



Liberty Prairie Reserve Master Plan

June 2013

Acknowledgments

The Liberty Prairie Reserve Master Plan is the cumulative effort of many individuals, including stakeholders (the Planning Team) who provided time and expertise to identify values, priorities, and recommendations to help successfully complete this plan. As the sponsor for this Chicago Metropolitan Agency for Planning Local Technical Assistance project, Conserve Lake County would like to thank all of the people who formed the Planning Team and worked to identify and address the specific challenges and opportunities that will impact the future of the Liberty Prairie Reserve.

Jim Anderson, *Lake County Forest Preserve District*

Steve Barg, *Conserve Lake County*

Lenore Beyer-Clow, *Openlands*

Steve Byers, *Illinois Nature Preserves Commission*

Pat Carey, *Lake County Board*

Bonnie Thompson Carter, *Lake County Board*

Damon Cedarburg, *Libertyville Township*

Mike Fenelon, *Lake County Forest Preserve District*

Tom Hahn, *Lake County Forest Preserve District*

Dave Holman, *Liberty Prairie Foundation*

David Husemoller, *Lake County Department of Planning, Building and Development*

Rebecca Janssens, *Lake County Forest Preserve District*

Ken Klick, *Lake County Forest Preserve District*

Rory Klick, *College of Lake County*

Brad Leibov, *Liberty Prairie Foundation*

Joe Lodesky, *Lodesky Farm*

Bob Megquier, *Openlands*

Jeff Miller, *Sandhill Family Farms*

Kathleen O'Connor, *Libertyville Township*

Mike Sands, *Farm Business Development Center at Prairie Crossing*

Tina Seaman, *Openlands*

Chris Slago, *Libertyville Township*

Sarah Surroz, *Conserve Lake County*

John Tannehill, *Lake County Forest Preserve District*

Patricia Werner, *Lake County Stormwater Management Commission*

In July 2011, Conserve Lake County gathered local residents with large private land holdings in the Reserve to discuss their individual and collective interests and concerns about the Reserve's future. Private landowner input is reflected in the recommendations found herein. We thank these citizens for their investments in time, land health, land protection, and personal resources that have added so significantly to the Reserve's value: Vivian Donnelley, Marshall and Jamee Field, Bert and Sandy Getz, Jeff and Joan Lynch, the late Barbara Potter and son Charlie Potter, George and Vicky Ranney, Mike and Nancy Roach, and David and Sandi Whitmore.

In March 2013, Conserve Lake County hosted a public open house to review the draft master plan. Nearly 50 Lake County residents attended and provided valuable feedback, which has been incorporated into the plan.

Funding Acknowledgement

Conserve Lake County and the Chicago Metropolitan Agency for Planning (CMAP) would like to thank the U.S. Department of Housing and Urban Development (HUD) for funding the development and production of this plan. This project is funded through a HUD Sustainable Communities Regional Planning grant, which supports CMAP's Local Technical Assistance (LTA) program.

The Chicago Metropolitan Agency for Planning (CMAP) is the region's official comprehensive planning organization. Its GO TO 2040 planning campaign is helping the region's seven counties and 284 communities to implement strategies that address transportation, housing, economic development, open space, the environment, and other quality-of-life issues.

See www.cmap.illinois.gov for more information.



Liberty Prairie Reserve Master Plan



Chicago Metropolitan
Agency for Planning


June 2013



Independence Grove. Photo courtesy of Lake County Forest Preserve District.

Table of Contents

Executive Summary	7	List of Figures	
1. Introduction	15	Figure 1: Liberty Prairie Reserve in Lake County	18
2. Existing Conditions	19	Figure 2: Liberty Prairie Reserve Local Government Jurisdiction	20
A. Ownership in the Reserve	21	Figure 3: Liberty Prairie Reserve Principal Landowners	23
B. Land Management and Ecosystem Preservation	29	Figure 4: Liberty Prairie Reserve Agricultural Landowners	25
C. Agricultural Land Management and Preservation	41	Figure 5: Liberty Prairie Reserve Land Use	27
D. Transportation Networks: Trails and Roads	47	Figure 6: Liberty Prairie Reserve Existing Farm Leases	28
3. Recommendations	51	Figure 7: Liberty Prairie Reserve Protected Areas	31
A. Ownership in the Reserve	54	Figure 8: Liberty Prairie Reserve and Regional Protected Areas	33
B. Natural Land Management	58	Figure 9: Liberty Prairie Reserve Pre-Settlement Vegetation	34
C. Agricultural Land Management	64	Figure 10: Liberty Prairie Reserve Water and Natural Resources	35
D. Transportation Networks: Trails and Roads	69	Figure 11: Liberty Prairie Reserve Key Natural Areas	37
4. Conclusion	75	Figure 12: Liberty Prairie Reserve Prime and Important Farmland	40
		Figure 13: Liberty Prairie Reserve Agricultural Production	43
List of Tables		Figure 14: Liberty Prairie Reserve Roads and Trails	46
Table 1. Farmland Ownership	24	Figure 15: Bull Creek - Bull's Brook Watershed	52
Table 2. Liberty Prairie Reserve Land Use	26	Figure 16: Liberty Prairie Reserve Agricultural Land, Open Space, and Management Areas	68
Table 3. Conservation Land Holdings	30		
Table 4. Lake County Farm Trends	44	Appendices	
		Oak Reserve Plan	



A thing is right when it tends to preserve
the integrity, stability, and beauty of the
biotic community.

It is wrong when it tends otherwise.

- *Aldo Leopold*

In a world of expansion and growth, native landscapes and wildlife once so plentiful are rare and losing ground. In a world of fragmented habitats and landscapes, people are often separated from nature. In a world of ease and efficiency, the importance of healthy food and how it is grown is sometimes forgotten.

There are few places with the collective resolve, the depth of commitment, and the shared vision to help shape the future; where neighbors work together to solve problems, share resources, and agree on common ground, the same ground on which all of us depend, and which all of us share.

The nearly 3,400 acres of protected land in the Liberty Prairie Reserve are part of a mosaic of residential neighborhoods, working land, and natural landscapes that represent over one hundred million dollars of public and private investment and tens of thousands of hours of effort applied over several decades. The Reserve, as a result, continues to inspire the heart, mind, and soul.

Blazing stars, native prairie plants found in the Reserve.
Image courtesy of Conserve Lake County.

Executive Summary

The Liberty Prairie Reserve consists of approximately 5,000 acres in the heart of Lake County, Illinois, where since 1991 over half the land has been protected by the active leadership and cooperation of public and private landowners, through more than 100 legal transactions. Its purpose is to preserve and restore the health of its natural areas and farmland and to encourage their appropriate use and appreciation by the public.

This Executive Summary highlights most of the key conclusions and recommendations from the full Liberty Prairie Master Plan, which reflects an 18-month process by stakeholders to assess and update the Reserve's original Master Plan of 1991. All 27 conclusions and recommendations developed by the planning team can be found with background information in the complete Master Plan.

The goal of this Master Plan is to create a model Reserve of exceptional land, water, and biodiversity health where public and private landowners manage their land in ways that sustain people, plants, and wildlife. We envision people restoring, enhancing, and enjoying the Reserve's rich array of natural areas. Additionally, the Reserve's agricultural values and heritage will be celebrated and continued in ways that support clean water, healthy soils, and diverse agricultural products and foods.

Origins & Accomplishments

Named after a rare native prairie and fen discovered in 1990, the Liberty Prairie Reserve was established in 1991 through a comprehensive plan adopted by the Lake County Forest Preserve District, Libertyville Township, and a group of civic-minded private landowners. Initially called the Oak Prairie Reserve, its purpose was to “provide a distinctive open space sanctuary under public and private ownership which will preserve and restore the area’s natural and historic landscape of agricultural fields, woodlands, wetlands, prairies, and farmsteads.”

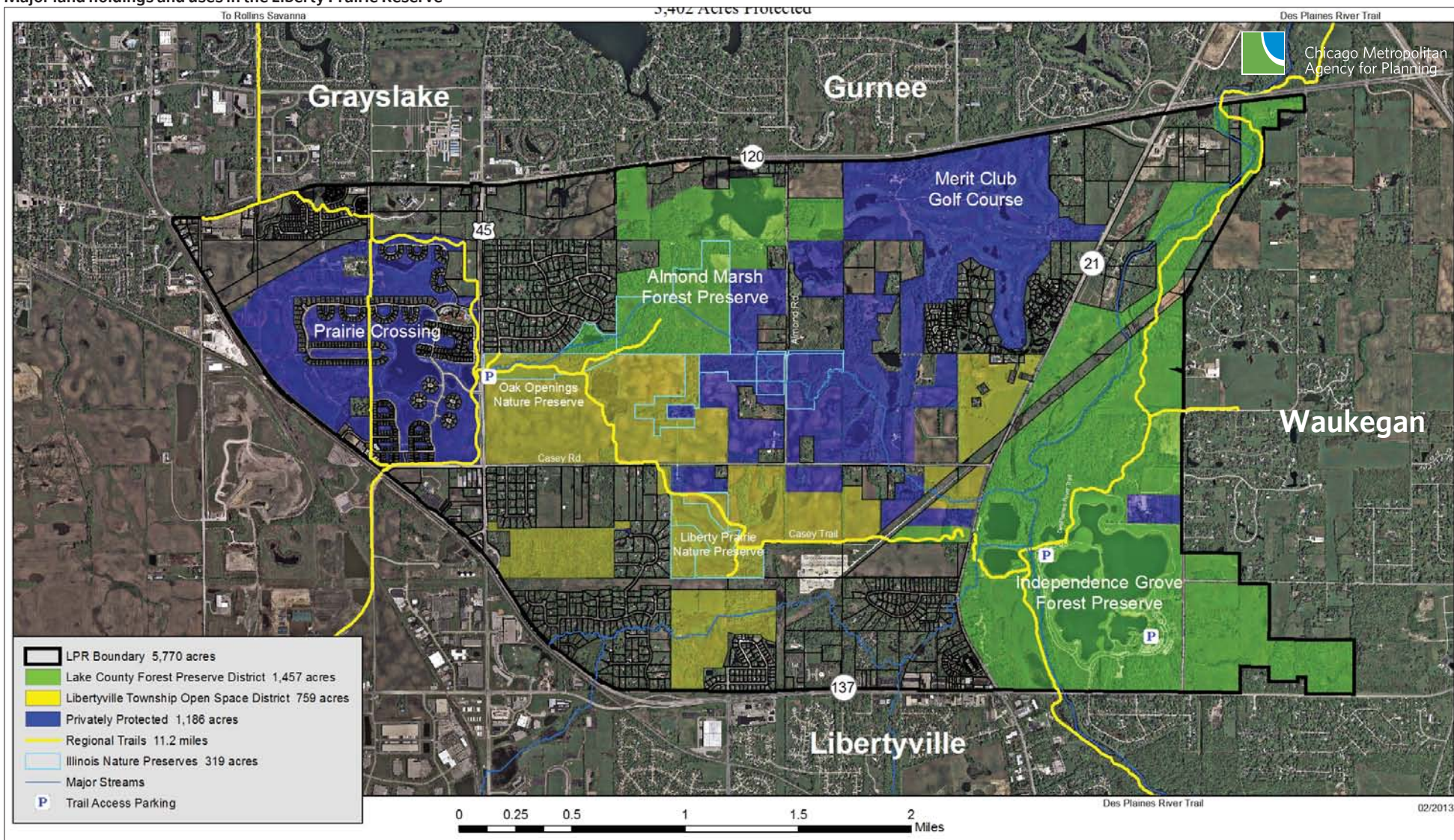
More than \$100 million in public and private money has been invested in land acquisition, conservation easements, trails, and habitat restoration within the Reserve. Twenty years later, many of the 1991 plan recommendations have been accomplished:

- Over 3,300 acres of natural areas and farmland on public and private lands have been legally protected from development through more than 100 separate land transactions and agreements.
- Over 12 miles of new public trails wind through some of the most scenic rural landscapes in Lake County.
- Water quality has improved and hundreds of acres of natural areas are actively managed.
- Three Illinois State Nature Preserves have been established on both public and private lands, demonstrating and safeguarding the unique natural heritage of the Reserve.
- Farm operations have expanded and diversified to include over 100 acres of sustainable, local organic production. Conventional grain farming has continued on nearly 700 acres.
- The Reserve was named one of four “Last Chance Landscapes in the U.S.” by Scenic America in 2000.

Located in the heart of Lake County between Libertyville, Grayslake, Gurnee, and Waukegan, the Reserve awaits fulfillment of its true potential and public benefit. To realize its original purpose and full public benefit, a group of ten public entities and non-governmental organizations gathered in 2012 and 2013 to document progress from the 1991 plan and create recommendations for the next twenty years.

The planning team that helped create this plan includes: Conserve Lake County, Chicago Metropolitan Agency for Planning (CMAP), Lake County Forest Preserve District, Lake County Departments of Planning, Transportation, and Stormwater Management, Liberty Prairie Foundation, Libertyville Township, Illinois Department of Natural Resources, Illinois Nature Preserves Commission, and Openlands. Several private landowners have been consulted and represented throughout this process.

Major land holdings and uses in the Liberty Prairie Reserve



Source: Conserve Lake County, 2012.

Principal Conclusions and Recommendations



Sandhill Crane family in tall grasses. Photo courtesy of Sandi Whitmore.

Expand Core Habitats

- Farmland adjacent to core habitats, and those considered highly erodible or hydric, should be considered for restoration to native plant and animal communities, increasing the habitat value to the most marginalized species in our region.
- Core habitat areas of 250 acres and larger, which provide the greatest wildlife benefits, should receive priority attention for long-range planning purposes.
- Opportunities to connect privately conserved habitat areas and publicly owned natural habitat should be explored and implemented wherever possible, depending on private landowner interest.

Most of the existing woodlands, prairies, and wetlands in the Reserve are fragmented and individually too small to support many of the species listed by the Illinois Department of Natural Resources as threatened, endangered, or in greatest need of conservation. However, the combined scale of the Reserve's protected lands provides refuges rarely found elsewhere in the region, for rare species dependent upon large blocks of contiguous habitat.



Great Blue Lobelia and Black-Eyed Susans in the Reserve. Photo courtesy of Conserve Lake County, 2013.

Support Ecological Management and Restoration

- Unify efforts across the entire landscape to control invasive species and conduct prescribed burns, using cooperative interagency agreements wherever possible.
- Halt the soil erosion that continues to impair the Reserve's surface waters, drawing heavily from the Bull Creek-Bull's Brook Watershed Plan (BC-BB Plan) of 2008.
- Encourage participation in the Conservation@Home program for sustainable landscaping on private properties within the Reserve.

For the past 25 years, millions of dollars have been invested in the restoration of natural resources and native habitats in the Reserve. The threats to these natural systems and the public and wildlife benefits associated with restoring them (cleaner water, less flooding, healthier ecosystems) compel us to continue this work throughout the vast natural areas found in the Reserve. Grant dollars should continue to be sought and leveraged to help support these efforts and innovative solutions, such as the \$81 million set aside for habitat restoration in the 2012 IL Route 53/120 Blue Ribbon Advisory Council (BRAC) report, as well as those specified in the 2008 BC-CC Plan.

