Wagner Fens in Lake County are four distinct fens within the Corridor that are designated Illinois Nature Preserves and span 292 acres. Protection of fen habitats is critical for maintaining nearby water tables and influencing the recharge of local aquifers, while also helping to improve water quality.

Based on IDNR's assessment of natural areas within Illinois, a total of six conservation areas and preserves within the Corridor were included in the 2016 Illinois Natural Resources Inventory (INAI) (Figure 4.1). These sites were included because the land: a) exhibits high quality habitat or has the potential to become high quality habitat with restoration improvements, b) is suitable for state-listed endangered or threatened species, and/or c) is currently a dedicated Illinois Nature Preserve or has the potential to become one.<sup>47</sup> McHenry County also has a Natural Area Inventory database (McNAI) that provides a more detailed and expansive selection of sites that exhibit rich biodiversity. These inventories should be used to prioritize acquisition, protection, and/or continue supporting these high quality areas as they provide a wide range of ecosystems services for the surrounding communities and region at large.

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<sup>44</sup> IDNR, Wildlife Action Plan, 2005. See

<https://www.dnr.illinois.gov/conservation/iwap/documents/wildlifeactionplanfinal.pdf>.

<sup>45</sup> Village of Port Barrington Ordinances, Chapter 151: Lowland Conservancy Overlay District. See

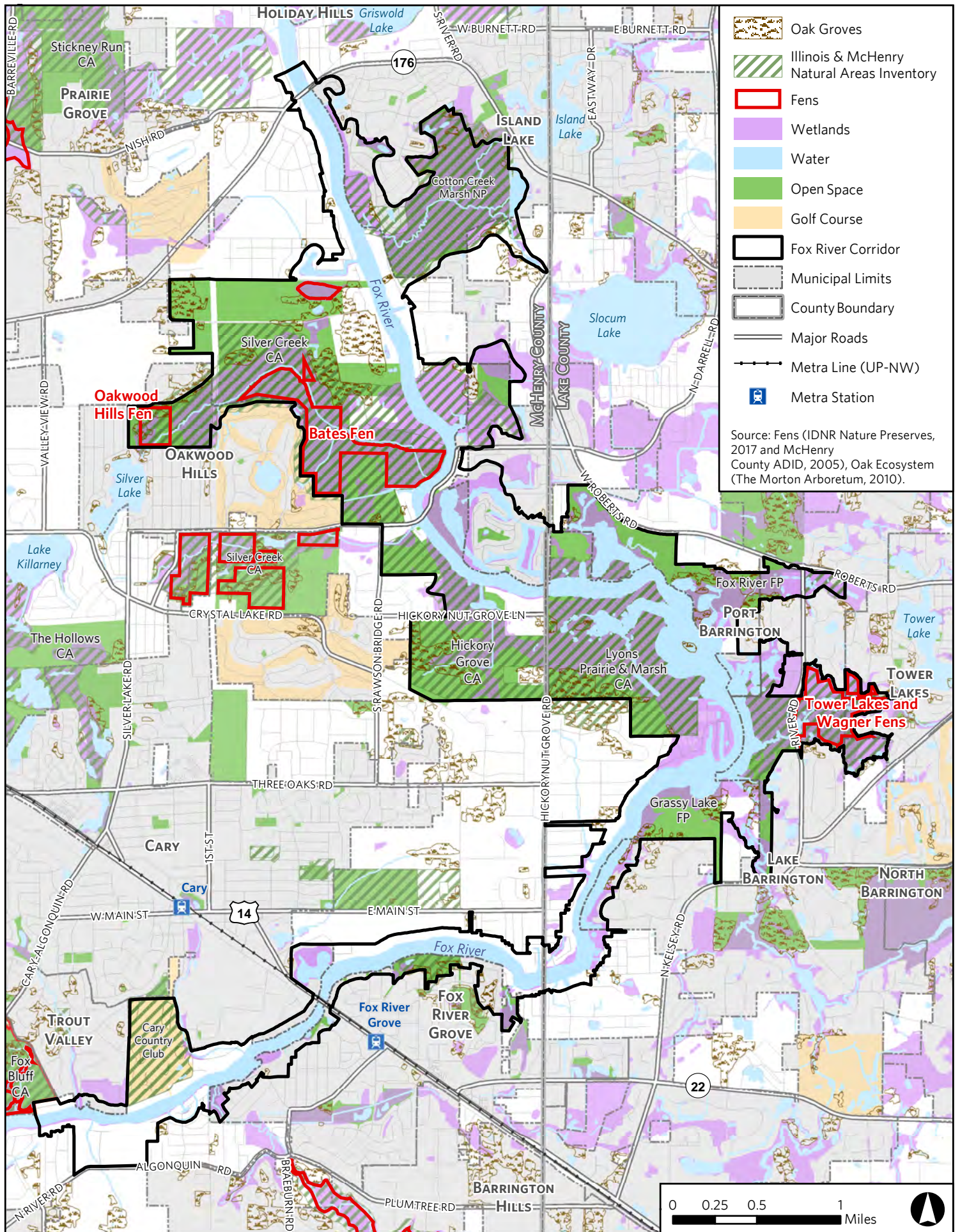
<http://www.portbarrington.net/wp-content/uploads/2017/08/CHAPTER-151-LOWLAND-CONSERVANCY-OVERLAY-DISTRICT-03-14.pdf>.

<sup>46</sup> McHenry County Green Infrastructure Plan, 2012.

<sup>47</sup> IDNR, Illinois Natural Areas Inventory, June 2016.



Figure 4.1 Land cover and habitat.





In 2005, IDNR led the development of the Illinois Wildlife Action Plan (IWAP), which identifies targeted areas and species for conservation and restoration.<sup>48</sup> An outcome of this Plan was the identification of Illinois' Species in Greatest Need of Conservation. These are often species that have experienced significant population declines or are threatened by external factors and stresses, such as fragmentation and climate change.<sup>49</sup> There are 38 wildlife species that have been sighted within the Fox River Corridor:

American Bittern	King Rail	Yellow-Breasted Chat
American Woodcock	Least Bittern	Brook Stickleback
Bell's Vireo	Little Blue Heron	Brook Trout
Black Rail	Northern Bobwhite	Central Mudminnow
Black-Billed Cuckoo	Northern Harrier	Iowa Darter
Black-Crowned Night-Heron	Ovenbird	Mottled Sculpin
Blue-Winged Warbler	Red-Headed Woodpecker	Pugnose Shiner
Bobolink	Red-Shouldered Hawk	Smallmouth Bass
Brown Thrasher	Sedge Wren	Walleye
Chipping Sparrow	White-Throated Sparrow	Yellow Perch
Common Moorhen	Willow Flycatcher	Smooth Green Snake
Great Egret	Wood Thrush	Blanding's Turtle
Henslow's Sparrow	Yellow-Billed Cuckoo	

Similar to the INAI and McNAI datasets, Illinois' Species in Greatest Need of Conservation should be used to help guide decisions and allocate resources that will improve the habitat of these vulnerable species.

IDNR also monitors threatened and endangered species in Illinois. There are approximately 18 plant and animal species that have been found within the Corridor:<sup>50</sup>

Beaked Spike Rush	Prairie Buttercup	American Bittern
Downey Willow Herb	Showy Lady's Slipper	Bald Eagle
False Asphodel	Slender Bog Arrow Grass	Blanding's Turtle
Flat-leaved Bladderwort	Snake-mouth	Iowa-Darter
Forked Astor	Tall Sunflower	Starhead Topminnow
Grass Pink Orchid	Slippershell	
Marsh Valerian	Bombus affinis	

<sup>48</sup> USGS, December 2016, A National look at species of Greatest Conservation Need as report in State Wildlife Action Plans. See <https://www1.usgs.gov/csas/swap/index.html>.

<sup>49</sup> USFWS, July 2017, Wildlife & Sport Fish Restoration Program: State Wildlife Grant Program – Overview. See <https://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm>.

<sup>50</sup> IDNR, 2016, Illinois Natural Heritage Database Program, Element Occurrence Data for Endangered Species and Rare Resources in Illinois. Biodiversity Tracking and Conservation System (Biotics).



Residents and visitors have reported spotting eagle nests along the Fox River, particularly near Lyons Prairie and Marsh and at Jack's Channel in Cary. Rookeries,<sup>51</sup> with great blue herons, great egrets, black crowned night herons, and double crested cormorants are commonly found throughout the Corridor as well. However, recreational birders have noted that the tree canopy used by nesting birds has declined over the years. Preserving and restoring additional suitable wooded riverfront areas for rookeries is needed in order to maintain rookery populations.