Preserve More Open Space

- If the occasion arises to convey or transfer currently protected lands to a separate agency, this plan recommends the Lake County Forest Preserve District as the primary receiver of management and ownership responsibility unless a different and more appropriate entity is identified.
- Key parcels of open land along Almond Road, Casey Road, and IL Route 21 should be considered high priority for protection. This may be done through private conservation easement, public acquisition, or nature preserves dedication.
- There are opportunities to expand the Reserve boundaries, protected lands, greenways and trails east to I-94 and west to Alleghany Road. Deeper relationships with landowners should be developed to inform them of the opportunities and benefits of participating in the Reserve.

Since the 1980s, more than 3,300 acres of land have been protected in the Reserve through acquisitions, conservation easements, and other conservation agreements. This is an extraordinary achievement and speaks to the deep commitment of private citizens and public officials that has formed a Reserve system much greater than any individual preserve or parcel. Continuing a coordinated private and public approach can ensure future successes as well.

Transition Agriculture to “Biologically-based” Practices and Other Sustainable Operations

- Biological farming practices, as defined by the Midwest Bio-Ag organization, should be encouraged. These practices decrease harmful soil erosion, increase soil fertility, and reduce or eliminate the need for chemical fertilizers, pesticides, and herbicides
- Biological farming practices, including organic farming, reduce negative off-farm impacts to land and water health.
- Ecologically sustainable production models including mixed vegetable production, perennial grass farming, and other bio-based practices should be implemented where desired by landowners.



Small-scale, sustainable farm operation. Photo courtesy of Conserve Lake County, 2013.

Biological farming reduces chemical fertilizers and pesticides by using practices such as cover cropping and incorporation of biological-based nutrients. Achieving land and water health goals on the 800 acres of farmland in the Reserve can be accomplished through the implementation of biologically-based farming methods for all types of production, including large grain operations. Growing interests in sustainable and local food production and the leadership of the Prairie Crossing Farm Business Development Center have prompted some of the Chicago region's best and most successful examples of sustainable farming practices within the Reserve. New sustainable local food production operations are being launched in 2013 at Casey Farm and the Prairie Crossing Organic Farm. Additional opportunities should be explored.

Improve Public Access — Moving People and Vehicles to, through, and around the Reserve

- Recommendations from the June 2012 IL Route 53/120 BRAC report should be implemented in their entirety for an environmentally sensitive four-lane limited access parkway with a 45-mph speed limit. These recommendations should protect natural resources and enhance public access of the Reserve and IL Route 120. Should Route 53 be built, Almond Road should be closed (except for emergency vehicles), per the BRAC recommendations.
- The six-mile Casey Trail runs east to west through the heart of the Reserve. Its link to Independence Grove should be completed in 2014. It will provide access to the Reserve for people living in Grayslake, Round Lake, Mundelein, Green Oaks, and Waukegan.
- New trail connections that provide access to the Reserve and the Casey Trail should be built to connect the people who live to the north and to the south including a bike/pedestrian underpass at IL Route 120 as specified in the IL Route 53/120 BRAC recommendations. Almond Marsh Forest Preserve is currently isolated from other trail connections. A pedestrian/bike trail along the Almond Road corridor should be created to provide access to Almond Marsh parking lot and the Reserve's main Casey Trail. A looped grass path originating from Almond Marsh Forest Preserve's parking should be considered.
- The scenic views and rural character of Almond and Casey Roads should be protected. A heritage road designation, similar to that of McHenry County, should be considered for these roads. Should IL Route 53/120 be built, Almond Road should be closed (except for emergency vehicles) per the BRAC recommendations.

One of the best ways to further increase the public benefit of the Reserve is to make it accessible to the people who live nearby but are currently cut off from pedestrian or bike access. Thousands of people would benefit from trail connections coming from the north and south. Completing improvements to the major arterials surrounding the Reserve (U.S. Route 45, IL Route 21 in progress, and IL Route 137 proposed improvements) will reduce cut through traffic in the Reserve.



Bike riders near Casey Farms in Liberty Prairie Reserve. Photo courtesy of Sandi Whitmore.

Establish a Liberty Prairie Reserve Stakeholder Partnership (Planning Council)

- A Planning Council representing public officials and civic leaders should be formed and meet regularly to support integrated planning efforts and review progress toward the fulfillment of this plan.
- Coordinating these meetings with the Bulls Brook, Bull Creek Watershed group should be considered, given the importance of water quality and the significant overlap of stakeholders and geography of place.

The Reserve should be managed as an integrated whole so that the activities on any particular property do not adversely affect surrounding properties. Because many landowners, both public and private, have a vested interest in caring for the natural and agricultural resources of the Reserve, bringing their representatives together regularly can ensure efficiencies and successes necessary to achieve land and water health within the whole Reserve.

Learning from the Experience of the Liberty Prairie Reserve

The Reserve may seem much as it did 50 years ago to drivers on Casey and Almond Roads, but much has happened since then to protect it and restore it to its natural state. Several key land owning families have acted to preserve the landscape by conservation easements and gifts. Just as important, members of the public, including key county and local government officials, have come together to protect the land in what is now the Reserve. For the Reserve to succeed in the future, this partnership must continue.

The origin of the Reserve was in many respects the result of the settlement of litigation in 1986 involving Lake County and neighboring municipalities of proposals for dense development in the “Heartland triangle.” It could have led to the building of several thousand residences in central Lake County and inevitably to the dense development of the Reserve. The settlement caused county and local government officials and many citizens to work together to protect the land in what is now the Reserve.

During this same time, citizens of Libertyville Township supported a referendum to form the first township open space district in the state. In 1991, the first management plan for the Reserve was created with extensive input and partial funding from local citizens and was adopted by the Forest Preserve District and Libertyville Township boards. The newly created open space district acquired over 750 acres of land in the Reserve. The Forest Preserve District responded as well, acquiring over 1,400 acres in the Reserve at Almond Marsh and Independence Grove. Private land owners put over 1,000 acres in conservation easements. Prairie Crossing, the first conservation community in the region, was developed within the Reserve, leaving 60 percent of its land as open space. It was both a result of the Heartland litigation settlement and a financial and leadership catalyst for the Reserve itself.

A constant barricade to additional progress has been the 50-year dispute over whether IL Route 53/120 should be built as a high-speed expressway through Lake County and the Reserve. With the apparent settlement of that dispute by the 2012 agreement of the IL Route 53/120 BRAC on a state-of-the-art environmentally responsible parkway of no more than four lanes, there is the opportunity to take the Reserve to a new level.

In light of this complex history and continuing challenges, it is important that Lake County officials, representatives of other units of government and leaders from the private sector join together now in the creation of a “planning council” to assure progress in the Reserve in accordance with this Master Plan.



Small-scale, sustainable farm operation. Photo courtesy of Conserve Lake County, 2013.



Oak Opening in Liberty Prairie Reserve. Photo courtesy of Conserve Lake County, 2013.

1. Introduction

This plan is an update to the original plan for the Reserve — the OPRP of 1991 — and addresses many of the same elements. The 1991 plan was adopted by the Lake County Forest Preserve District and Libertyville Township. The original stated purpose of the Oak Prairie Reserve (now known as the Liberty Prairie Reserve) was “to provide a distinctive open space sanctuary under public and private ownership which will preserve and restore the area’s natural and historic landscape of agricultural fields, woodlands, wetlands, prairies, and farmsteads.”¹

Goal

The Liberty Prairie Reserve will be a model of exceptional land, water, and biodiversity health where public and private landowners manage their land in ways that sustain people, plants, and wildlife. We envision people enjoying, enhancing, and restoring the Reserve’s rich array of natural areas. Additionally, the Reserve’s agricultural values and heritage will be celebrated and continued in ways that support clean water, healthy soils, and a diversity of agricultural products and foods.

¹ White, John, William J. Johnson, and Thomas Hahn. “Oak Prairie Reserve Protection and Management Plan.” Prepared for the Lake County Forest Preserve District and Libertyville Township. Ecological Services: Urbana, Illinois, 1991. Page 13.

The OPRP contains a wealth of information that is still current and represents a number of benchmarks of existing conditions at the time it was adopted. In the ensuing 20 years, however, changes in and around the Reserve have occurred, including those to the physical, environmental, economic, and socio-political contexts. Increasing population of the Chicago region places escalating demands on the land and transportation networks in Lake County. Consequently, Conserve Lake County, CMAP, and a consortium of stakeholders interested in continuing to steward the natural, agricultural, and historic assets in and around the Reserve are reexamining the value, protection mechanisms, and long-term vision of the Reserve to update the plan to account for these changing conditions. These stakeholders (the Planning Team) included:

- College of Lake County
- Conserve Lake County
- Farm Business Development Center at Prairie Crossing
- Illinois Department of Natural Resources
- Illinois Nature Preserves Commission
- Lake County Board
- Lake County Department of Planning, Building, and Development
- Lake County Forest Preserve District
- Lake County Stormwater Management Commission
- Liberty Prairie Foundation
- Libertyville Township
- Openlands
- Local farmers Jeff Miller and Joe Lodesky

The time frame for this document is 15 – 20 years, through approximately 2030; however, it should be revisited and amended as needed to accommodate changing conditions and goals. This plan update is intended to help guide decision-making so that land use, management, and change are complementary to the goals of the Reserve. As such, this plan does not set targets, schedules, or other prescriptive measures for implementation of plan recommendations. Rather, it is a framework for landowners, managers, and stakeholders to support efforts and decisions that are consistent with the guidelines

and recommendations herein. It explores recommendations that relate to: jurisdiction, ownership, and tenancy; natural land management and preservation; agricultural land management; and trails and roads. One of the intents of the plan is to improve and coordinate management of natural resources with land uses and management in the Reserve so that they are mutually beneficial and to reconcile those that are mutually exclusive. A second intent is to move agricultural land within the Reserve towards management practices that improve land and water health, as well as towards a greater degree of local food production, consistent with the GO TO 2040 plan priorities. A third intent is to expand and restore core natural areas, very little of which remains. There are precious few locations in northeastern Illinois where such a landscape can be recreated, and the Reserve is a location with significant potential to do so. From a conservation point of view, the landscape-scale approach to restoring natural landscapes will help to protect and sustain the region's biodiversity.

The plan is targeted to land owners, land managers, local government staff and elected officials, county staff and elected officials, and representatives of regional and state agencies. Adoption by landowners will indicate general agreement with the direction and recommendations of the plan and the desired outcome; however, the path to achieve the desired outcome will be determined by individual landowners.

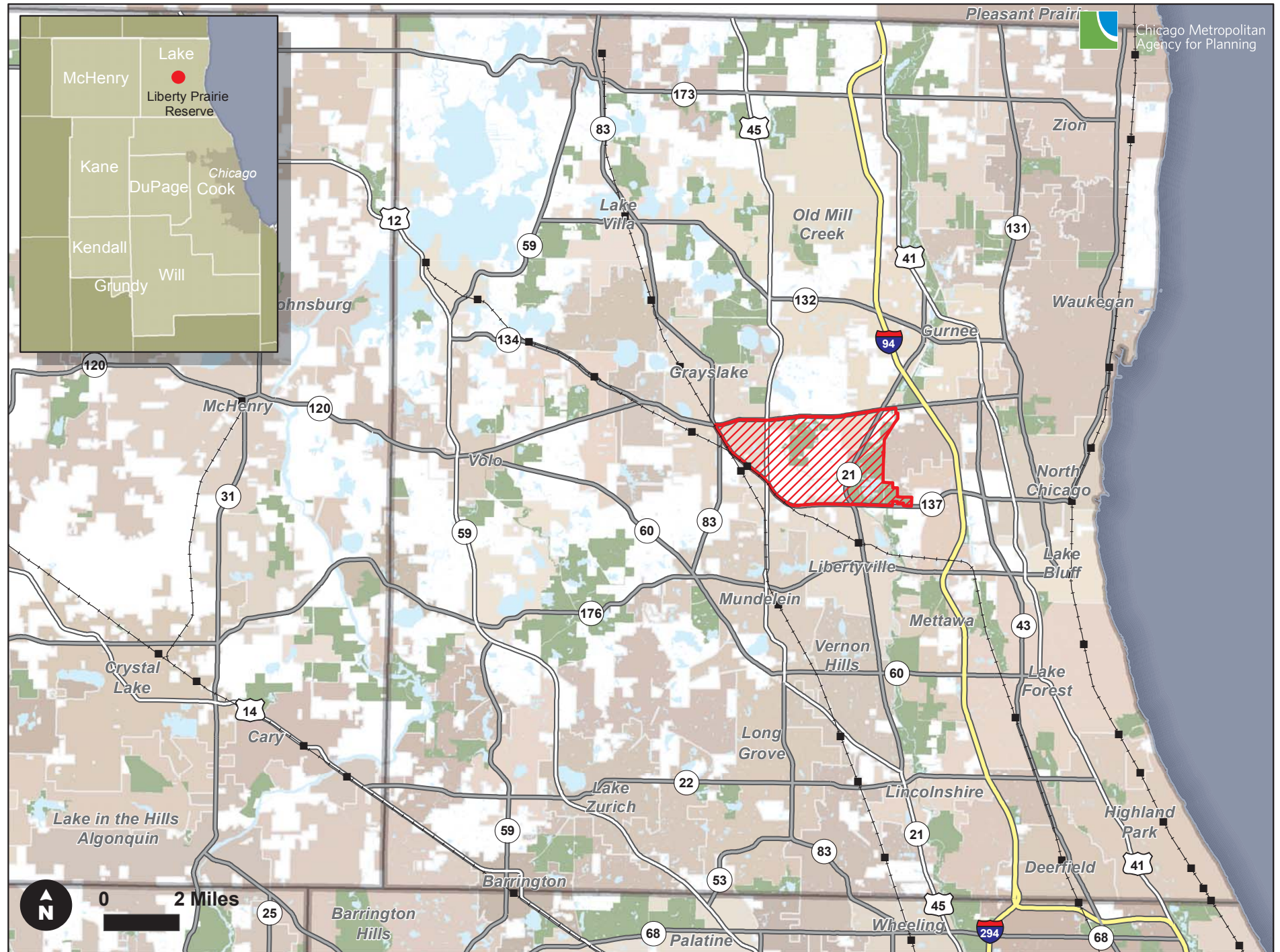
This plan update was developed through a number of planning meetings with Reserve stakeholders (the Planning Team) in 2011, 2012, and 2013. Conversations and planning sessions included the topics presented in this update, and included both high-level philosophical and strategic discussions as well as detailed, on-the-ground discussions about specific properties and management needs in the Reserve. This update represents the next, but clearly not the final, iteration of planning for the Reserve and its stakeholders. It should continue to evolve to address changing conditions and to protect and enhance the resources, values, and interests for which the Reserve was created.

To review progress toward plan implementation and to adapt the plan to changing conditions, the creation of a planning council to carry on this work with active involvement of Reserve stakeholders should be developed. This group would meet regularly to share ideas and information, to discuss the management recommendations of this plan, and to work towards common goals for the Reserve while also achieving individual landowner goals.



Restoration planting at Aaron's Prairie.
Photo courtesy of Conserve Lake County, 2013.

Figure 1: Liberty Prairie Reserve in Lake County



Source: Chicago Metropolitan Agency for Planning, 2012.

2. Existing Conditions

The Reserve is a 5,800 acre conservation area in central Lake County, Illinois. More than forty years of collaborative public and private efforts have resulted in an assemblage of natural areas, working farmland, trails, and a vibrant conservation community of people. The Reserve includes nearly 3,400 acres of preserved natural areas and farmland that create an oasis of life in the midst of a highly developed part of the Chicago region.

Currently, approximately 2,500 people live and several hundred people work in the Reserve. The Reserve increases the quality of life for people who live in or near it by improving the health of the land, water, wildlife, and food production and providing a natural setting in which to live, work, and recreate. Its historic character is a unique combination of protected natural areas, residential communities, and active agricultural lands remains today, as does its mosaic of public and private land owners. See **Figure 1: Liberty Prairie Reserve in Lake County**.

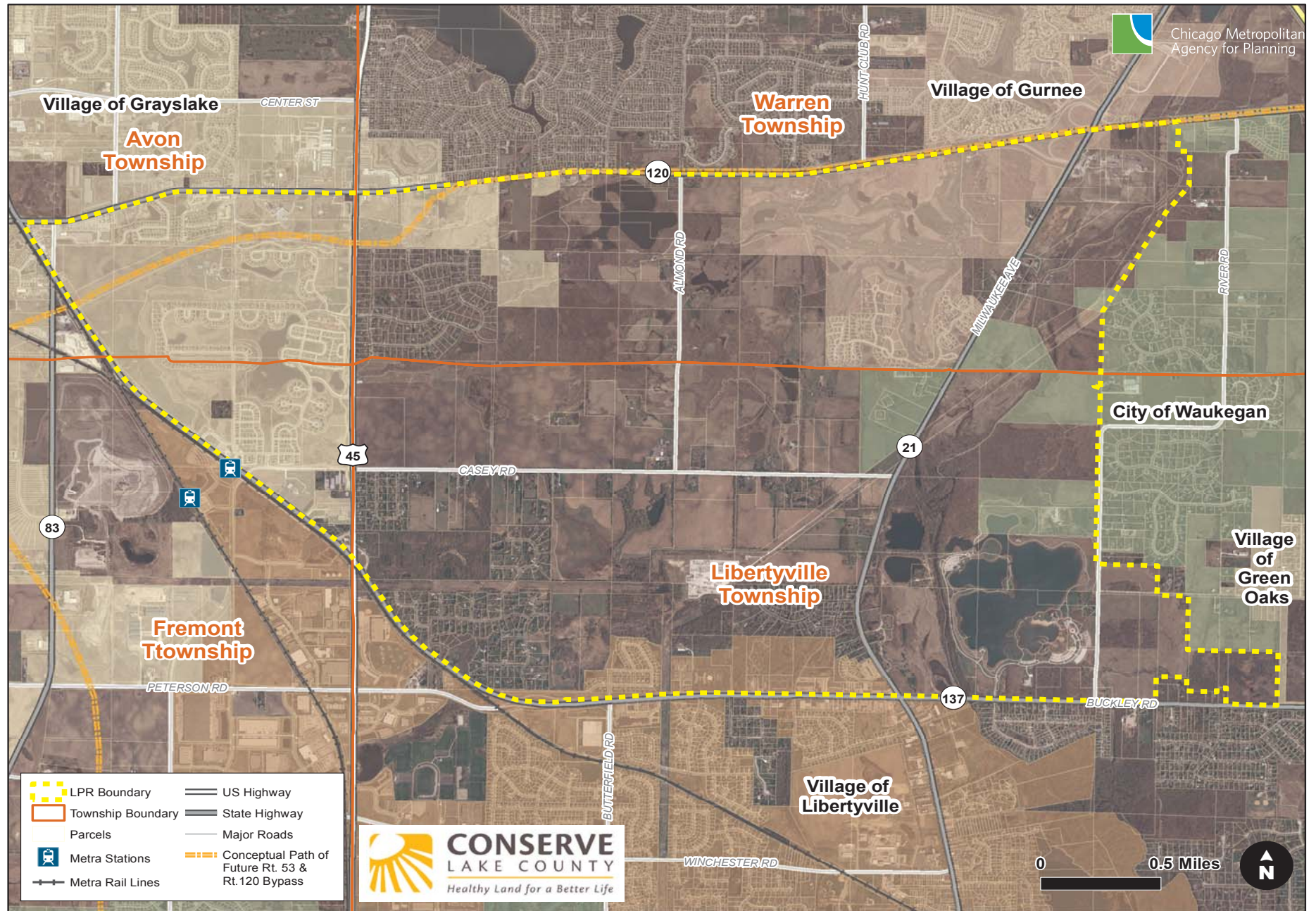
Over the past 20 years a variety of individuals and public and private groups has worked together to maintain and enhance the Reserve, including:

- Conserve Lake County (formerly the Liberty Prairie Conservancy)
- The Conservation Fund
- Illinois Nature Preserves Commission
- Illinois Department of Natural Resources
- Lake County Forest Preserve District
- Liberty Prairie Foundation
- Libertyville Township
- Openlands (a regional land conservation organization)
- The Nature Conservancy
- Private landowners

These groups and others have been stewards of the Reserve for over 30 years, protecting its cultural and natural heritage and helping each other to manage its blend of private land and public open space. Through conservation easements, public acquisitions, voluntary conservation easements and deed restrictions to limit development, and other land use planning tools, the Reserve has remained protected for the enjoyment of Lake County residents and visitors alike.

This **Existing Conditions** section of the plan presents the “State of the Reserve” as of 2012. It does not update biological information found in the original 1991 plan. Rather, it describes the current state of physical, land use, ownership, preservation, transportation, infrastructure, and jurisdictional boundary and management factors.

Figure 2: Liberty Prairie Reserve Local Government Jurisdiction



Source: Chicago Metropolitan Agency for Planning, 2012.

A. Ownership in the Reserve



Aerial photograph showing the major landscapes of the Reserve: farmland, prairie under restoration, residences, woodlands, and wetlands (the Almond Marsh). Photo courtesy of Conserve Lake County, 2013.

The Reserve is a mosaic of adjacent and in some cases overlapping jurisdictions that are managed and controlled by the individual jurisdictions, owners, and tenants of each parcel. It sits in the heart of Lake County between Libertyville, Grayslake, Gurnee, and Waukegan. Within the Reserve, nearly 3,400 acres of natural areas and farmland on

public and private lands have been legally protected from development through more than 100 separate land transactions and agreements. Various land owners have partnered to achieve common goals of preservation, restoration, and an increase in the appropriate public use and appreciation of the Reserve.

Local Government Jurisdictions

The Reserve boundary is not a political jurisdiction and was not set by a government entity, but rather through a collaborative process with public and private stakeholders. It is bound by IL Route 120 to the north, IL Route 137 to the south and west, and the Des Plaines River valley to the east. **Figure 2: Local Government Jurisdiction** displays how the Reserve spans parts of several local governmental entities in Lake County, including portions of:

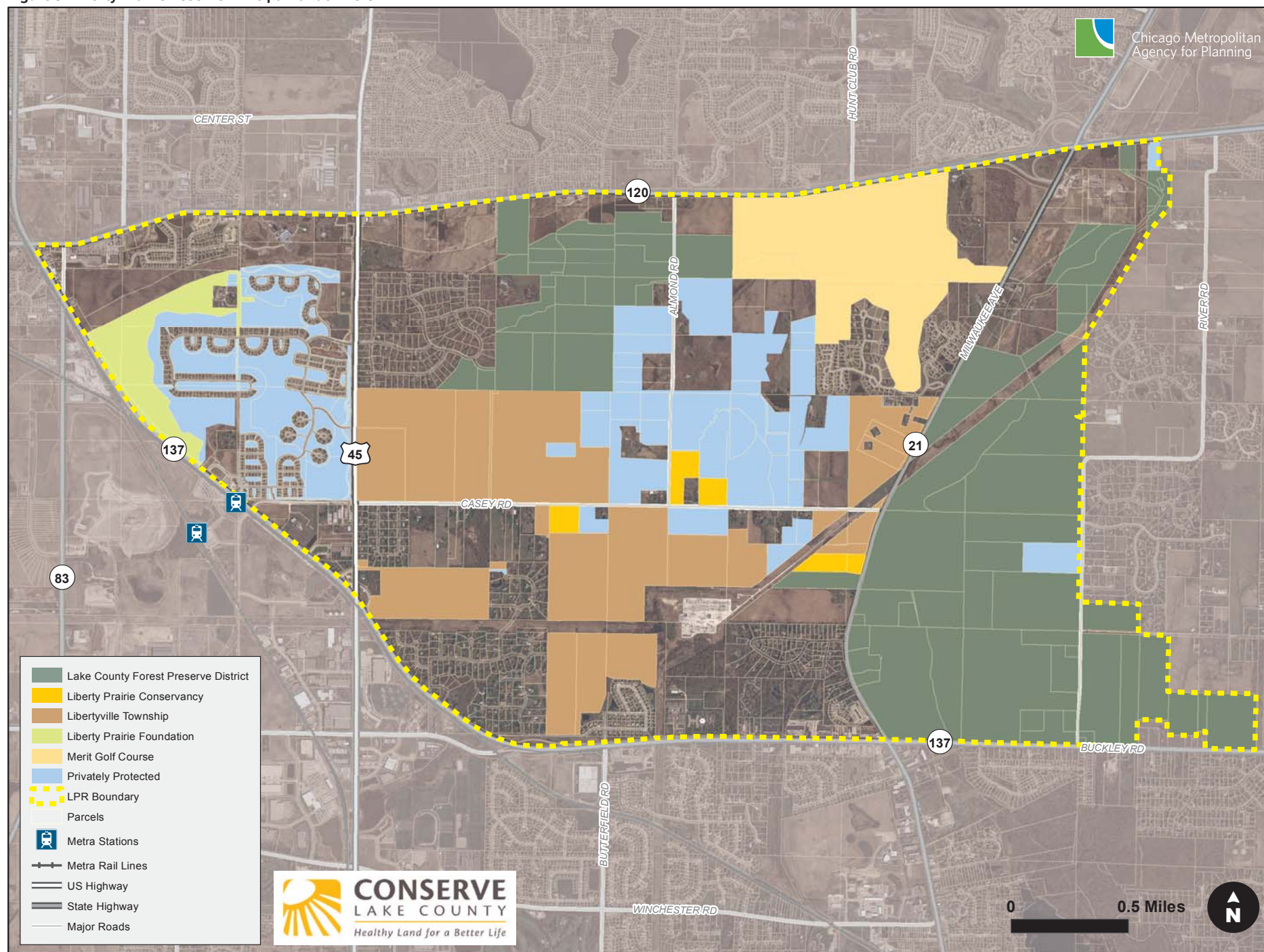
- Avon Township
- Fremont Township
- Village of Grayslake
- Village of Gurnee
- Lake County (unincorporated)
- Village of Libertyville
- Libertyville Township
- Warren Township
- City of Waukegan

While municipalities have land use authority over the small parts of the Reserve within their jurisdiction, the majority of the Reserve falls within unincorporated Lake County's regulatory jurisdiction. Roads are managed and maintained by a number of agencies including the municipalities, townships, Lake County, and the State of Illinois, as discussed in the following **Transportation Networks** section.



Liberty Prairie Reserve sign on land donated by a private landowner.
Photo courtesy of Conserve Lake County, 2013.

Figure 3: Liberty Prairie Reserve Principal Landowners



Source: Chicago Metropolitan Agency for Planning, 2012.

Land Use and Ownership

Land ownership within the Reserve is a patchwork of public, private, and nonprofit land holders. From its establishment, many of the land holders in the Reserve created a strong vision to use their properties in a way that maintains the open and rural character of the area.

The largest landowners in the Reserve include both public and private entities, as shown in **Figure 3: Principal Landowners**.

- The Lake County Forest Preserve District is the largest landowner in the Reserve, controlling 1,456 acres including the Almond Marsh and Independence Grove Forest Preserves. Large portions of Almond Marsh are designated as a state nature preserve. Independence Grove is the District’s most popular preserve and provides a variety of recreational opportunities for nearly 1 million visitors annually.
- Libertyville Township was the first Township in Illinois to establish an Open Space District in 1985. The Township is a major landowner in the Reserve with 760 acres. Liberty Prairie and portions of Oak Openings state nature preserves are dedicated on Township open space land.
- The Merit Club Golf Course is a privately owned 334-acre golf club in the northeast part of the Reserve that is protected by a conservation easement held by Openlands.
- The Liberty Prairie Foundation owns 91 acres of the protected open space in the Prairie Crossing conservation residential community that includes residential uses, open space preservation, organic food production, and a network of trails. Occupying the northwest corner of the Reserve, the Prairie Crossing conservation community has committed over 60 percent of its 677 acres to protected open space.

Agriculture is also a prominent open space land use in the Reserve. There are 23 separate owners of farmland within the reserve, ranging from private families to public entities to foundations. Libertyville Township and the Liberty Prairie Foundation are the two single largest owners of agricultural lands, together comprising about 55 percent of the 834 acres in production.²

Table 1. Farmland Ownership

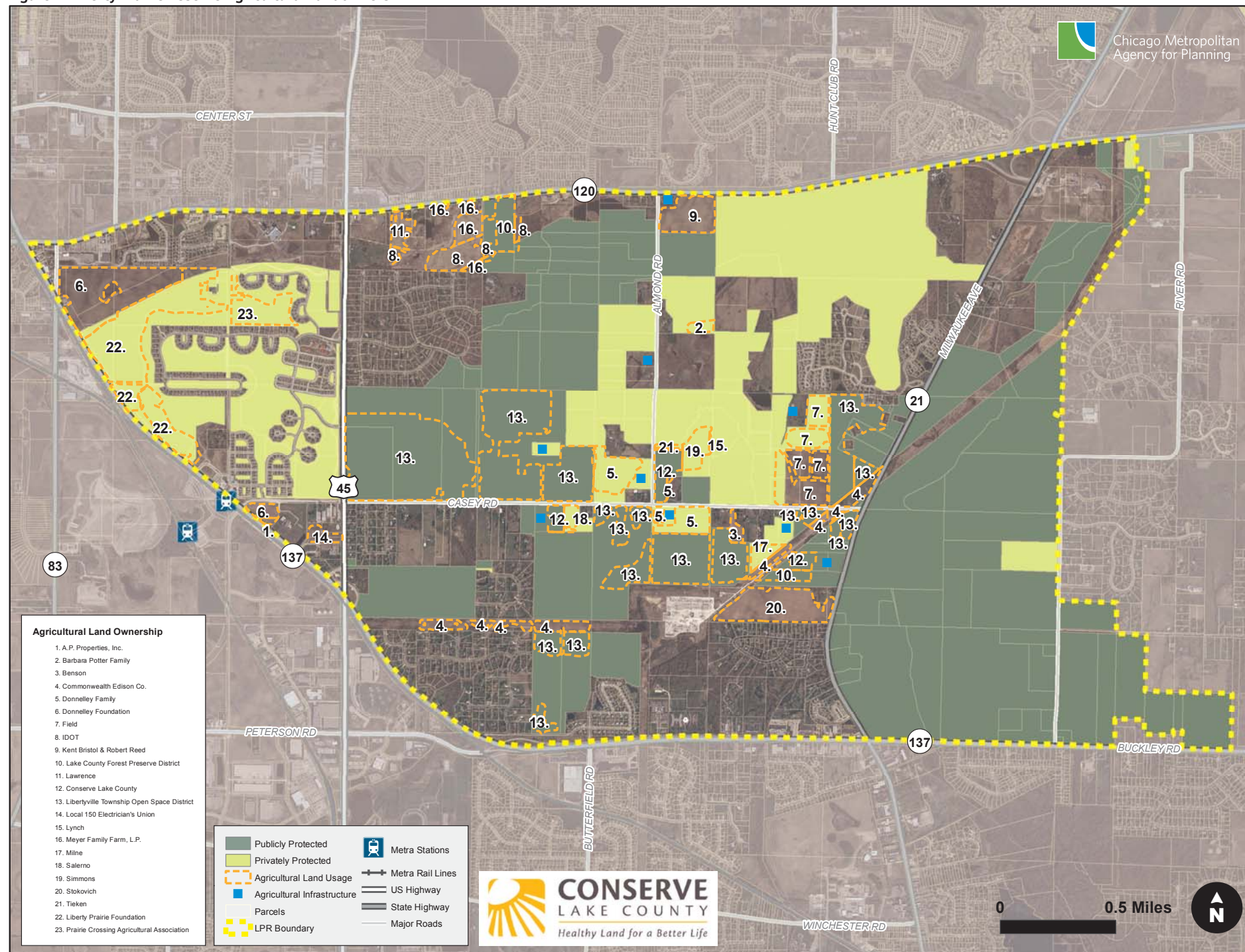
Libertyville Township	362 acres	Tieken	16 acres
Liberty Prairie Foundation	88 acres	Meyer	13 acres
Gaylord and Dorothy Donnelley Foundation	62 acres	Simmons	11 acres
Field	47 acres	Lynch	8 acres
Stokovich	36 acres	Lawrence	7 acres
Donnelley	34 acres	Milne	6 acres
Exelon Company	24 acres	Local 150 Union	5 acres
Conserve Lake County	23 acres	Salerno	4 acres
Illinois Department of Transportation	22 acres	Benson	4 acres
Bristol	21 acres	Potter	3 acres
Lake County Forest Preserve District	20 acres	A.P. Properties, Inc	1 acre
Prairie Crossing Stable	17 acres		

Source: Conserve Lake County, 2013.