## **Stewardship and Management**

The abundance of stakeholders and groups dedicated to protecting the river and its surroundings was noted by the public as a strength of the Corridor. Open space maintenance is a critical activity that requires engaging local partners and residents to assist with the restoration and management of natural areas in partnership with public land managers. Invasive species continually threaten the integrity of the Corridor's protected open space. Phragmites, oriental bittersweet, gypsy moth, buckthorn, and bindweed are some of the most prevalent invasive species found throughout the Corridor. The removal of these non-native plants is a major step toward restoring a natural area. However, public land managers do not have the capacity to restore and maintain *all* sites at a degree that yields thriving, high quality ecosystems. A site recently cleared of invasive species can become vulnerable and easily regress if it does not receive the proper ongoing maintenance that typically prevents a rebound effect.

Conservation areas and forest preserves in the Corridor are affected by the need for ongoing stewardship. Many are fragmented and crowded with invasive species because they cannot be maintained on a regular basis. Ongoing management of these natural areas, especially those along the river, has the potential to promote healthier ecosystems and increase species habitat, while reducing invasive species and increasing visibility for land managers and authorities who patrol the area to ensure user safety. The Cary Park District, which collaborated with homeowner associations, nearby Villages, and McHenry County to control gypsy moth in the past, is a successful case study of how land managers across multiple jurisdictions have worked to address invasive species.

Restoration and management of oak-dominated habitats and wetlands within residential communities surrounding open space is important. Approximately 71 percent (258 acres) of the oak-dominated forests are located within conservation areas and nature preserves, while the remaining 29 percent (104 acres) are predominately found in residential areas on the periphery (Figure 4.1).<sup>52</sup> Trees and other vegetation along rights of way, yards, and undeveloped areas can amount to a sizable community forest and are an asset for both residents and wildlife. Oaks

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<sup>51</sup> Rookeries are communal birding nesting areas.

<sup>52</sup> The Silver Creek and Sleepy Hollow Creek Watershed Action Plan identifies a conservation opportunity to protect a large oak-dominated community in Nunda Township.

as a group were found to play a critical role for migratory warblers and other species that depend on the oak canopy.<sup>53</sup>

Wetlands are also abundant in the Corridor, including on private residential land. The presence of these habitats presents an opportunity for residents to become stewards of these otherwise diminishing ecosystems. Traditional conservation mechanisms, such as easements or land acquisition, may not be practical in established residential areas. However, there are many active property owners in the Corridor that practice land and conservation stewardship. Existing programs such as the Land Conservancy of McHenry County's (TLC) Oak Keeper Project<sup>54</sup> and CFC's Habitat Corridors<sup>55</sup> are important tools to educate and train residents about tree maintenance, desirable native tree plantings, and other landscaping best practices that can be used at the neighborhood or community scale.

Stakeholders indicated a need for increased environmental education and appreciation, particularly among landowners and river users. Communities can take advantage of existing efforts to improve open space in the Corridor through volunteer opportunities, environmental education programs, and partnerships. In addition to programming led by MCCD and LCFP, conservation groups like Barrington Area Conservation Trust, Citizens for Conservation, Environmental Defenders of McHenry County, and the Fox River Ecosystem Partnership offer volunteer opportunities to help with restoration, environmental education, and advocacy initiatives. The Village of Port Barrington offers outreach and educational programming on wetlands and green infrastructure as effective strategies for enhancing ecosystems and improving the quality of the region's drinking water supplies. Communities and private landowners within the Corridor could also pursue partnerships for management agreements to promote open space improvements. In recent years, the Fox River Grove Harbor Team made an agreement with the Village of Fox River Grove that allowed them to build a small harbor in exchange for restoring the Fox River shoreline along Lions Park.

## **Issue: Open space access can be limited in areas.**

The Fox River Corridor comprises 2,717 acres of open space, which account for 55 percent of the study area. This total broadly encompasses local parks, conservation areas, forest preserves, and state nature preserves. Despite this abundance of dedicated open space, many people would like to see more access to these sites and some are unclear as to which natural areas are publically accessible and from where they can access them.

### **Limited access due to sensitive habitat**

Protected land managers in the Corridor must balance the goals of protecting natural resources and providing recreational opportunities. While expanding recreational opportunities provides

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<sup>53</sup> Urban Conservation Treaty for Migratory Birds, Migrant Bird Habitat Study, 2004. See

[http://www.bcnbirds.org/greenpapers\\_files/migranthabitatstudy.pdf](http://www.bcnbirds.org/greenpapers_files/migranthabitatstudy.pdf).

<sup>54</sup> <http://www.conservemc.org/what-we-do/conserves-oaks/what-is-an-oak-keeper>

<sup>55</sup> <http://citizensforconservation.org/educational-programs/community-programs/habitat-corridors/>

benefits to residents and the local economy, disturbance by users can lead to the degradation of vegetation, wildlife, and water quality. In order to protect rare, irreplaceable, and highly sensitive ecosystems, access to some natural areas in the Corridor is restricted. Oakwood Hills Fen (92 acres) and Cotton Creek Marsh (265 acres) are two dedicated Illinois Nature Preserves that are strictly for habitat conservation and are not accessible by the public. On the other hand, Lyons Prairie and Marsh permits public access by land, but restricts access to the dedicated state nature preserve from the Fox River to prevent boating or paddling through high quality marsh wetland habitat and the species nesting and living there. While restricting access limits some recreational opportunities, these areas should continue to be of high priority for preservation given the wildlife habitat and ecosystem services they provide. Given the sensitive nature of these ecosystems the wildlife habitat and ecosystem services would be degraded or lost if encroachment were permitted. At the same time, restricted access can have the added benefit of creating a vast viewshed and a rare sense of isolation in a relatively developed area of the Chicago region.

There are natural features within the landscape that may also physically restrict people from fully accessing a site. Hydric soils are present in nearly 1,500 acres, or 55 percent of the Corridor's open space. A substantial portion of publically accessible open space comprises wet, unstable soils that can at times be a physical barrier to use and access. This condition is likely present in the southern half of Silver Creek Conservation Area, which contains the Bates Fen Nature Preserve, and the sections of Hickory Grove Conservation Area on the east side of the river adjacent to Port Barrington. Although these conditions are not ideal for recreation, the preservation of this land benefits its biologically diverse and ecologically rich habitats and provides downstream property owners with flood mitigation.

### **Limited access due to trail network**

Confusion may also arise from a disconnected trail network among publicly accessible open space. Stakeholders indicated that there is a need for greater connectivity between and within natural areas. However, trails and boardwalks that could afford these connections are not always structurally feasible when wet soils and sensitive habitat are present. It can also be difficult to navigate the Corridor's large natural areas without proper signage and maps. The three largest natural areas open to the public are Silver Creek (686 acres), Lyons Prairie and Marsh (408 acres), and Hickory Grove (339 acres). Some natural areas, like Hickory Grove, span both sides of the Fox River, while others, like Silver Creek, create pockets of private property enclosed by publically accessible open space. A portion of Hickory Grove is also owned by a homeowners association, which may be perceived as private, even though it is open to the public. In response to these navigational difficulties, stakeholders said that these conservation areas could benefit from wayfinding signage that informs users of areas that are open to the public and marks major points of entry. Stakeholders also said that some paddlers or boaters illegally enter into Lyons Prairie and Marsh by water who could be curtailed by installing signage that is visible on the water.



## **Opportunity: Recreational amenities offer room for diversification and safety improvements.**

The diverse ecosystems supported by the Corridor’s open space offer a variety of recreational amenities for residents and visitors to enjoy and bring an economic boost to the area (Figure 4.2). Currently, many of the conservation areas and forest preserves provide opportunities for users to fish, hike, horseback ride, bicycle, swim, camp, and launch canoes into the Fox River, as well as cross-country ski and snowmobile during the winter months.<sup>56</sup> Other amenities and services offered include trail overlooks, picnic tables, shelters, outdoor environmental education programs, and summer and youth camps for children, teens, and families. Unique attractions, such as seasonal festivals, the Norge Ski Club, and Lake Julian Trout Pond, draw locals and visitors from around the region. Although many of these sites provide a diverse set of recreational activities, the Corridor has the potential to improve upon existing amenities and offer new ones that support a wider range of opportunities. For example, MCCD staff has expressed interest in restoring an old campground within the Silver Creek Conservation Area into a publicly accessible waterfront. The area could be envisioned as a space for picnic, hiking, bird watching, and other recreational activities. However, it is worth noting again that much of the land along the river’s edge may be marshy, which could make the development of additional recreational amenities such as trails down to the river and non-motorized boat launches infeasible in these areas.