Figure 4: Agricultural Landowners and **Table 1** display the various owners of the 834 acres of agricultural land. While much of this agricultural land has been in corn and soybean production over the past four decades, other kinds of agricultural production are increasing including organic vegetables, hay and small livestock operations such as chicken, pigs, goats, and cattle. Much of the current agricultural land is adjacent to managed and protected natural areas. Some of these farmed parcels should be assessed for their value as restored natural areas in comparison to their agricultural value, or for ecologically sustainable farming practices that may be more supportive of nearby natural areas than current farming practices. This is explored further in the Recommendations section of the plan. With two exceptions (Lynch and Tieken) all of the production is done by tenant farmers.

2 This figure represents the number of acres in production, compared to 972 acres of agricultural land use, some of which are not in agricultural production.

Figure 4: Liberty Prairie Reserve Agricultural Landowners



Source: Chicago Metropolitan Agency for Planning, 2012.

While single-family, multi-family, commercial, and institutional land uses do exist in the Reserve, the majority of land (approximately 70 percent) is open space including natural and agricultural lands. These landscapes are the primary uses addressed by this plan update. **Figure 5: Land Use** displays the current land uses in the Reserve based on Lake County's public parcel geography; acreages are reflected in **Table 2**.

Cooperation between public and private land owners in the Reserve is important to ensure the continued protection of the natural ecosystems, open character, beauty, and productivity of the area, particularly due to the impact of the various land uses. The collaborative nature of the landowners' relationships is necessary for continued conservation, as well as the integration of sustainable landscape practices across the different land uses of the Reserve.

Table 2. Liberty Prairie Reserve Land Use

LAND USE CATEGORY	ACRES	%
Preserved Open Space	2900	53%
Residential	1049	19%
Agricultural	972	18%
Institution	195	4%
Utilities and Communications	187	3%
Commercial	170	3%
Undeveloped Land	16	<1%
Office and Industrial	15	<1%
Total *	5504	100%

* This total does not include approximately 300 acres of road right-of-way in the Reserve.
Source: Conserve Lake County, 2013.

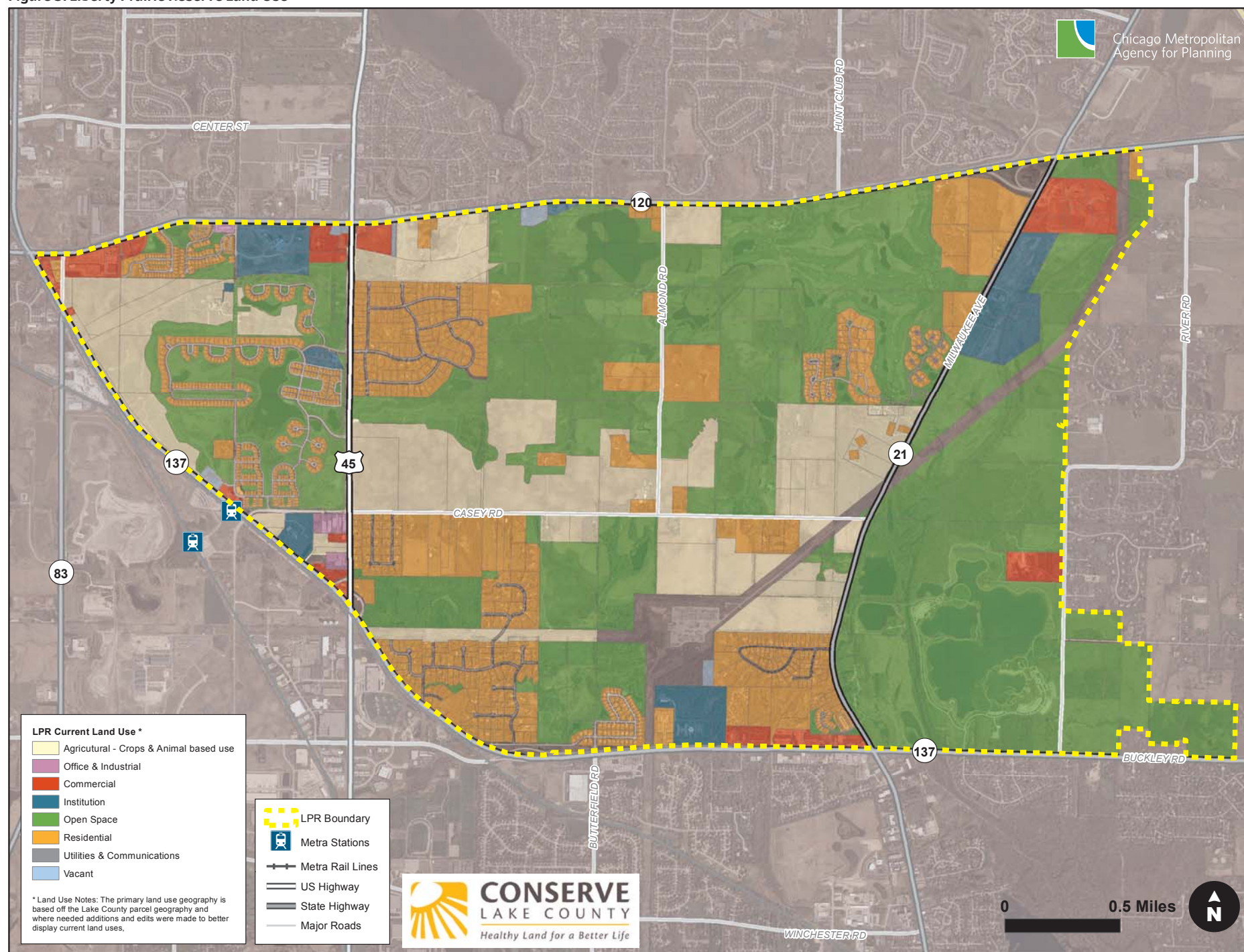


Aerial view of the Reserve in autumn. Photo courtesy of Conserve Lake County, 2013.

Tenancy and Tenure of Agricultural Land

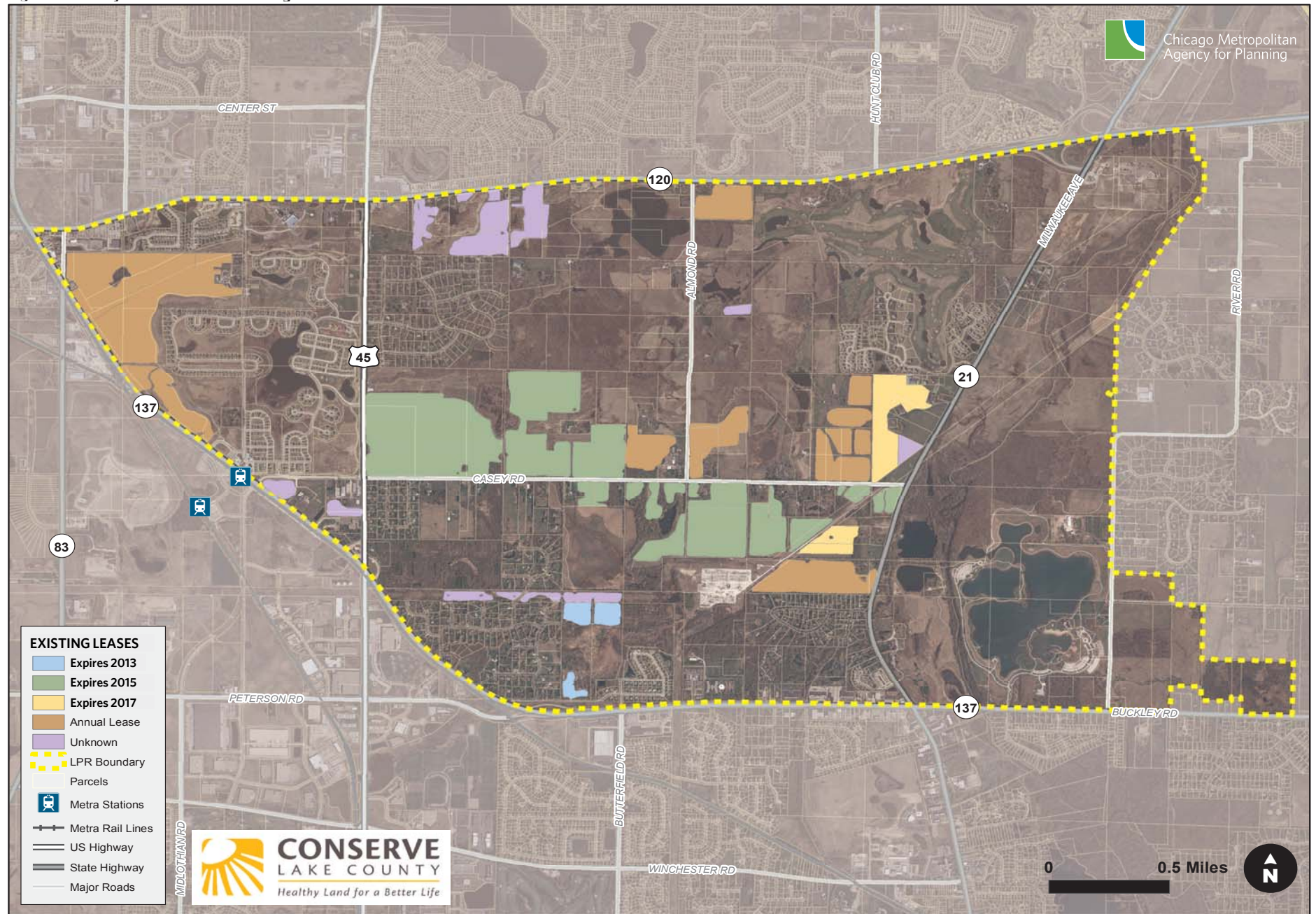
The majority of commercial agricultural land in the Reserve is leased to tenant farmers. Tenant farming has been a part of the Reserve's agricultural fabric for many decades, from multi-generational conventional family farmers to newer small-scale family farm enterprises at Prairie Crossing and Casey Farm. Overall, leasing terms are an important factor in determining farming practices and operations, and while leases / license agreements can include requirements for sustainable farming practices, this is only one of a number of ways to encourage more sustainable operations. These concepts are explored further in the Recommendations section of the plan. Some agricultural land in the Reserve is leased annually while other leases have longer terms. The range of lease terms or license agreements is displayed in **Figure 6: Agricultural Land Tenancy** (page 28).

Figure 5: Liberty Prairie Reserve Land Use



Source: Chicago Metropolitan Agency for Planning, 2012.

Figure 6: Liberty Prairie Reserve Existing Farm Leases



Source: Chicago Metropolitan Agency for Planning, 2012.

B. Land Management and Ecosystem Preservation



Great Blue Lobelia and Black-Eyed Susans in the Reserve. Photo courtesy of Conserve Lake County, 2013.

The Reserve's preserved lands contribute to preserving the diverse ecological resources of the northeastern moraine region of Illinois. The Reserve serves as a valuable resource for refuge to native flora and fauna. Lake County is home to more listed threatened and endangered species than any other county in the state, an honor and a responsibility. It also protects important soil and water resources. For these reasons, many stakeholders expressed a strong desire for the expansion of natural areas through ecological restoration and land management.

Historical Description of Open Spaces in Lake County

"Where I grew up the knotted burr oaks stood, their boughs so long they arched down to the ground again. And it was under these living arches that my people came driving their wagons. They saw the green and bronze of the first of the prairie grasses, the wild gardens of the new world flora; they saw the black earth, and they called these spots the oak openings. The trees were spaced wider and wider, pastoral kings, each with his own realm of high meadow."

— Description of Kennicott Grove in nearby Glenview, Lake County, Illinois. By Donald Peattie, in *"A Prairie Grove: A Naturalist's Story of Primeval America,"* The Literary Guild of America: 1938.

Land Protection

Land preservation efforts began in the Reserve in 1977 with a 13-acre conservation easement on private property. That easement protected an oak woodland and remnant prairie on Marshall and Jamee Field's "Willow Farm" property, located along Casey Road near Libertyville. This was Illinois' first conservation easement which followed from state enabling legislation in 1976. Since then, more than 80 acquisition and easement transactions have been completed in the Reserve protecting 3,383 acres. See **Figure 7: Reserve Protected Areas**.

Conservation easements, legally binding agreements that restrict development rights, protect nearly 1,000 acres of the Reserve. Most of these easements are held by nonprofit conservation organizations like Conserve Lake County and Openlands; however, some are held by Lake County Forest Preserve District and Libertyville Township. Additionally, the Illinois Nature Preserves Commission has dedicated three state nature preserves in the Reserve, providing the state's highest level of protection in order to protect extremely rare and globally threatened Illinois habitats such as graminoid fens, sedge meadows, and mesic prairies. Notable conservation land holdings in the Reserve are included in **Table 3**.

The proximity of the public and private conservation land holdings is the result of extraordinary coordination and collaboration among the stakeholders in the Reserve. These 3,383 acres of protected lands form one of the largest conservation areas in Lake County, and one of a number of focal points for conservation efforts in Lake County. **Figure 8: Regional Protected Areas** (page 33) displays the Reserve within the context of protected areas in the surrounding area.

Although many of the land preservation objectives originally outlined in the OPRP have been completed, some strategically important lands that are vulnerable to development should be considered for acquisition by a conservation organization, conservation easement or limited conservation development. These large unprotected parcels of land are primarily found along Almond and Casey Roads and along Milwaukee Avenue. The recommendation section of this plan discusses these areas in greater detail.