### **Safety**

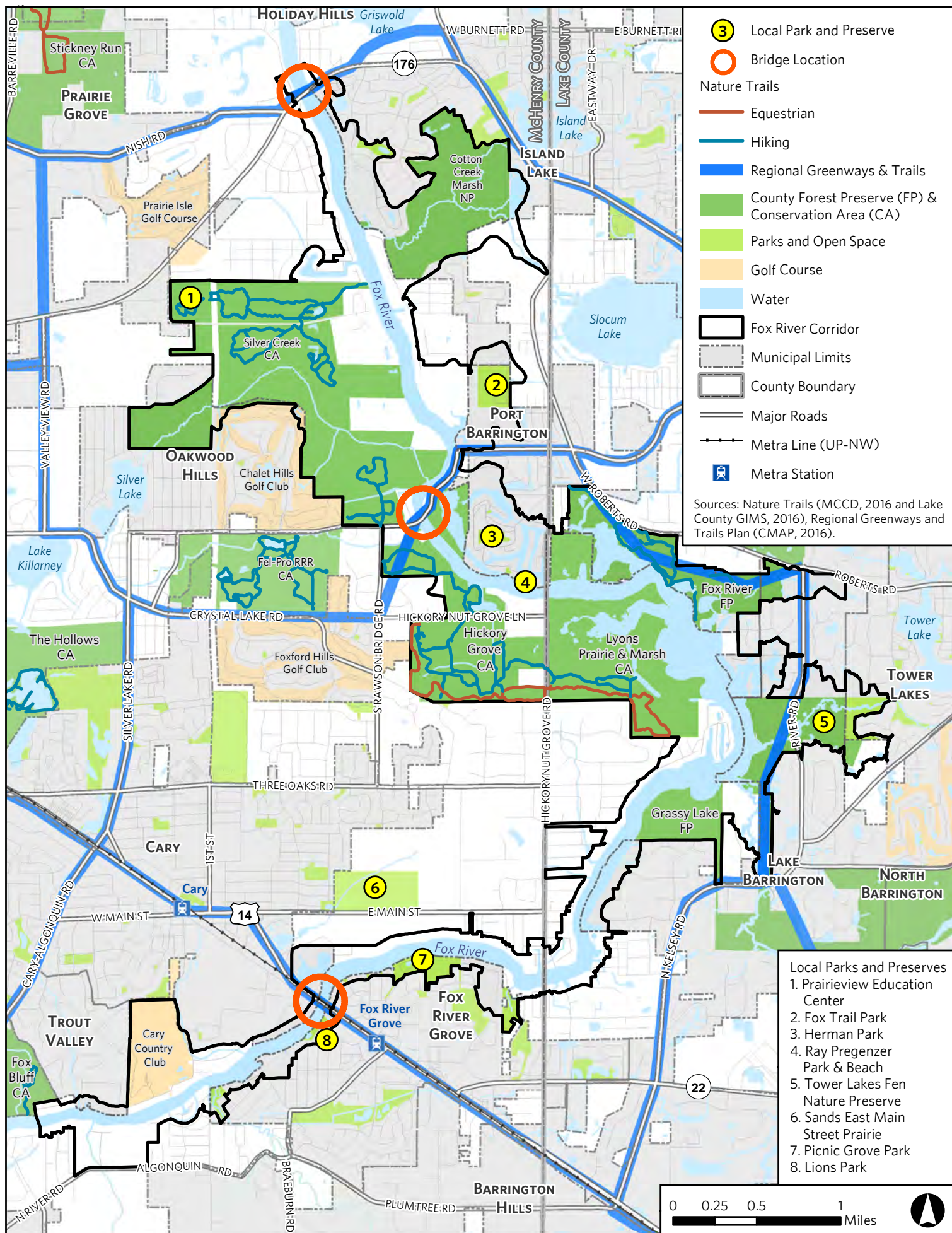
Providing more opportunities for recreation in and out of the water will require special considerations to ensure safety of all users. Swimming, tubing, and waterskiing are popular activities on the Fox River that can be in conflict with recreational boating and vice versa. Fox River Grove’s Picnic Grove Park is a popular destination for swimming and socializing in the summer, however, several stakeholders think that the boat traffic makes it dangerous for swimmers. Some dedicated swimming areas identified by stakeholders, such as a small cove near the Grassy Lake Forest Preserve, also face heavy use by boaters to anchor. Snowmobiling is another activity that could benefit from improved safety. Spring-fed areas of the Fox River that do not freeze over are dangerous for snowmobilers and several deaths have occurred over the years. Working with local snowmobile clubs to educate users and install signage identifying these hazards areas could improve the safety and enjoyment of the sport.

Stakeholders would also like to see trail improvements and new dedicated walking trails that reach the river. Many different users —bicyclists, hikers, horseback riders— use the existing trails, which can prompt safety concerns. Installing signage and conducting more education on trail etiquette can alleviate concerns and increase the enjoyment of all users.

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<sup>56</sup> Fel-Pro RRR, Hickory Grove, Lyons Prairie and Marsh, Silver Creek, and the Fox River Forest Preserve are all sites within the Corridor that allow fishing. Camping facilities are offered at Hickory Grove and Fox River Forest Preserve (for youth groups only).

Figure 4.2 Parks and recreation.



## Chapter 5. Access and Connectivity

Safe and convenient access is essential for residents and visitors to enjoy all that the Corridor has to offer. During outreach activities, stakeholders expressed a need to improve access and connectivity for all transportation modes – bicycling, walking, boating, paddling, and driving – that provides more public river access, complete trail networks for bicyclists and hikers, and increased safety.

### **Issue: Few public access points exist for river users.**

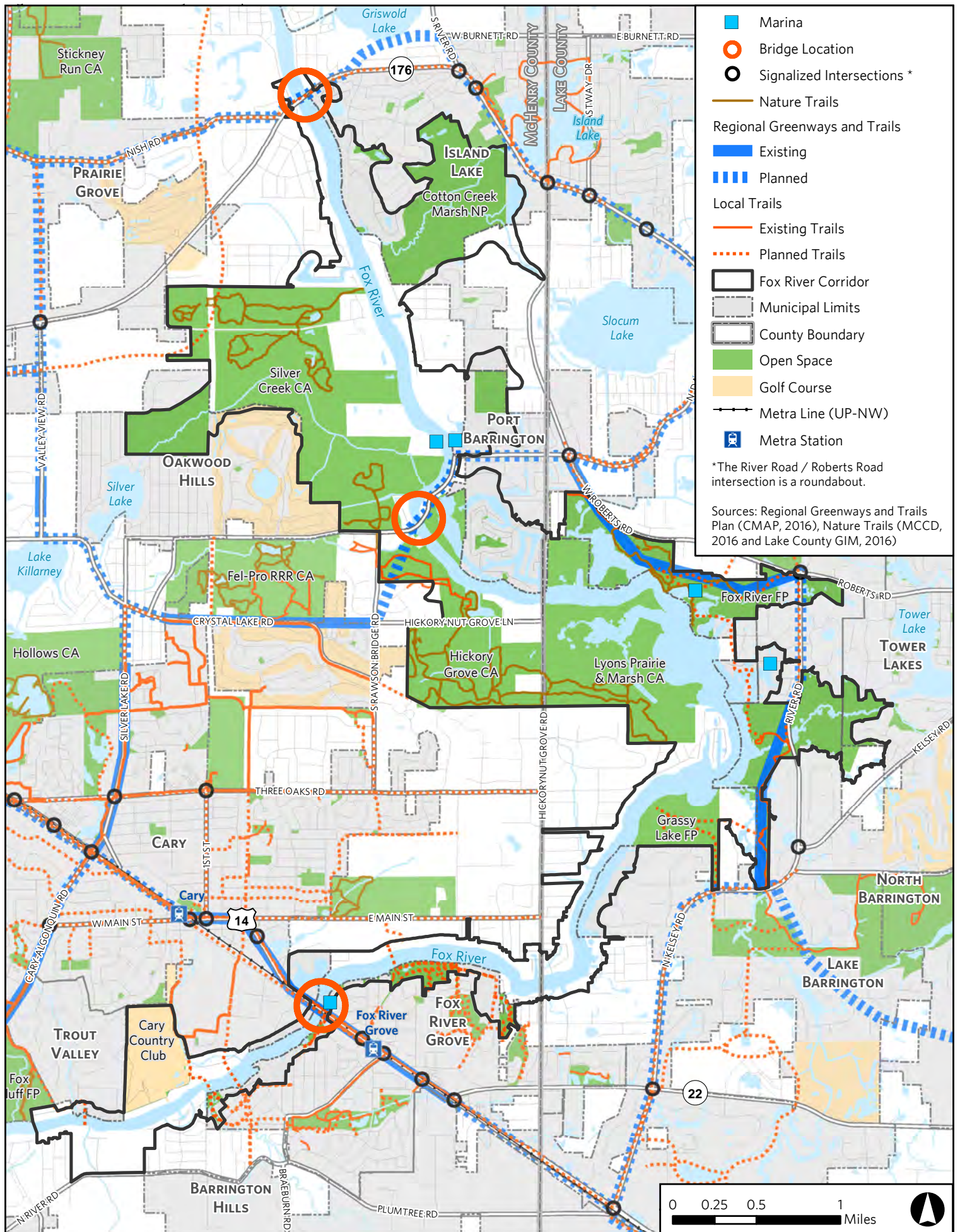
Much of the riverfront in the Fox River Corridor consists of land that is privately owned or marshy and difficult to access. Private docks are common fixtures along the river and several communities, like Port Barrington, and subdivisions have private launch points and parking for residents' use. For river users without private access, public access points are limited and can be difficult to find, as they are not all mapped.