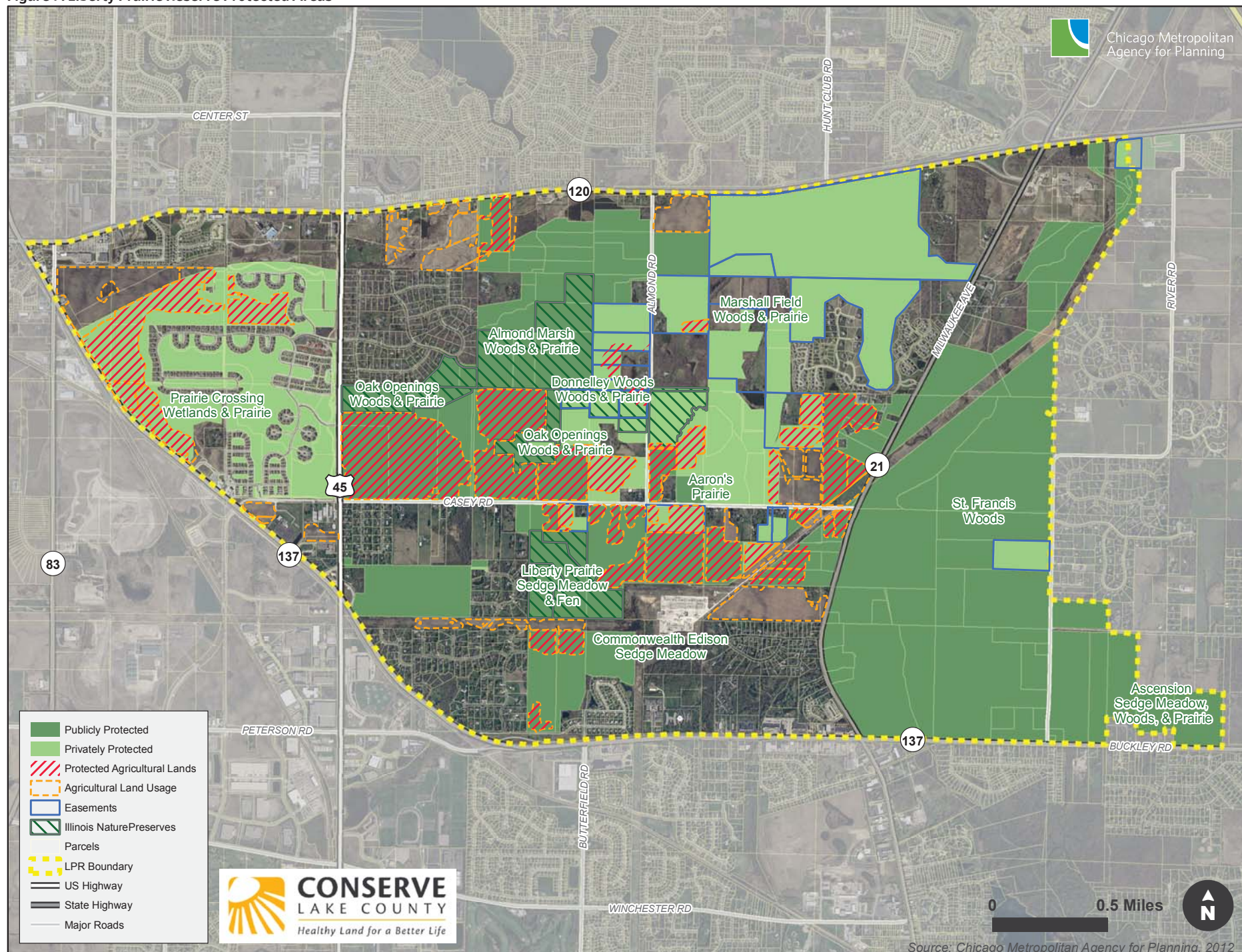
Table 3. Conservation Land Holdings

JURISDICTION	LOCATION	TYPE	ACREAGE
Lake County Forest Preserve District	Almond Marsh	Fee simple ownership	321
Lake County Forest Preserve District	Almond Marsh	Easement	180
Lake County Forest Preserve District	Casey Farm	Fee simple ownership	15
Lake County Forest Preserve District	Independence Grove	Fee simple ownership	1,101
Lake County Forest Preserve District	Independence Grove	Easement	20
Libertyville Township Open Space District	Casey Road North	Fee simple ownership	312
Libertyville Township Open Space District	Casey Road South	Fee simple ownership	196
Libertyville Township Open Space District	Milwaukee Avenue	Fee simple ownership	87
Libertyville Township Open Space District	U.S. Route 45	Fee simple ownership	73
Libertyville Township Open Space District	IL Route 137	Fee simple ownership	92
Openlands	NW, SW, and NE Quadrants of Reserve	Easement	501
Conserve Lake County	Casey Farm	Fee Simple	13
Conserve Lake County	Almond and Casey Roads	Easement	176
The Nature Conservancy	North of Casey Road, East of Almond Road	Easement	40
The Conservation Fund	Prairie Crossing	Easement	198
The Illinois Nature Preserves Commission	Central Reserve	Nature Preserve/ Easement	322
Prairie Crossing Home Owners Association	Prairie Crossing common areas	HOA Covenant	155
Private landowners	North of Casey Road, east of Almond Road	50 year deed restriction	96

Many properties within the Liberty Prairie Reserve possess multiple levels of protection. For example, while there are 322 acres of Illinois Nature Preserves within the Reserve, the majority of those sites are also protected by public entities such as the Lake County Forest Preserve District and Libertyville Township. As such, individual parcels are often double or even triple counted in this table.

Conserve Lake County, 2013.

Figure 7: Liberty Prairie Reserve Protected Areas



Source: Chicago Metropolitan Agency for Planning, 2012.

Source: Chicago Metropolitan Agency for Planning, 2012.

Land Management

Whether or not land is preserved — i.e., protected from development — its natural areas must be managed or will lose ecological function and integrity. Managing natural communities across jurisdictional boundaries presents difficulties. In the Reserve, it is not unusual for natural communities to encompass land owned by four or more different land owners. Managing natural communities in this context is most effective when clearly-defined objectives are applied across the biological community being managed. For example, the oak hickory woodland that spans more than a mile from U.S. Route 45 east to IL Route 21 covers lands owned by dozens of land owners including Arbor Vista subdivision residents, Libertyville Township, Lake County Forest Preserve District, and numerous private owners along Almond and Casey Road. A single set of management objectives for these woodlands regardless of jurisdiction or ownership would help assure consistent and appropriate stewardship of this woodland over time.

Managing surface and ground water function and quality also presents unique challenges. Native plant and habitat restoration often lacks desired outcomes without the restoration of natural hydrologic functions. Much of the 800 acres of protected agriculture land in the Reserve is being drained through underground networks of drain tile that has significantly altered the natural hydrology of the land. The quality of water within streams and wetlands has been negatively impacted from the runoff of nutrients and chemicals applied to lawns and agricultural fields and chloride-based deicers applied to roads. Restoration of drained hydric soils and the surrounding buffers allows for the return of natural hydrological conditions which will greatly reduce the movement of soil and pollutants into down-stream natural areas.

Due to its geography, settlement patterns and land use history the natural resources of the Reserve include a rich variety of intact and remnant woodland, wetland and prairie community types, as shown in **Figure 9: Pre-Settlement Vegetation** and **Figure 10: Water and Natural Resources** (pages 34 and 35). Some of the natural communities are rare, even globally threatened such as the graminoid fen, mesic prairie, and sedge meadow. These rare plant and animal communities harbor at least 18 federal and state threatened plant and animal species such as slender bog arrow grass and the black-crowned night heron.

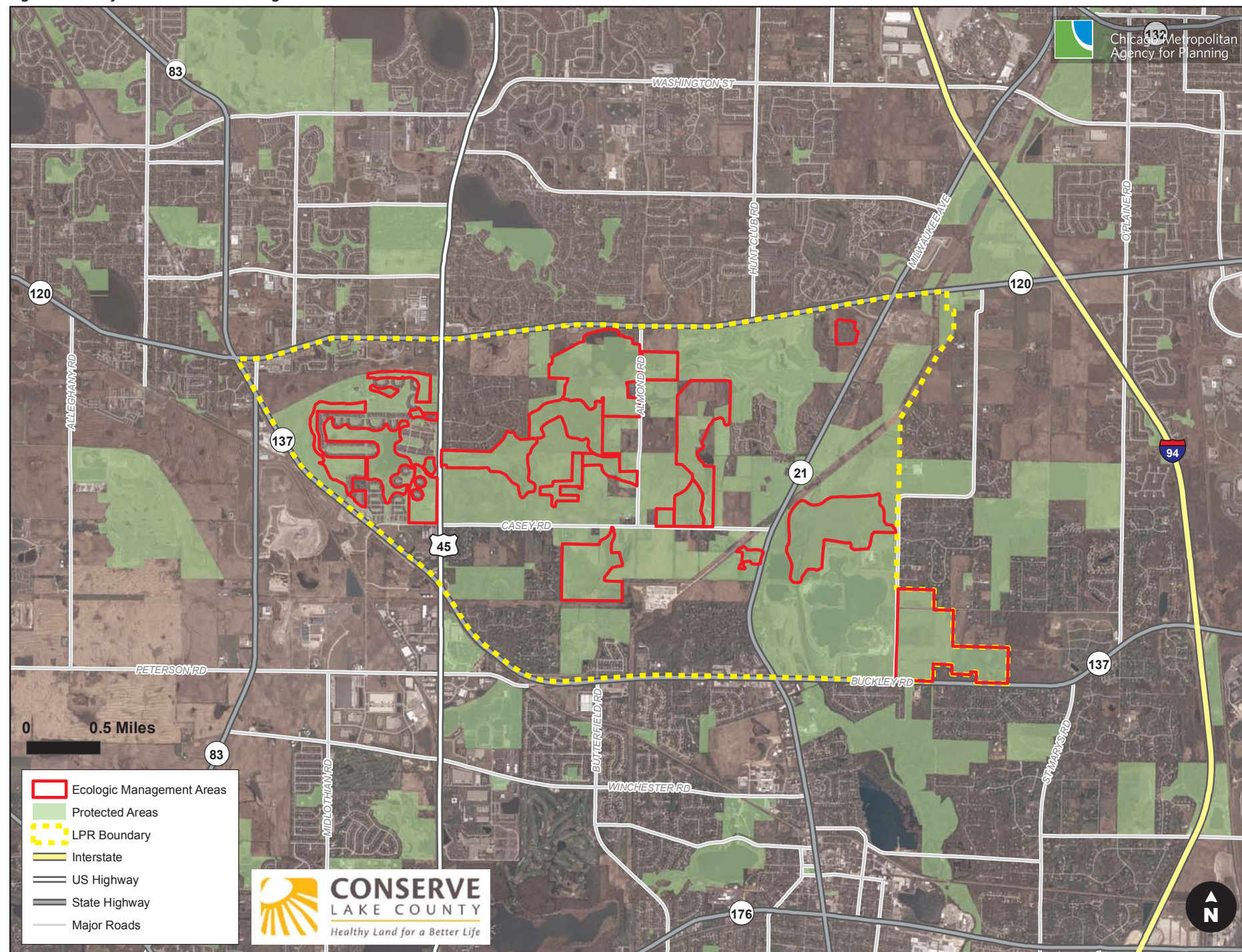


Heron rookery at Almond Marsh. Photo courtesy of Janet and Phil Hauck.

The Illinois Natural Area Inventory, first completed in 1977, listed a number of the sites as priorities for protection within the Reserve, all of which have been protected. Because three areas of the Reserve contain biological diversity (and heritage) of state-wide significance they have been designated as Illinois State Nature Preserves.³ These nature preserves (and associated buffers) occur on both public and private properties within the Reserve and are known as Oak Openings, Liberty Prairie, and Almond Marsh. A team of land managers and practitioners who actively manage these sites provided the following notes on existing conditions for several key natural areas on public and private lands within the Reserve, as shown in **Figure 11: Key Natural Areas** (page 37).

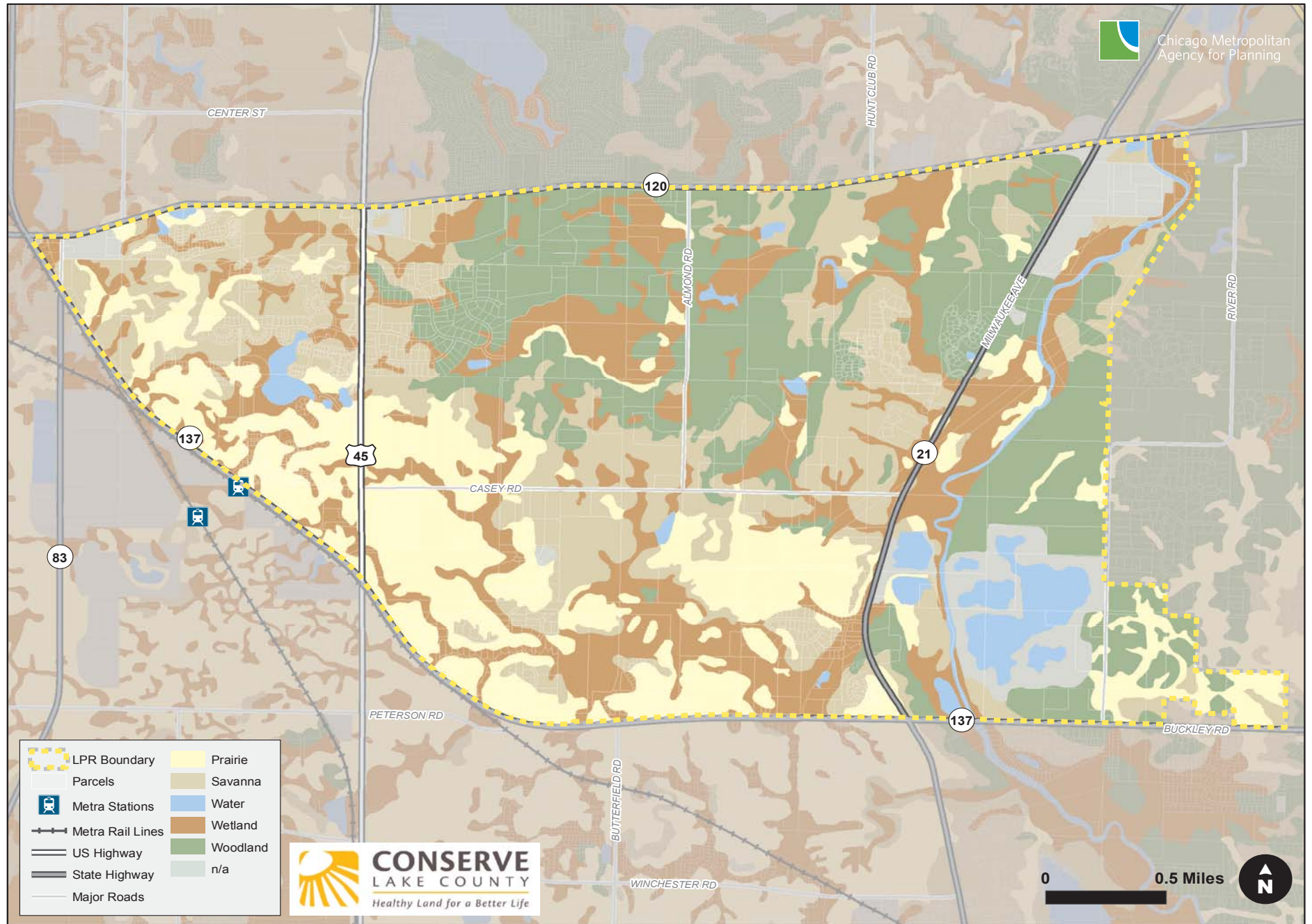
³ Permanently protected by state law, nature preserves are private and public lands that have rare plants, animals, or other unique natural features. Ranging in size from one acre to more than 2,000 acres, nature preserves protect tall grass prairies, oak groves, sandstone bluffs, wetlands, bogs, and other threatened natural areas that are the last remnants of the Illinois wilderness. <http://dnr.state.il.us/inpc/>.