There are five marinas in the study area: Port Barrington Marina, Broken Oar Marina, Fox River Marina, Port Barrington Motor Sports, and Fox 14 Marina (Figure 5.1). Four are located on the east side of the river and one, Port Barrington Marina, is situated on the river's west side. Some stakeholders expressed the need for another access point on the west side of the river in Cary or Fox River Grove. This view is in line with Fox River Grove's Redevelopment Plan to improve the site of the Fox 14 Marina, as well as the Cary Comprehensive Plan to provide boat access as part of the redevelopment of Jack's Channel. Despite a desire for improved marina access from the west side of the river, some of the marinas like Fox River Marina have not yet reached capacity. The U.S. Army Corps of Engineers regulates boat piers and ramps on the Fox River under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Permits for multi-user facilities, such as marinas, hotels, homeowner associations, and other facilities with overnight mooring, and the installation of boat ramps require the removal of an existing pier or ramp for each one constructed.

Accessing public river access points by road can be difficult for someone unfamiliar with the area. Major roads like Route 14, Route 176, and Rawson Bridge Road provide access across the river, but only a select few local roads actually lead to the river. Because the residential subdivisions were developed at different times, the street network can seem like a labyrinth that is difficult to navigate. The street grid is not likely to change in the future; however, wayfinding improvements could help residents and visitors alike to reach public river access points and reduce unwanted traffic in residential neighborhoods.



Figure 5.1 Marinas and Bicycle and pedestrian network.



- Marina
  - Bridge Location
  - Signalized Intersections \*
  - Nature Trails
  - Regional Greenways and Trails
    - Existing
    - - - Planned
  - Local Trails
    - Existing Trails
    - - - Planned Trails
  - Fox River Corridor
  - Municipal Limits
  - County Boundary
  - Open Space
  - Golf Course
  - Metra Line (UP-NW)
  - Metra Station
- \*The River Road / Roberts Road intersection is a roundabout.

Sources: Regional Greenways and Trails Plan (CMAP, 2016), Nature Trails (MCCD, 2016 and Lake County GIM, 2016)

## **Wisconsin-Illinois Water Trail<sup>57</sup>**

FREP, the Southeast Wisconsin Fox River Partnership, and the Wisconsin Village of Waterford received a technical assistance grant from the National Park Service (NPS) through the NPS Rivers, Trails, and Conservation Assistance Program to develop the Fox River Water Trail Plan. A water trail plan is a long-range plan that describes a vision, desired future conditions, and step for adopting best management practices for recreational use of a waterway. In recognition of cooperative efforts to conserve waterways and increase recreational access, the NPS grants a National Water Trail designation to segments of rivers and coastline that provide scenic, educational, and recreational value as part of a national network of exemplary trails. Completing a water trail plan is an important first step to seeking recognition as a National Water Trail. Benefits of the designation include the elevated profile that accompanies national recognition. The purpose of the Program is to connect all Americans to their parks, trails, river, and other special places by helping plan parks and trails, conserve and improve access to rivers and natural areas, and create recreation opportunities through locally led partnerships. As part of this grant, a team is working to locate and evaluate access points along the entire length of the Fox River and perform a gap analysis to identify where new access sites may be needed.

### **Issue: Sedimentation limits access for boaters.**

Recreational boating is a popular pastime on the Fox River and Chain O'Lakes. This particular segment of the Fox River, called the Lower River, attracts local boaters seeking to enjoy the scenic river and serves as a regional connection between the Chain O'Lakes and the Algonquin dam. The Fox Waterway Agency<sup>58</sup> and IDNR work together to maintain access for boaters, paddlers, and other recreational users on the Fox River. Dredging, debris removal, and buoy placement are just a few of the projects managed by the FWA and are funded through boating sticker fees<sup>59</sup> and occasional grants. IDNR is responsible for maintaining adequate water levels for recreational boating on the Chain O'Lakes and for consumption by the cities of Elgin and Aurora and Fermilab in Batavia. Flows are maintained through IDNR's control of the Stratton Dam located just south of the City of McHenry. Unlike larger dams, Stratton Dam is primarily a low-head dam that does not hold back sediment.

Many stakeholders believe sedimentation is a major issue in the Fox River Corridor. Caused by streambank erosion and inadequate upland erosion control, and exacerbated by major floods, sediment buildup can create shallow areas that restrict passage for boaters and hinder access to private docks, marinas, and riverfront businesses. Unsurprisingly, this issue is most prevalent in the bays, channels, and other backwater areas since they are more likely to collect sediment and are a lower priority for dredging than the main channel of the Fox River. Areas near Port Barrington Motor Sports/No Wake Bar and Grill, Hickory Grove Conservation Area, and the lagoon in Fox River Grove were commonly cited problem areas during outreach activities.

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<sup>57</sup> <http://www.foxriverecosystem.org/trail.htm>

<sup>58</sup> The jurisdiction of the Fox Waterway Agency extends from the Algonquin Dam northward to the Wisconsin border and includes the Fox River, Chain O'Lakes, tributaries, and navigable channels.

<sup>59</sup> IDNR also distributes boating stickers required for all boats in Illinois.



Dredging involves the excavation and disposal of sediment, which is expensive and requires land to deposit what is dredged from the river or prepare it for sale. IDNR has funded dredging projects in the past, but not in recent years. While dredging is a core function of the FWA, the needs throughout the entire Fox Waterway far exceed the funding and land available to properly handle the dredged material.<sup>60</sup>

## **Opportunity: Recreational paddling is increasing in popularity.**

Stakeholders expressed a strong interest in improving amenities and safety for recreational paddling in this scenic stretch of the river. Paddling tends to be more popular in the areas downstream of the Algonquin dam. The dam prevents motorboat passage from the Lower River and Chain O'Lakes, which results in less wake and fewer potential conflicts between paddlers and boaters below the dam. Paddling club trips do not take place in the Corridor as a result of heavy motorboat traffic. Some recreational paddlers said they generally avoid putting in on the Fox River between the Chain O'Lakes and the Algonquin dam because of heavy motorboat traffic there and more serene opportunities downstream on the river. However, residents who live on or near the river said they enjoy paddling on the river early in the day during the peak season, or anytime during the day in early spring and late fall. Paddlers on the river during peak hours in the summer are advised to stay outside of the buoys and close to shore.

Paddlers and boaters often share launch points, which can create an unsafe environment for paddlers. Paddlers can launch at all marinas in the Corridor except for Port Barrington Marina and Fox 14 Marina. The Hickory Grove Conservation Area has a canoe launch that MCCD occasionally uses for trips for experienced paddlers. Paddlers can also launch from Picnic Park and Lions Park in Fox River Grove. Local businesses are also starting to capitalize on the growing interest in paddling. In 2016, Herman's Rest-A-While began to rent kayaks to paddlers to explore Port Barrington's Nielsen's Channels and the Fox River. During outreach activities, stakeholders identified opportunities for additional launch points for paddlers along the channels in Port Barrington, at Burtons Bridge, and at a property in Lake Barrington owned by Citizens for Conservation. They also expressed a desire for more places to stop to rest with modest facilities. Similar improvements have been planned just downstream of the study area in Fox Bluff Conservation Area. The MCCD master plan for the conservation area provides fishing pier/launch areas at the northeastern end of the area (where an informal put-in currently exists) and the southern end, where one would be added in Fox Bluff Conservation Area.<sup>61</sup>

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<sup>60</sup> Uncontaminated dredged material can be recycled and used as fill. FWA has sold dredged material locally as well as to the City of Chicago for the construction of Maggie Daley Park. Partnerships, such as with the Village of Fox Lake, help FWA distribute dredged materials.

<sup>61</sup> MCCD, Fox Bluff Conservation Area Master Plan, 2014. See <http://www.mccdDistrict.org/rccms/wp-content/uploads/2014/08/Fox-Bluff-Master-Plan-Final.pdf>.



## **Issue: River safety is a concern for all river users.**

The Fox River's popularity surges during warm weather, which can create more potential conflicts between all of its users. In 2016, the Fox Waterway Agency experienced a five percent increase in boat sticker sales over the previous year.<sup>62</sup> Improved water quality has also led to an increase in paddling, fishing, tubing, swimming, and other recreation.

High boat speeds is an issue raised by many stakeholders in the Fox River Corridor. The river has a 25 mile per hour speed limit at night, but speeds are not restricted during the day. The river itself is rather narrow and has been described by stakeholders as a highway with buoys marking the lanes. In addition to general concerns about high speeds, several stakeholders believe that boats they are seeing on the river are getting larger and faster. They also expressed the need for more routine management of the channel markers (buoys) to ensure safe passage of boats, particularly between the Broken Oar and Burtons Bridge.

According to records maintained by the McHenry County Sheriff's Office, 24 crashes between motorized or non-motorized watercraft occurred from 2009 through August 2017 between the Stratton and Algonquin dams. With the exception of one crash occurring in May, the remaining 23 crashes all took place during the months of June, July, or August. During outreach activities, stakeholders identified four major pinch points in the Fox River Corridor: Burtons Bridge, the Route 14 bridge, and the curves near Port Barrington Marina and north of Lyons Prairie and Marsh. Many stakeholders expressed interest in establishing no wake zones and employing other means to slow boaters down through these dangerous locations. They also noted issues with anchored boats drifting into the channel lanes and conflicts between boaters and swimmers at Picnic Grove in Fox River Grove.

Government agencies, boat clubs, and volunteers are all working to maintain safe conditions on the Fox River. The IDNR Conservation Police are responsible for closing down the river when water levels cause unsafe conditions due to high flows, high velocities, or debris. County Sheriff's Departments are responsible for law enforcement on the river; however, other entities like MCCD assist with patrol, safety, hazard mitigation, and emergency response events when called upon by the state and other partnering agencies. Citizen groups are also active on the river. Fleet 17 is a Boat Club on the Lower Fox River and the Chain O'Lakes that promotes safe boating and works in cooperation with regulatory agencies. Water Trail Keepers are volunteers who monitor waterways and report high water levels, downed trees, and other hazards that may affect paddler safety. However, not all paddlers consult this information before going out on the river and some do not know that this information exists.

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<sup>62</sup> Northwest Herald, "McHenry County boating popularity on the rise this summer," Sep. 5, 2016. See <http://www.nwherald.com/2016/09/05/mchenry-county-boating-popularity-on-the-rise-this-summer/alj3dce/?page=1>.

## **Opportunity: Existing and planned trails support a robust bicycle and pedestrian network.**

Stakeholders expressed a need for more walking and biking trails and better trail connections with safe crossings. While a riverfront trail does not exist in the Corridor, there are numerous trails in conservation areas and forest preserves to build on, as well as a growing network of bicycle routes in the Village of Cary. In addition to physical infrastructure, stakeholders also emphasized the need for marked routes, signage, and maps to assist with wayfinding.

### **Existing and planned trails**

This area of the Chicago region has an extensive regional trail system within a few miles of the Fox River Corridor. In McHenry County, the Prairie Trail extends to the west of Route 31 from the Wisconsin state line until it crosses the Fox River in Algonquin. Once in Kane County, the Prairie Trail links to the Fox River Trail that follows the river south to Oswego in Kendall County.

McHenry County,<sup>63</sup> Lake County,<sup>64</sup> and individual villages each have planned to expand the area's bicycle and pedestrian network to better link communities, forest preserves, conservation areas, regional trails, and other destinations (Figure 5.1). There are four key routes planned to serve the Fox River Corridor:

- Prairie Trail – Island Lake Connector (via Route 176 and Nish Road),
- Rawson Bridge – Prairie Trail Connector (via Rawson Bridge Road and Crystal Lake Road),
- Union Pacific Corridor (in Union Pacific rail right-of-way, from the Prairie Trail to Lake County line), and
- River Road (from Fox River Forest to Preserve Grassy Lake Forest Preserve) and Kelsey Road/Highway 30 (from Grassy Lake to Union Pacific Corridor).

Communities in the Corridor are also planning to improve connections to key destinations. Cary's Comprehensive Plan lays out a network that extends to unincorporated McHenry County to the east via Cove Drive, Three Oaks Road, and Main Street. The plan also identifies connections to the Fox River at Trout Valley Park, Cary Country Club, Sands East Main Street Prairie, and the ComEd right-of-way. Fox River Grove and Lake Barrington have also planned for new trails and Island Lake has an existing trail around its namesake lake. Bicycle and pedestrian infrastructure is supported by McHenry County's Long Range Transportation Plan. The plan recommends "complete streets" projects to accommodate all road users in existing and future urbanized areas of the County, which includes the Villages of Cary, Fox River Grove, Island Lake, Oakwood Hills, and Trout Valley.

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<sup>63</sup> McHenry County, 2040 Long Range Transportation Plan, 2014. See <https://www.co.mchenry.il.us/county-government/departments-j-z/transportation/transportation-plans/long-range-transportation-plan>.

<sup>64</sup> Lake County, 2040 Transportation Plan, 2014. See <https://www.lakecountyil.gov/735/2040-Transportation-Plan>.

Stakeholders also emphasized the need to provide consistent signage for routes and trails. Clear signage and wayfinding between trails and key destinations can provide benefits at a low cost. In some cases, the physical infrastructure connecting a trail to a destination may be sufficient, but signage can be particularly helpful to users who are not aware of nearby amenities or are unsure how to reach them.