Figure 8: Liberty Prairie Reserve and Regional Protected Areas



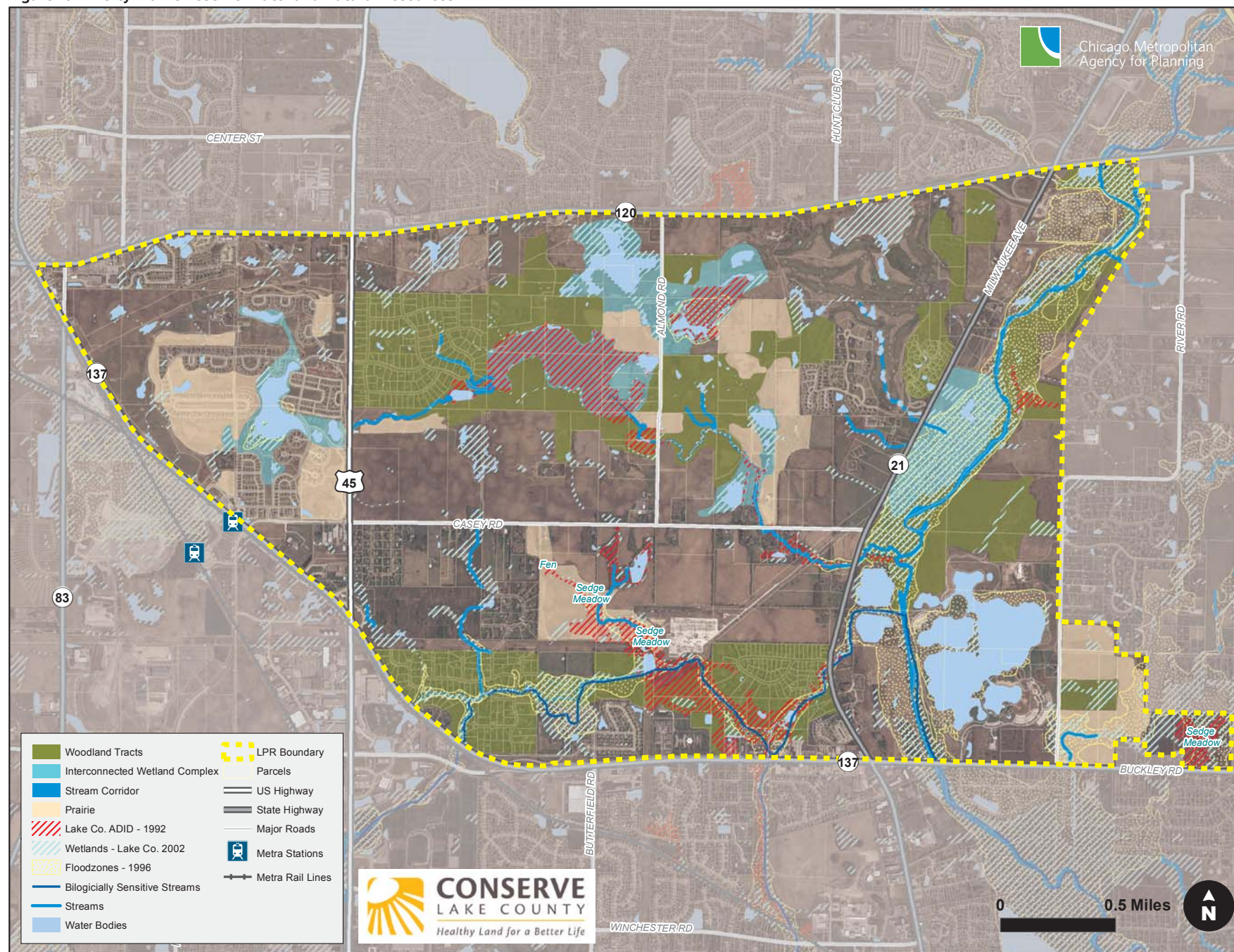
Source: Chicago Metropolitan Agency for Planning, 2012.

Figure 9: Liberty Prairie Reserve Pre-Settlement Vegetation



Source: Chicago Metropolitan Agency for Planning, 2012.

Figure 10: Liberty Prairie Reserve Water and Natural Resources



Source: Chicago Metropolitan Agency for Planning, 2012.



Sedge Meadow restoration at Liberty Prairie. Photo courtesy of Conserve Lake County, 2013.

Liberty Prairie, Sedge Meadow and Fen

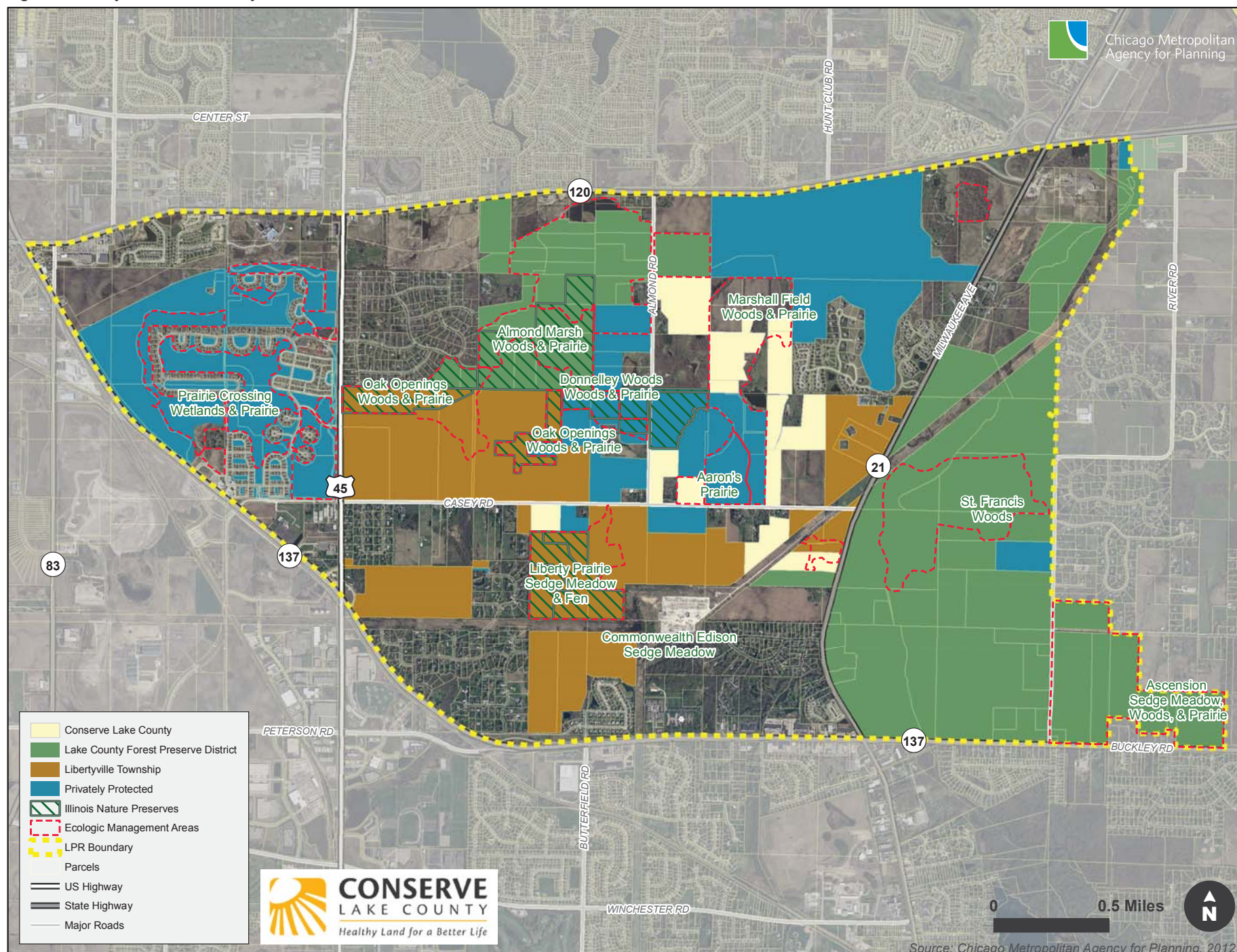
The Liberty Prairie site is owned and managed by Libertyville Township with support from Conserve Lake County and a dedicated group of volunteer stewards. This Illinois State Nature Preserve has been actively managed for 15 years, including invasive species control, seed and plug planting, stream bank erosion control, and controlled burning. Large grant-funded projects include the unearthing and replanting of a sedge meadow buried by agricultural activity, and a major prairie buffer expansion. A high quality wet prairie remnant and graminoid fen are now surrounded by buffers of prairie and sedge meadow after more than a decade of active land management activities. Extensive invasive species control and controlled burning has helped maintain the high quality areas, and the impact of agricultural fields has been reduced by retiring several fields uphill from the prairie and sedge meadow.

The site continues to face challenges including genetic isolation, invasive species, and stream erosion. Erosion also contributes to sediment and nutrient transport to nearby water resources, which can cause stream degradation. There is concern about the potential loss of species such as the smooth green snake and *Paraphilaenus parallelus* (a leafhopper), an insect listed as a “Species in Greatest Need of Conservation” in the Illinois Wildlife Action Plan, which was documented on site. The property will benefit greatly from continued aggressive invasive species control and the phased implementation of stream headwaters protection that is presently underway.

Oak Openings Woods and Prairie

Oak Openings is owned and managed by Libertyville Township with support from Conserve Lake County and a dedicated group of volunteer stewards. This Illinois State Nature Preserve buffer is largely riparian oak woodland that runs along Bull’s Brook and is bordered by Libertyville Township’s regional trail. An adjacent farm field was taken out of production in the late 1990s and replanted to prairie, and a mitigation project east of the Preserve preserved a marsh wetland. Stream bank and wetland restoration projects, as well as invasives control and controlled burning, have dramatically improved this site. Plug, acorn, tree, and seed planting have occurred where the invasive woody species removal has taken place. Still invasive species continue to affect much of the natural communities described above. Oak Openings includes one of the public parking areas for trail access within the Reserve.

Figure 11: Liberty Prairie Reserve Key Natural Areas



Source: Chicago Metropolitan Agency for Planning, 2012.

Source: Chicago Metropolitan Agency for Planning, 2012.

Almond Marsh Nature Preserve

Almond Marsh is owned and managed by the Lake County Forest Preserve District with support from a dedicated group of volunteer stewards. This site features a calcareous floating mat type marsh with sedge meadow edges, an open water pond, and restored prairie and oak woodlands. Beaver activity on the southeastern end of the marsh created more open water and flooded woodland edges. Cattail invasion continues to be a significant problem in the southern marsh, and some of the prairie areas are dominated by tall warm-season grasses and lack forb diversity. Significant clearing and controlled burning in the woodland areas have helped to control the invasive brush, and the restored prairie areas are burned regularly. Land management activities have also included seed and plug planting, erosion control, hydrologic restoration, installation of heron rookery platforms, and reforestation.



Invasive species control – garlic mustard removal. Photo courtesy of Conserve Lake County, 2013.

St. Francis Woods, Independence Grove

St. Francis Woods is owned and managed by the Lake County Forest Preserve District with support from a dedicated group of volunteer stewards. This high quality upland, oak hickory woodland borders the Des Plaines River on the northwest side of Independence Grove Forest Preserve. This oak hickory woodland has responded well to management including control of woody invasive species and controlled burning, but over browsing by deer continues to be a threat especially to the ephemeral woodland forbs. The heavily used Des Plaines River Trail (DPRT) bisects the eastern edge of the woods.

Ascension Sedge Meadow, Independence Grove

Ascension Meadow, located east of River Road on the north side of IL Route 137 in Libertyville, is owned and managed by the Lake County Forest Preserve District. This rare sedge community has benefited from extensive invasive species brush clearing and tree thinning that have created conditions for more light to reach the ground layer and native herbaceous species growing there. Invasive species control and burning continue as regular land management activities.

Donnelley Woodland and Prairie

The Donnelley property is located on the west side of Almond Road north of Casey Road is privately owned and actively managed by a caretaker. The oak woodlands along the southern edge of Almond Marsh have undergone extensive brush clearing, and the native herbaceous layer is responding well to supplemental native seeding. Controlled burning started in 2007. Approximately 20 acres of farm fields and pastures have been taken out of production along the driveway and west of the main home to help control soil erosion issues.

Commonwealth Edison Sedge Meadow

Owned by Commonwealth Edison Power Company, this wet prairie remnant was first identified by botanist Jack White in 1990. It has not received any ecological management, and there is concern that the site is degrading rapidly due to invasive species and lack of active management.

Marshall and Jamee Field Woods and Prairie

This privately owned, 190-acre property is located east of IL Route 21 and north of Casey Road. It is actively managed by a full-time caretaker with support from Conserve Lake County and other resource experts. The oak woodland has been under active management for approximately 30 years and contains very good biodiversity including some plants of high conservation value. A prairie restoration begun there in the 1990's has responded well and an additional 30 acres of prairie was planted in a retired farm field in 2008.

Prairie Crossing Prairie and Wetlands

Most of the natural areas and farmland in Prairie Crossing is owned and managed by the Liberty Prairie Foundation and the Prairie Crossing Home Owners Association. This conservation community of approximately 400 homes features large areas of prairie and wetlands managed through controlled burning and active invasive species control. Threatened and Endangered fish species from Sanctuary Pond, one of the Illinois Department of Natural Resources only threatened and endangered non-game fish nurseries, have made their way downstream to Bull's Brook and Almond Marsh through natural migration.

Whitmore/Roach/Lynch Prairie, Wetlands and Woods

These three adjoining properties, which feature prairie, wetland and woodland restoration and management, are found along the north side of Casey Road between Almond Road and IL Route 21. Low lying lands along the west and east side of Bull's Brook north of Casey Road include a 15-year-old prairie restoration, wetland enhancements with extensive native plantings, and a fairly new woodland restoration bordering the Field's property to the north. Controlled burning and invasive species control are ongoing

Aaron's Prairie

Aaron's Prairie is owned and managed by Conserve Lake County. The site features a six-acre prairie restoration of a former farm field east of Almond Road and north of Casey Road. The land was seeded to native prairie in 2009 and has responded well. Controlled burning, erosion control, and invasive species management continue on this site.

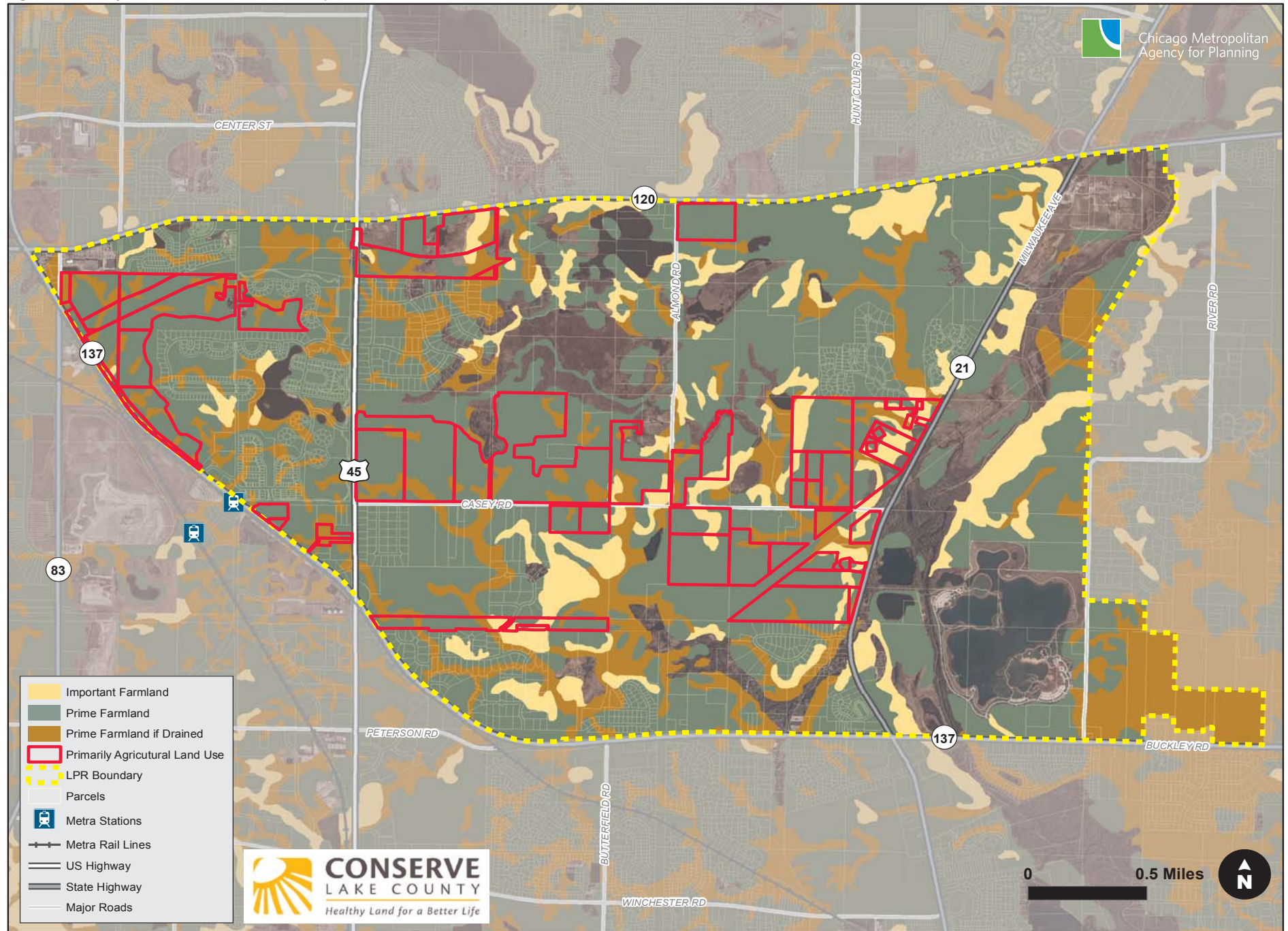


Northern pike at Milne fish survey. Photo courtesy of Conserve Lake County, 2013.



Headcut at Bull Creek headwater. Photo courtesy of Conserve Lake County, 2013.

Figure 12: Liberty Prairie Reserve Prime and Important Farmland



Source: Chicago Metropolitan Agency for Planning, 2012. U.S. Department of Agriculture Natural Resource Conservation Service.

C. Agricultural Land Management and Preservation



Tomato planting by Sandhill Organics, Prairie Crossing. Photo courtesy of Liberty Prairie Foundation, 2013.

Like its natural areas, one of the unique aspects of the Reserve is the presence of prime and important farmland, as shown in **Figure 12: Prime and Important Farmland** (as determined by the Natural Resource Conservation Service), and the inclusion of working lands in the preserved landscape. In addition to the beauty and openness provided by the natural areas in the Reserve, farmland supports a resilient food system for a growing urban area, viewscapes, and a cultural setting that is both attractive and economically valuable. Farming has occurred on lands within the reserve for over 160 years, dating back

to the 1840s. Historically, farm practices have gone through various periods of production methods and crop orientation. These include wheat production, dairy production, hay farming, diversified livestock, vegetable production, and corn and bean production. The predominant crop production in the post-World War II era has been large-scale corn and soybean operations. Beginning in the mid 1990s, local organic food production was introduced (or perhaps more accurately re-introduced) and interest in this approach to farming in the Reserve and region is growing.⁴

⁴ "Lake County Sustainable Local Food System Report," a product of Chicago Metropolitan Agency for Planning's Local Technical Assistance (LTA) program. Lead project partner Conserve Lake County, 2013.

Today, portions of the Reserve are nationally recognized as a model of sustainable food production that incorporates a range of ecologically sensitive approaches, including those that have achieved the federally recognized and esteemed designation of organic. The Farm Business Development Center at Prairie Crossing, created by the Liberty Prairie Foundation, is the region's long-standing leader in this effort, and its impact has been felt far beyond the borders of the Reserve.

Hundreds have visited and benefited from the work of the Center, including policy makers, elected officials, influential farmers, regional planners, and developers. Likewise, Center representatives have been featured presenters at key conferences, meetings, and planning sessions nationwide.

As shown in **Figure 13: Agricultural Production**, current farmland production of the 834 acres total includes:

- 650 acres of corn and bean production
- 88 acres of certified (or in process of certification) organic local vegetable and small livestock production
- 55 acres of hay production
- 41 acres of large livestock grazing and other

Note: Farmland ownership is presented in Section 2.A. Land Use and Ownership.



Three sisters with house in background in the Reserve. Photo courtesy of Conserve Lake County, 2013.

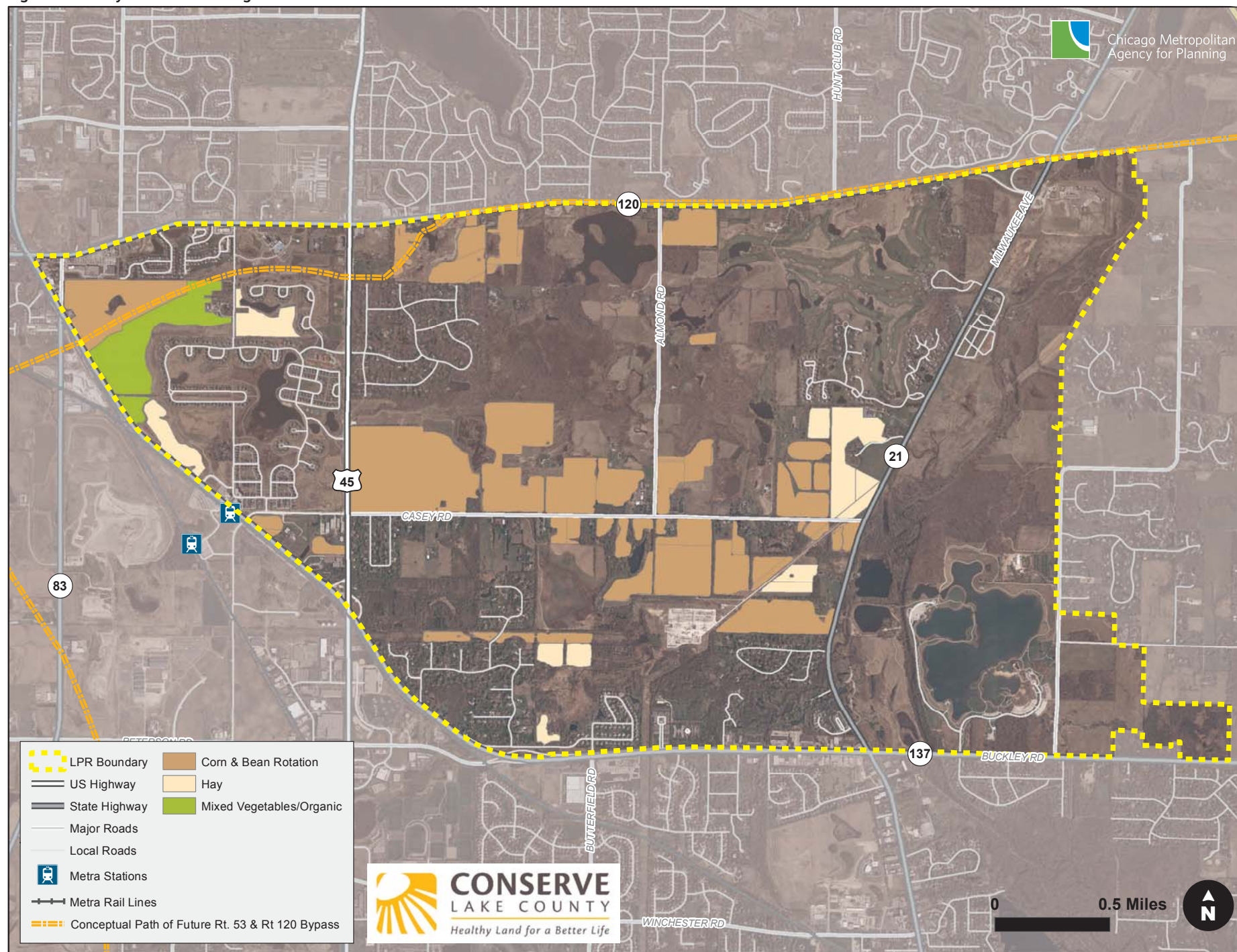


Soy bean rows on gentle slope. Photo courtesy of Conserve Lake County, 2013.



Hay farming at Casey Farm. Photo courtesy of Conserve Lake County, 2013.

Figure 13: Liberty Prairie Reserve Agricultural Production



Source: Chicago Metropolitan Agency for Planning, 2012.

Farmland Protection

In the year 2000, after two decades of very rapid development in Lake County, the County government commissioned the American Farmland Trust to look at the future of farming in Lake County and recommend possible government programs that could help preserve and perpetuate agriculture into the 21st century. This study, *On Thin Soil: The Uncertain Future of Agriculture in Lake County* (2001), determined that large-acreage grain farming is getting more difficult and less profitable as development pressures and traffic continue to increase. Farm fields have become fragmented and more isolated, and agricultural support services have largely left the county, making large-scale commodity crop production difficult.

What the 2001 report failed to pick up on was an emerging trend of local food producers and specialty growers whose needs and markets were vastly different from traditional row crop agriculture and whose future in Lake County seems more compatible with existing development patterns. In fact, as farmland acres continued to decline over the past twenty years as a result of development, the number of farmers and the diversity of farm operations increased both in the Reserve and in Lake County (see **Table 4**). And while the overall economic impact of farming and agricultural activities in Lake County may be modest compared to other economic activity in Lake County, it does contribute to an emerging “local food economy” in the Chicago metropolitan region. In fact, CMAP and other regional partners have prioritized strengthening the local food system and are working on a variety of projects to strengthen that system. For example, in 2013 an examination of barriers to a more robust local food system in Lake County was completed by CMAP and its partners, resulting in a number of recommendations for strengthening the system.

In 1994, Prairie Crossing Farm became the county’s first organic certified farm

Table 4. Lake County Farm Trends

	2007	2002	% CHANGE
Number of Farms	396 acres	337 acres	+18
Land in Farms	34,525 acres	38,860 acres	-11
Average Size of Farm	87 acres	115 acres	-24

Illinois Department of Agriculture, 2002, 2007.



Field erosion at Casey Farm. Photo courtesy of Conserve Lake County, 2013.

operation on approximately 10 acres of farmland within the Reserve in Grayslake. The farm operation has grown steadily and now includes one of the Chicago region's largest commercial organic producers, Sandhill Family Farms, which now leases approximately 40 acres from the Liberty Prairie Foundation. In 2006, the Liberty Prairie Foundation started a Farm Business Development Center that provides business support for entrepreneurial farmers to grow their businesses within a community of other farmers on approximately 60 acres. There are currently seven independent farm enterprises within the center and several operations have successfully transitioned to commercial operations in new locations around the region.

Currently the majority of agricultural land in the Reserve is used for commodity crop production (corn and beans), followed by food production (vegetables and small livestock), hay production and grazing. See **Figure 4: Agricultural Landowners** (page 25) and **Figure 13: Agricultural Production** (page 43).

Of the 834 acres of farmland, 575 are protected from development either through a conservation easement or ownership by a conservation organization and in some cases both. There are several additional parcels of farmland that could be protected in the future. While this does not ensure continued farming of these lands long-term, it is nonetheless one factor that influences land use toward continued farming. The reasons for this are two-fold: some of the landowners of protected farmland value working lands and support agriculture, and second, the farmland generates an income stream. There are economic forces and cultural values at play that could result in rather long term commitments to agriculture. Still, land managers have noted that some farmland practices adjacent to high-quality natural areas have caused problems such as erosion, nutrient influx, and water quality issues that negatively affect the quality of these natural areas and conversion of some of these lands may actually be less costly than farming over time.



Combine harvester. Photo courtesy of Conserve Lake County, 2013.

Farming Infrastructure Assets for Local Food Production

For land owners interested in supporting local food production operations certain infrastructure assets may be necessary. These include:

- Outbuildings for farming operations
- Water / irrigation sources
- A source of electricity
- Housing / residential buildings for farmers

Eight parcels in the Reserve were found to have these infrastructure assets, as shown in **Figure 4: Agricultural Landowners** (page 25). Seven of the eight locations (labeled “Agricultural Infrastructure” in the map legend) are situated on or near currently farmed lands. These infrastructure assets may help prioritize sites for conversion to food production, as discussed in the Agricultural Land Management recommendations.

Figure 14: Liberty Prairie Reserve Roads and Trails



Source: Chicago Metropolitan Agency for Planning, 2012.

D. Transportation Networks: Trails and Roads



Bridge at Independence Grove. Photo courtesy of Lake County Forest Preserve District.

The Reserve is bordered by heavily trafficked roads, yet maintains a rural character throughout. Farm tractors and their associated equipment occasionally use the roads to access farms within the Reserve. The Reserve is close to several regional trails and has many trails within its boundaries, but the connections between routes and within the reserve have room for improvement, especially for the safety of pedestrians and bicyclists.

Trails

The Reserve boasts a number of recreational options, allowing non-motorized travel through and between natural areas. The Reserve has over 12 miles of regional trails within its boundaries, including a 3.7 mile stretch of the regionally significant DPRT, which connects north to Wisconsin and south to Cook County, as shown in **Figure 14: Roads and Trails**. Libertyville Township and Lake County Forest Preserve District own the Casey Trail that stretches from the DPRT west to the Prairie Crossing Bike Path. There is a footpath through the area just west of the ecologically significant Almond Marsh that is enjoyed by bird watchers and nature enthusiasts. Other trails lead to and from the Prairie Crossing Metra station and north to the Rollins Savanna Forest Preserve and College of Lake County, as displayed on **Figure 14: Roads and Trails**. The trails are available to walkers, bicyclists, and equestrians.