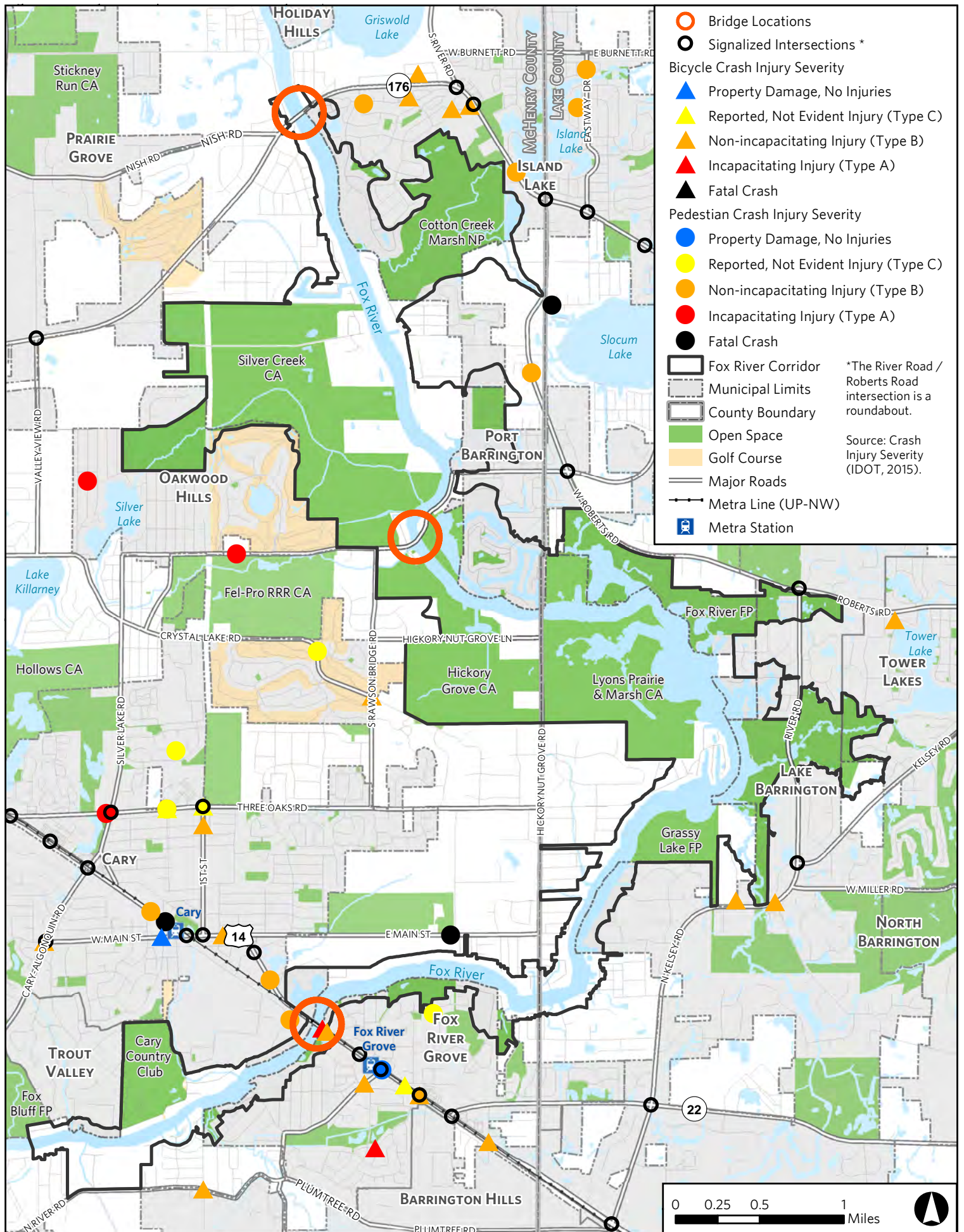
### **Bicycle and pedestrian safety**

Expanding the bicycle and pedestrian network to provide routes that run parallel to or allow users to bypass busy streets is a vital step to improve safety in the Corridor. Unsurprisingly, stakeholders agreed that Route 14 is unsafe for bicyclists and pedestrians. This major arterial connects the Villages of Cary and Fox River Grove to the Fox River, yet it experiences heavy traffic volumes and is designed with frequent curb cuts to access businesses, which increases the potential for incidents between pedestrians, bicyclists, and motor vehicles. There have been vehicle crashes with bicyclists and pedestrians on Route 14, including on the east side of the river in Fox River Grove (Figure 5.2). The north/east side of the Route 14 has a sidewalk that continues across the river, but it is too narrow to safely accommodate bicyclists and pedestrians.

Vehicle-related bicycle injuries have occurred on other major roads that have unpaved or partially paved shoulders, including Kelsey Road near the entrance to Grassy Lake Forest Preserve and Route 176 in Island Lake. Vehicle crashes with pedestrians have also occurred on Route 176, Roberts Road, and Rawson Bridge Road. While no injuries have been reported at the Route 176 and Rawson Bridge Road bridges, the public stated a need to improve safety for bicyclists and pedestrians at these river crossings. Current bridge conditions include wide shoulders on Route 176, a narrow sidewalk and narrow shoulders on Rawson Bridge, and a standard sidewalk and little to no shoulders across Route 14. Several stakeholders also expressed a desire for safer and more enjoyable connections on the east side of the river between Fox Trail Park, Fox River Preserve, Grassy Lake Forest Preserve, and Wagner Fen that avoid busy streets like Rawson Bridge Road, Roberts Road, and River Road. Connections were also suggested between Fox Bluff Conservation Area and the Village of Trout Valley, Silver Creek Conservation Area and Burtons Bridge, Fel-Pro RRR Conservation Area, and within Silver Creek itself, and from Ski Hill Road to Main Street in Fox River Grove.



Figure 5.2 Bicycle and pedestrian crash injuries, 2010-2014.



## Chapter 6. Economic Development

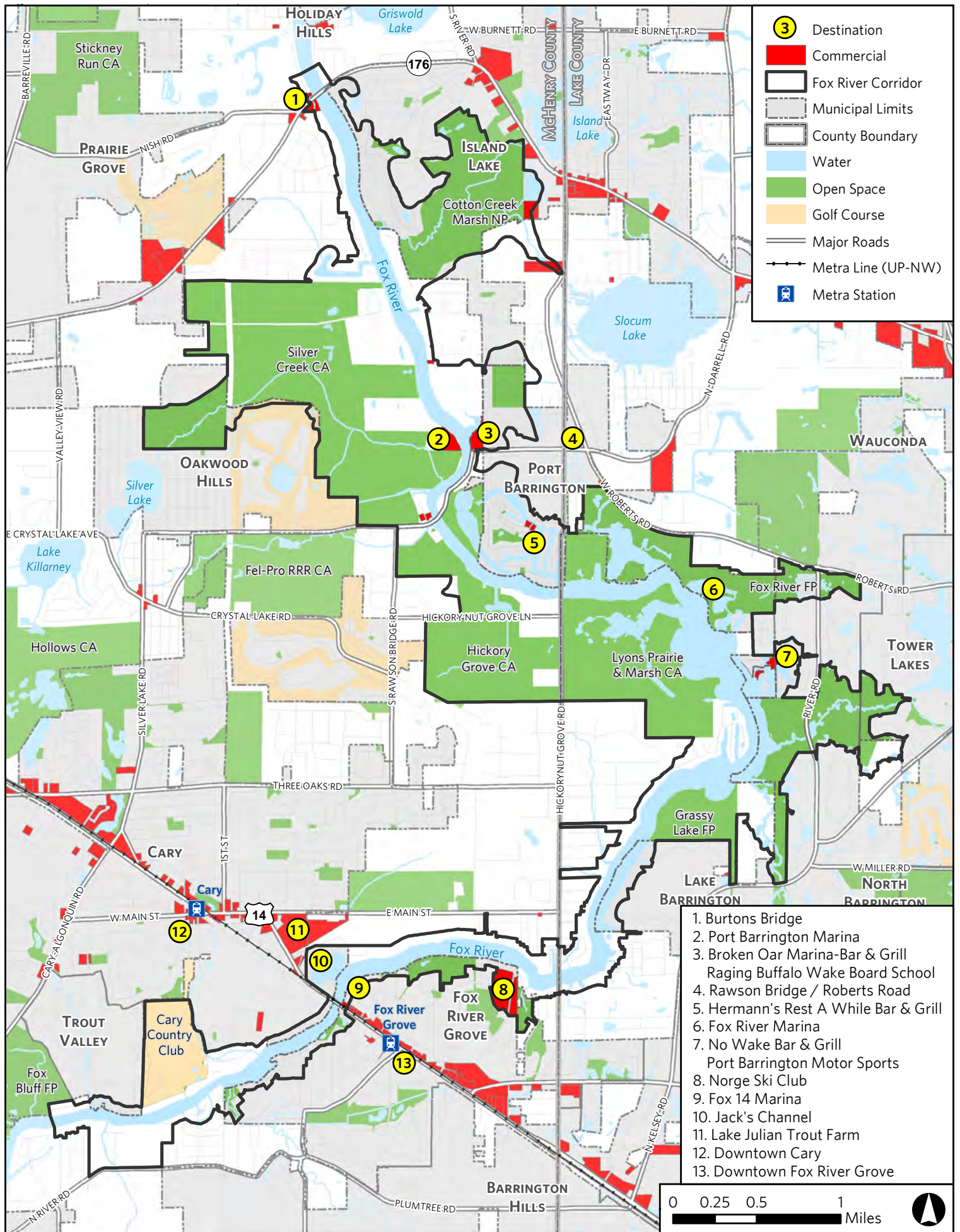
This segment of the Lower River enjoys economic activity from the downtowns of Fox River Grove and Cary, riverfront restaurants and bars, and events. The Villages of Cary and Fox River Grove are engaged in planning to activate their riverfronts and downtown areas. Businesses primarily attract local residents and have the potential to capture additional business from boaters passing through the area as they head up and down the Fox River.

### **Opportunity: River-oriented businesses and activities attract visitors to the Corridor.**

While several stakeholders noted a contrast in economic activity between this section of the Lower River and the more populated areas of Algonquin, McHenry, and Johnsburg, businesses in the Corridor take advantage of the Fox River, which draws people to the Corridor and, in turn, generates tax revenue for these smaller communities. Stakeholder specifically identified entertainment provided by restaurants and other businesses on the river as a strength of the Fox River Corridor. Businesses in the study area primarily cluster near Burtons Bridge, Rawson Bridge Road, and Route 14 bridges with a few others dotting the riverfront (Figure 6.1). Many of the businesses are restaurants or bars that cater to boaters and locals, host live music, and provide outdoor seating. Situated on the riverfront, many of these businesses experience damage from riverine flooding and loss of revenue when high water levels cause the Fox Waterway Agency to close the river to recreational boaters. During outreach activities, stakeholders wanted to see improved signage and wayfinding, as some businesses are tucked away and can be difficult to find. Some noted the need for better visibility and access by boat at riverfront restaurants. Broken Oar, Kief's Reef, No Wake Bar and Grill, and the Dead End all have piers to accommodate boaters. For businesses without direct river access, piers shared among riverfront and non-riverfront properties could benefit all businesses by generating more activity and expanding their customer base.



**Figure 6.1 Businesses, destinations, and commercial land use.**





The Fox River is a draw for recreational businesses, tournaments, and events throughout the year. Raging Buffalo Wakeboard School, associated with Raging Buffalo Snowboard Ski Park in Algonquin, has taught over 1,000 students since its establishment in 2001.<sup>65</sup> Herman's Rest A While has expanded its business on Nielson's Channel to offer kayak rentals in the summer and parking for ice fishing in the winter. Lake Julian Trout Farm, on Route 14 in Cary, is a spring fed lake that has been open for fishing for over 60 years.<sup>66</sup> The scenic Cary Country Club is less than a block away from the Fox River and tournaments at Norge Ski Club attract thousands of spectators to the Fox River Corridor throughout the year. Fishing tournaments, like Anglers Dream<sup>67</sup> at Port Barrington Motor Sports, are hosted in the area and the Villages of Port Barrington and Fox River Grove host festivals on riverfront parks in the summer. Just outside the Corridor to the south of Grassy Lake Forest Preserve is Freier Farm, a 26-acre farm acquired by the Village of Lake Barrington and used for recreation and entertainment. The conservation areas, forest preserves, and state nature preserves also attract birders and other nature enthusiasts, which generates economic revenue in the Corridor and surrounding area. Developing and promoting these types of ecotourism activities, particularly water-based recreation and outdoor entertainment, would provide an economic boost to Corridor and are recommended in the McHenry County 2030 Comprehensive Plan.<sup>68</sup>

Some businesses in the Corridor take advantage of the marketing services provided by Visit McHenry County, Visit Lake County, and chambers of commerce in the area including Cary-Grove Area, Barrington, and Lake Zurich. However, there is an opportunity to expand participation by more businesses, as well as municipalities, to reach a broader customer base and promote tourism.

## **Issue: Few opportunities exist for new riverfront development or redevelopment.**

Stakeholders expressed an interest in more riverfront and family-friendly restaurants and river-oriented businesses accessible by water and land. However, undeveloped and unprotected riverfront land is scarce and much of the vacant land that exists is unsuitable for development, as it is either situated in the floodplain and/or provides essential habitat to native flora and fauna. This limits the potential for new development without redevelopment of existing and potentially underutilized spaces. Despite these limitations, stakeholders and past planning efforts have identified four key areas where new development or redevelopment could occur.

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<sup>65</sup> <http://www.ragingbuffalo.com/wakeboard-school>

<sup>66</sup> <http://lakejulian.com/>

<sup>67</sup> <http://www.anglers-dream.com/2017-div-20-fox-river>

<sup>68</sup> McHenry County, 2030 Comprehensive Plan, 2010. See <https://www.co.mchenry.il.us/county-government/departments-j-z/planning-development/divisions/planning-zoning-land-use-division/2030-comprehensive-plan>.

## Jack's Channel (Cary)

During outreach activities, the Village of Cary was often described as a riverfront community, without river access. Cary's riverfront extends from Cary Creek to Jack's Channel<sup>69</sup> and, with the exception of Jack's Channel, is comprised of single family homes. Jack's Channel is an undeveloped, 30-acre property with riverfront access situated to the north and east of Route 14. To attract development interest to the site, the Village established a tax increment finance (TIF) district in 2012 for the Route 14/Jandus Cutoff Road area that includes Jack's Channel. The Village's 2015 Comprehensive Plan recommends Jack's Channel as an opportunity to leverage the river as an economic and recreation asset by creating a publicly accessible destination on the riverfront.<sup>70</sup> The concept developed as part of the Comprehensive Plan envisions a mix of commercial lodging, entertainment, a marina, and nature walk through protected natural areas (Figure 6.2). The site is not without restrictions; protection of floodplain, wetlands, and other sensitive areas will need to be incorporated into any future development to avoid degradation of this unique habitat.

**Figure 6.2 Redevelopment concept plan for Jack's Channel site (Cary Comprehensive Plan).**



<sup>69</sup> With the exception of Fox Bluff Conservation Area on the southwest side of the community.

<sup>70</sup> Sustainability is a driving principle in the Cary Comprehensive Plan. The plan notes that growth and redevelopment should be guided by sustainable best practices that protect natural areas.

## Marina Site (Fox River Grove)

Stakeholders voiced support to increase riverfront activity at the Route 14 bridge in Fox River Grove, which is consistent with the Village's plan to enhance public access and vibrancy of this area. Several plans and studies have been developed, including the Village of Fox River Grove Station Area Planning Study (2003), CMAP Community Design Workshop for Fox River Grove (2009), Redevelopment Plan (2014), and Fox River Grove TIF District Expansion (2015). Each of these plans identify the area east of Route 14 between North River Road and the Fox River as a prime opportunity to redevelop the riverfront and create a stronger link between the river and downtown. The site is currently home to Fox 14 Marina and the Dead End Bar & Grill. In the 2014 Redevelopment Plan, this area is included as the final phase (Phase 4) and redevelopment may consist of a marina, restaurant, and lodging (Figure 6.3). The redevelopment of this area would promote access for boaters, pedestrians, and bicyclists. Boat access would be provided by launch or marina that would draw boaters to the Village. The Village would also like to see improved connections for pedestrians and bicyclists between the development, Lions Park, as well as downtown.

**Figure 6.3 Fox River Grove Downtown Redevelopment (Phasing Plan).**





## **Burtons Bridge**

Burtons Bridge is an unincorporated area of McHenry County located on the west side of the Fox River along Route 176. Seven businesses are clustered in this area at the intersection of Route 176 and Nish Road, three restaurants (Carlos River Café, Riverside Pub, and Kief's Reef) and four automotive businesses. During outreach activities, stakeholders voiced support for improved business appearance and more river-related businesses in this area. There may be some potential for redevelopment in this area.

## **Rawson Bridge Road and Roberts Road (Port Barrington)**

Just outside of the Fox River Corridor, two vacant lots on the northeast and southwest corner of Rawson Bridge Road and Roberts Road present an opportunity for river-related commercial development in the Village of Port Barrington. Both sites are outside of the floodplain and do not have known wetlands, oak groves, or other sensitive habitats making them suitable for development. Development of this area would bring new revenue to the Village of Port Barrington and could demonstrate some of the green infrastructure practices promoted by the Village.

## **Opportunity: Downtown reinvestment in Fox River Grove and Cary.**

The downtown areas of Fox River Grove and Cary present opportunities to both attract people to the Fox River and attract river users to patron downtown businesses. Both Villages are reinvesting in their downtowns to spur economic development and increase their residential base. Many stakeholders support this reinvestment and would like to see the development of municipal piers to attract boaters into downtown areas and supported mixed use development on the river and in the downtowns.

## **Fox River Grove**

Downtown Fox River Grove is centered around the Metra station and extends along Route 14 from School Street to the Fox River. Most businesses are located on the east side of Route 14; the Union Pacific tracks run parallel to the road and thus limit development on the west side. Some businesses are clustered on the other side of the tracks on Lincoln Avenue and Algonquin Road. Since 2003, the Village has taken steps to plan for the redevelopment of its downtown. The central location of the Fox River Grove Metra station presents an opportunity for the Village to attract transit oriented development to increase its employment base, tax base, and retail offerings. Transit oriented development concentrates housing and commercial development close to existing transit infrastructure, thereby providing an alternative to automobile trips. The most recent redevelopment plan provides a blueprint to redevelop the downtown with mixed-use commercial and residential uses over four phases:

1. Residential apartments south and east of the Fox River Grove Metra station
2. Commercial on east side of Route 14 between Illinois Street and Phase 3
3. Residential apartments between Phase 2 and River Road, and

#### 4. Marina redevelopment

Construction will begin on Phase 1 in fall 2017, which will include 300 apartment units in three five-story buildings between Lincoln Avenue and Algonquin Road<sup>71</sup>. The Village also adopted architectural and streetscape design guidelines in 2014 to guide new building architecture and streetscape improvements along Route 14 and the downtown area.

#### **Cary**

Cary's historic downtown area sits on a bluff, approximately one mile from the Fox River. It is oriented along Main Street between High Road and Route 14. The Village has helped increase the vibrancy of its downtown by developing a Streetscape Master Plan in 2016 and is initiating streetscape improvements in summer 2017. Downtown Cary is the site of several events throughout the year. The Cary-Grove Area Chamber of Commerce hosts Cary Cruise Nights, Cary Main Street Fest, Halloween Trick or Treat walks, and the Merry Cary Parade and Festival and the Rotary Club of Cary-Grove hosts the City Farmers Market in the Metra parking lot. The 2015 Cary Comprehensive Plan provides a vision to enhance and expand the Downtown for residents and transform it into a regional destination. The plan promotes transit oriented development near the Metra station that is pedestrian-friendly with a mix of commercial and multi-family uses. It also identifies the opportunity to expand commercial activity on US Route 14 toward the Fox River including the development of the Selcke and Jandus Cutoff properties and Lake Julian frontage. To increase the vibrancy along this busy corridor, the plan also recommends improvements on Route 14 to improve pedestrian and bicycle safety and access between Downtown, Route 14 businesses, Jacks Channel, and ultimately the Fox River.

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<sup>71</sup> Daily Herald, "Work on Fox River Grove downtown redevelopment to begin by fall," Mar. 17, 2017. <http://www.dailyherald.com/article/20170317/business/170318920/>.

# Chapter 7. Looking Forward

The Fox River Corridor is a unique scenic area, rich in environmental, cultural, and recreational assets. The combination of a diverse ecosystem, recreational waterway, and river-embracing businesses offers the opportunity for the forthcoming plan to continue building a corridor that balances protection with sustainable use that attracts visitors and serves local residents.

The plan will aim to maintain and enhance the assets of the Fox River Corridor with an eye toward the future. Based on key findings of this report, the following priority challenges and opportunities emerged that the plan will address in full:

## Surface water and groundwater protection

Water pollution affects aquatic life in rivers, lakes, and streams, community groundwater supplies, and recreation potential, and is a primary concern of stakeholders. Reducing nutrients, sediment, and other pollutants requires action at the local and watershed scales. The plan will explore strategies for Fox River Corridor communities to protect this valuable resource through better stormwater management, watershed plan implementation, and other actions. It will also encourage greater collaboration and coordination among governments and civic organizations across all scales.

## Sedimentation

Sedimentation is a critical issue echoed by stakeholders throughout the Upper Fox River and Chain O'Lakes. It affects water quality, restricts boating access, and degrades aquatic habitat. In river systems like the Fox River, some sediment transport and deposition is a natural process. However, the dams in the river and the pools formed behind them slow the flow of water, increasing sedimentation rates within the river and at tributary mouths. In the plan, CMAP will consider dredging needs in the Corridor and explore strategies to accommodate water recreation while protecting the river ecosystem. The plan will also recommend ways that communities, Counties, and stakeholders can advocate for funding to address the highest need areas.

## Flood mitigation

Flooding on the Fox River is a key concern of stakeholders, particularly for residents and business owners in flood prone areas. The recent floods of July 2017 led to widespread property damage and impacts to quality of life in the Corridor and throughout the Fox River Basin. Flooding also leads to river closures, which causes economic hardship to businesses that rely on recreational boaters and other river users. The plan will provide resources and strategies to help communities, property owners, and businesses become more resilient in the face of future flooding.



## **Ecosystem enhancement and preservation**

The Fox River Corridor's wetlands, oak groves, and prairie support diverse ecosystems that benefit flora and fauna, water quality, flood mitigation, and recreation enjoyed by stakeholders. The plan will identify strategies for protection, restoration, and invasive species management on protected land and in the periphery. It will also explore the use of land conservation tools and resources to protect undeveloped sensitive areas. These strategies will consider creative ways for land managers to collaborate across jurisdictions and build on the initiatives of active citizen groups.

## **Environmental education and engagement**

An educated and engaged public is the foundation for natural resource protection. Stakeholders repeated the need to educate landowners and river users on threats facing the Fox River Corridor, like river pollution, water depletion, and habitat loss, and engage them to become part of the solution. The plan will provide resources and strategies to educate and engage these stakeholders on stormwater management, shoreline stabilization, invasive species, and other topics.

## **River access**

Stakeholders suggested more river access points for boaters, paddlers, hikers, and other users. Most public access points, like marinas and launches, are located on the west side of the river and smaller access points may not be well known. However, much of the riverfront in the Fox River Corridor consists of land that is privately owned or marshy and difficult to access. CMAP will assess conditions and recommend improvements for new or existing access points building on plans from the villages of Cary and Fox River Grove, as well as efforts led by the Wisconsin-Illinois Water Trail initiative.

## **River user safety**

The Fox River is popular for a variety of watersports, which increases the potential for conflict among river users. Boating is extremely popular between the Algonquin Dam and the Chain O'Lakes and many stakeholders are concerned with heavy boat traffic and unsafe speeds, particularly at identified pinch points. Different government agencies, boat clubs, and volunteers are all committed to improving river safety. The plan will explore strategies for these entities to enhance safety through education, engagement, and policy measures, while accommodating all river users.

## **Bicycle and pedestrian network connectivity**

Numerous existing and planned trails exist in the corridor to support a robust bicycle and pedestrian network. The Corridor does not boast a riverfront trail; however, trails in conservation areas and forest preserves, and a growing network of bicycle routes in the Village of Cary present opportunities to build on. Stakeholders also emphasized the need for marked routes, signage, and maps to assist with wayfinding. The plan will help prioritize

improvements to advance the bicycle and pedestrian network to enhance safety and provide connectivity through the Corridor and to the regional network.

## **Recreational amenities**

The Fox River Corridor offers a range of recreational amenities for residents and users to enjoy. Stakeholders suggested the potential to improve upon existing features and offer new ones that support a wider range of opportunities, particularly with access to or along the riverfront. At the same time, recreation management is important to protect sensitive habitats. CMAP will consider potential new recreational amenities within the Corridor and provide recommendations for improvement in the plan.

## **River-oriented programs and events**

Programs and events hosted by villages and businesses draw residents and visitors to the Corridor throughout the year. Many stakeholders suggested that they would like to see riverfront open space used more frequently. The plan will recommend that the Villages work to create events and programs that serve a mix of residents and increase the use of the riverfront. Strategies will explore ways that the Villages could collaborate with MCCD, LCFP, and park districts to develop and promote recreational programs that take advantage of the Fox River.

## **Marketing the Fox River Corridor**

Economic activity generated by river-related businesses, tournaments, and events is crucial for many of the smaller, residential communities in the Corridor to expand their tax base and provide services to residents. While some businesses already take advantage of the marketing services provided by Visit McHenry County, Visit Lake County, and chambers of commerce, there is an opportunity to expand participation by more businesses and municipalities. The plan will explore strategies to market river tourism by targeting outdoor outing groups that cater to paddlers, anglers, birders, and other nature enthusiasts.

## **Wayfinding**

Stakeholders reported difficulty finding businesses, uncertainty regarding access to natural areas, and inconsistencies in route signage among different jurisdictions in the Corridor. Wayfinding signage provides directions and distances to specific destinations. For bicyclists, it also routes them to streets with bicycle infrastructure or to neighborhood routes with low traffic volumes and speeds. CMAP will draw on best practice for wayfinding signage and recommend strategies to help people reach destinations in the Corridor by foot, bicycle, boat, kayak, vehicle, or other mode.

## **Land use and conservation design**

The Corridor is comprised of a mix of land uses, with a large amount of water, open space, and residential land in the study area and a greater mix of uses in downtown Fox River Grove and

Cary. The plan will recommend strategies to support, preserve, and strengthen existing uses in the Corridor through design and land use recommendations that boost the current mix. Stakeholders noted a desire for more riverfront and family-friendly restaurants and river-oriented businesses accessible by water and land. CMAP will consider potential new development or redevelopment opportunities and recommend guiding principles for future development to ensure the protection, access, and enjoyment of the river.

## **Downtown economic development**

The downtowns of Fox River Grove and Cary are opportunities to draw people to the Fox River and attract river users to patron downtown businesses. Recent plans in both communities support reinvestment to make the areas around the Metra stations more pedestrian-friendly with a mix of commercial and multi-family uses. The plan will identify strategies to improve the connectivity between the Fox River and the downtowns for mutual benefit.

## **Coordinated planning efforts**

Several plans exist for the area, which offers an opportunity for the Fox River Corridor Plan to unify these recommendations. At the same time, the Plan can provide guidance to communities that have not had the opportunity to carry out planning activities. Bringing together various plans that cover diverse geographic areas can be challenging, but analysis shows that many common themes and concerns run through the existing plans for the area. Going forward, the counties, districts, and villages should use the current plan as a chance to identify and implement the core strategies that they and their residents and stakeholders share.

## **Implementation**

As part of its recommendations, the Fox River Corridor Plan will include implementation steps to advance the strategies it identifies. Partnerships and collaborations are an important component of implementing any plan, especially for plans that cross multiple jurisdictions. The Fox River Corridor Plan will build on the cooperative efforts that led to its creation to ensure that its vision becomes a reality. McHenry County, Lake County, MCCD, LCFP, IDNR, FRSG, the villages of Cary, Fox River Grove, Island Lake, Lake Barrington, Oakwood Hills, Port Barrington, Tower Lakes, and Trout Valley, and other stakeholders have already demonstrated their commitment to collaborating to improve the Fox River. These relationships will form the foundation of ongoing actions to implement the plan's recommendations.