The neighboring villages of Mundelein, Libertyville, and Grayslake worked with the Lake County Division of Transportation to complete the Prairie Crossing Bike Path, which extends from the Prairie Crossing conservation community to outside the Reserve boundaries, connecting western Lake County communities to the Grayslake bike path. The last three segments of the Prairie Crossing path were completed in July of 2012. This path serves as a central connector in the County, providing direct access to regional multi-use paths (Fort Hill Trail, Millennium Trail, and the North Shore Bike Path), two Metra commuter stations, Fremont Township Library, Lake County Fairgrounds, Mundelein High School, Mundelein Middle School, and Mundelein Park District sites, and two other adjacent municipal bikeway systems.

In 2014, a long anticipated connection of the Casey Trail to the 32-mile DPRT will be completed. The trail has been built and is awaiting the completion of a tunnel under IL Route 21, connecting Libertyville Township's Casey trail through the Reserve to the DPRT. The trail section from the DPRT west to the ComEd substation site will be under the jurisdiction of the Lake County Forest Preserve District. The section west of the ComEd station to Prairie Crossing in Grayslake is under the jurisdiction of the Libertyville Township. The Prairie Crossing Bike Path and the DPRT are both excellent resources and the connection between them via the Township's Casey trail will improve the safety of bicyclists and pedestrians who are currently using Casey Road for east-west travel.



Equestrians on Liberty Prairie Trail. Photo courtesy of Conserve Lake County, 2013.



Cyclists using trails through the Reserve. Photo courtesy of Conserve Lake County, 2013.

Roads

Roads both internal to the Reserve and along the Reserve's boundary are an incredibly important factor in the future quality of the Reserve. The northern boundary of the Reserve is IL Route 120, with an average annual daily traffic (AADT) count of 18,000 – 39,000 vehicles (counts are higher East of Hunt Club Road near I-94). The southern boundary of the Reserve is IL Route 137 (or Buckley Road), which has an average daily traffic count of between 15,000 and 32,000 vehicles, which serves as a physical barrier for the residential areas to the south. Along the eastern edge of the Reserve, River Road connects IL Route 137 and IL Route 120, and is classified as a collector road. All other 26 miles of roads in the Reserve are local roads. **Figure 14: Roads and Trails** (page 46) shows the Reserve's transportation infrastructure and the current traffic counts for each of the roadways that traverse the Reserve.

Almond Road, which runs north-south bisecting the northern half of the Reserve, is a rural road with one lane in each direction. Casey Road is the east-west road between IL Route 21 and the Prairie Crossing Metra station. Both Almond and Casey Roads are designed as low-traffic rural roads. Road corridors are increasingly becoming pathways for invasive species. Municipal, township, county, and state road supervisors should be invited to participate with land managers on invasive species control plans.

Three north-south principal arterials cross through the area:

- U.S. Route 45 (24,000 AADT)
- Milwaukee Avenue /IL Route 21 (23,800 AADT)
- IL Route 83 (9,100 AADT)

The northern boundary of the Reserve is IL Route 120, with an AADT count of 18,000 – 39,000 vehicles (counts are higher near I-94). The heavy motorized traffic along IL Route 120 is a major access barrier for the residential areas directly north of the Reserve (in Wildwood and Gurnee), which have no safe bicycle or pedestrian access to the trail system or the Reserve. It is believed that road runoff carries a significant amount of pollutants into Reserve wetlands, including chloride (road deicing agents), which diminishes aquatic life and creates conditions supportive of invasive wetland species.

Future development of IL Route 53/120 (Central Lake County Corridor) would impact the Reserve's valuable resources including wetlands, streams, and agricultural land. Alternatively, a significant environmentally focused road investment could enhance the long term sustainability of the Reserve. The GO TO 2040 comprehensive regional plan calls for a "modern boulevard" with a small footprint to minimize impacts on the natural environment and character of the nearby communities. Following up this recommendation, the Illinois Toll Highway Authority commissioned a BRAC in 2011.



Automobile traffic around the Reserve. Photo courtesy of Conserve Lake County, 2013.

This Advisory Committee, which included representatives from the Reserve and numerous other stakeholders in Lake County, worked together to plan and design feasible scenarios for this proposed new capital project. The consensus BRAC Resolution and Summary Report, released and sent to the Illinois Tollway for further action in June 2012, contains recommendations, design standards, and performance standards intended to address local community and environmental concerns and impacts while alleviating traffic congestion concerns. As discussed in the **Roads, Trails, and Access Recommendations**, any future highway construction or improvements should follow the recommendations adopted by the BRAC, avoid environmentally sensitive habitats in the Reserve, minimize and mitigate direct and indirect impacts to environmental resources, and promote alternatives to driving while improving conditions for motorized traffic. The Guiding Principles and Key Recommendations of the report are included in the text box on page 50.

There are two Prairie Crossing Metra stations located in the western section of the Reserve; one is on the North Central Service (NCS) line and the other is the more heavily traveled Milwaukee District North (MD-N) line. The MD-N line has more frequent service, as well as weekend service, which the NCS does not have. Over 50 trains stop at these stations every weekday. Both lines offer access by train to the Reserve's regional trail system and some trains allow for bicycle transport. They both have ample parking with low utilization rates (42 percent). With the lack of weekend service at the NCS station, there is an excellent opportunity for shared parking for the recreational users of the trails that connect through the area.

IL Route 53/120 Project BRAC Resolution and Summary Report Guiding Principles and Key Recommendations

Critical Advisory Council Recommendations for Liberty Prairie Reserve section:

1. Maintain alignment on current IL Route 120 roadbed from Almond Road to Sears Boulevard before moving south to new right-of-way.
2. Eliminating salts in the de-icing program for the road.
3. Providing significant funding for additional land protection and restoration.
4. Providing a trail underpass under the new road to provide a safe connection between the Reserve and the communities to the north.
5. Minimizing to the greatest extent possible cut-through traffic in the Reserve by closing any connection or providing only a right-in right-out on the Almond Road south.

IL Route 53/120 Guiding Principles:

1. Enhance mobility and accessibility, and relieve congestion, in the Central Lake County Corridor.
2. Seek innovative design solutions for a safe, integrated, multi-modal corridor that preserves the environment and the character of nearby communities, and enhances their economic vitality.
3. Analyze potential funding options and pursue corridor concepts to the extent that they are financially viable, fiscally sustainable, and equitable.
4. Minimize environmental and long term development impacts of transportation infrastructure and operations.
5. Promote environmental enhancements and sustainable practices in all aspects of project development, implementation and operations, and strive to improve the overall environment.
6. Promote diversity in all aspects of project development, implementation, and operations.
7. Develop and apply innovations in all aspects of the project to create a 21st Century modern boulevard that serves as a national and international model.
8. Cooperate with agencies and municipalities to deliver the Council's work in a transparent and accountable manner.

Overarching Advisory Council's Key Recommendations:

1. **Create a Transportation System That Preserves the Environment and Nearby Communities and Enhances Connectivity.** In order to achieve a modern, sustainable, and innovative transportation system that meets the goals of the Guiding Principles, the Council recommends a set of essential roadway design standards and performance standards. These standards describe the physical elements and the core functions of the new roadway as the Council has agreed to.
2. **Design a Context Sensitive Roadway.** The Council recommends specific context sensitive roadway designs for the proposed facility that directly respond to the environment and the communities around the right of way. A context sensitive approach ensures that the same design is not applied to the entire length of the roadway, but finds a balance between the goals of environment and open space preservation, mobility, and accessibility.
3. **Respect and Preserve the Land.** The unique environment, habitat, and wildlife of Lake County require a comprehensive planning approach in order to reduce long-term and irreversible impacts from fragmentation and disturbance. The Council recommends creating restoration and monitoring plans, land preservation actions, and identifies priority sensitive areas that require further protection.
4. **An Innovative Funding Plan for an Innovative Road.** Just as the Council recommends a truly innovative roadway design for environmental preservation and context sensitivity, the Council proposes a funding framework that is equally ground-breaking for an Illinois toll road. Instead of relying only on toll revenues from the extension and the core system, it combines the use of tolls along with contributed capital from promising local, state and federal sources that reflects strong local commitment to building a 21st Century facility.
5. **Create a Corridor Plan and Implementation Strategy.** A corridor plan that integrates land use, transportation, economic development, and open space is vital to the success of the IL Route 53/120 project. New roadway development can often bring unwanted results without adequate prior planning because of a rise in traffic, disruptions to environmental systems and lack of forethought about desired future land uses. The Council recommends creating a corridor plan that is based on the integration and preservation of open space and natural areas, multi-modal connections, market-feasible development, and congestion relief.

3. Recommendations

The **Recommendations** section of the plan includes guidelines and suggestions for preservation, management, administration, and infrastructure in the Reserve, within the context of the vision:

To create a model Reserve of exceptional land, water, and biodiversity health where public and private landowners manage their land in ways that sustain people, plants, and wildlife. We envision people enjoying, enhancing, and restoring the Reserve's rich array of natural areas. Additionally, the Reserve's agricultural values and heritage will be celebrated and continued in ways that support clean water, healthy soils, and a diversity of agricultural products and foods.

Public-Private Vision for the Reserve

"Oak Prairie Reserve is a cooperative undertaking involving both public and private landowners. With such cooperation, it is possible to accomplish goals and achieve benefits that could not be attained through exclusively public efforts or private endeavors alone."

- Oak Prairie Reserve Protection and Management Plan of 1991

In addition to the recommendations below, which were developed with input from the Reserve Planning Team, strategies for moving forward should consult two primary resources as background and additional recommendations, best management practices (BMPs), strategies, and implementation action steps. The first document is the original plan for the Reserve — the OPRP. The second document is the 2008 BC-BB plan, which includes nine goals, 52 objectives, and 119 actions designed to help improve the watershed.⁵

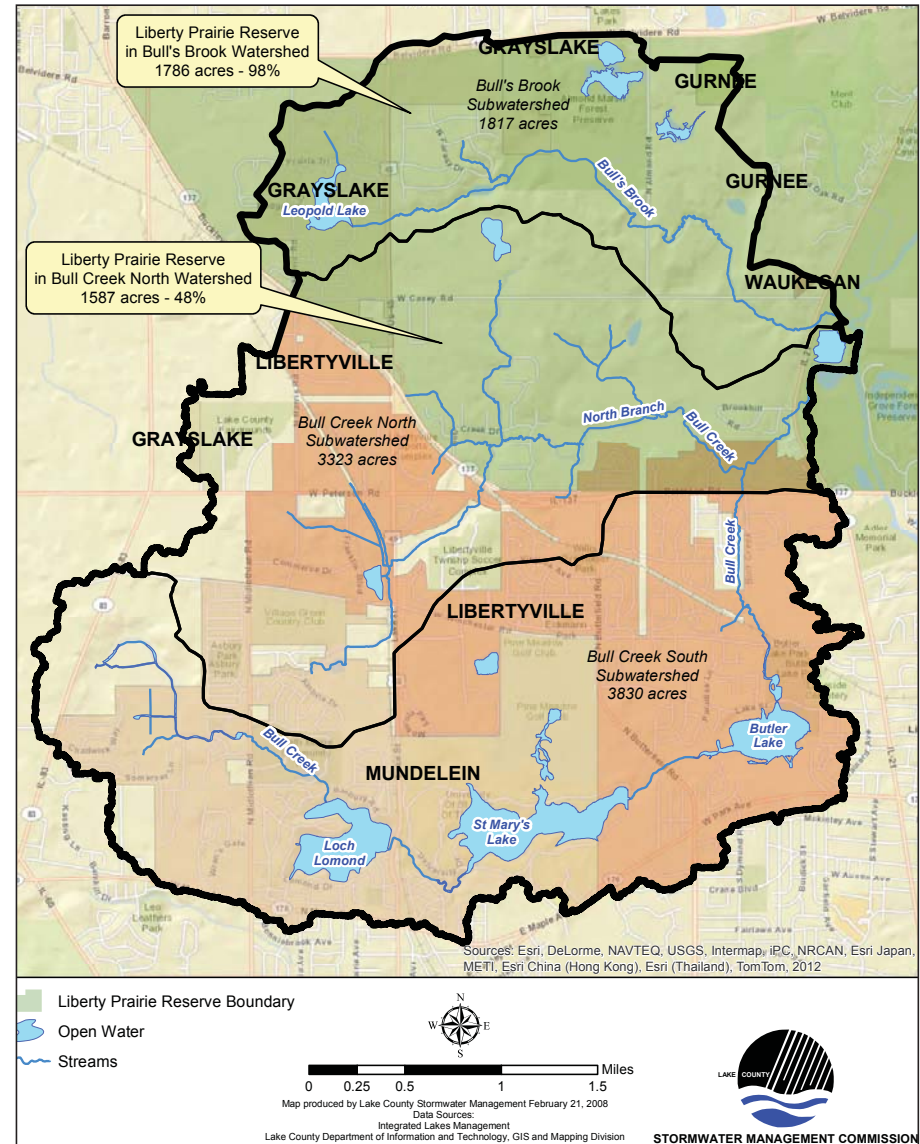
The Reserve includes the entire length of Bull's Brook and a large portion of the north branch of Bull Creek. Ninety-eight percent of the 2.75 square mile Bull's Brook drainage area is in the Reserve, while 48 percent of the five-square-mile North Branch Bull Creek drainage area is in the Reserve. Both streams are tributaries to the Des Plaines River. See **Figure 15** for a map of the watershed and Reserve.

The BC-BB plan was completed in 2009 and includes an assessment of the current watershed conditions, along with site-specific and programmatic recommendations related to eight watershed goals. The BC-BB Plan has been adopted by eleven key watershed stakeholders including: the Lake County Board, the Stormwater Management Commission, the Villages of Grayslake, Libertyville and Mundelein, Libertyville Township, Mundelein Park District, Conserve Lake County, and the Liberty Prairie Area, Prairie Crossing and Loch Lomond home owners/property owners associations.

The Reserve is identified in the BC-BB plan as a special and unique area of the watershed. A number of water and natural resources in the Reserve are noted as being worthy of protection and restoration. Bull Creek and Bull's Brook, Leopold Lake, Sanctuary and Dog Training Ponds, Oak Openings, Liberty Prairie, and Almond Marsh are specifically called out in the watershed plan.

The BC-BB plan identifies a number of threats to these resources, including: topsoil and in-stream erosion, excess nutrient loads, hydrology impacts due to the volume of stormwater runoff, and road salt. High-quality natural resources are threatened by hydrology changes and the migration of invasive species from upstream and adjacent land uses.

Figure 15: Bull Creek – Bull's Brook Watershed



⁵ See <http://www.lakecountyil.gov/Stormwater/LakeCountyWatersheds/Pages/BullCreekDP.aspx>.

Source: Lake County Stormwater Management Commission, 2008.

The BC-BB plan includes a number of recommendations that apply to the Reserve as well as other areas of the watershed, along with site-specific action recommendations for remediation that include a number of specific sites located in the Reserve. Recommended actions from the BC-BB plan focus on protection and restoration of natural areas, developing natural areas management plans, and establishing and maintaining buffers for these natural areas. The BC-BB watershed plan includes the following maps:

- A map of open and partially open parcels that are high priority for natural resources protection and enhancement.
- A map that includes 16 potential wetland restoration sites in the Reserve.
- A map of protection and enhancement needs for parcels adjacent to ecologically significant or threatened and endangered species locations.

Water quality and stream health actions for the Reserve include recommendations for stabilizing and restoring the moderately to severely eroded areas of Bull's Brook and Bull Creek; establishment and restoration of adequate riparian and lakeshore buffers; and wetland protection and restoration sites are identified. Using native plants in landscaping and buffers, and developing Resource Management Service Plans that include agricultural BMPs are also recommended to improve water quality.

There are 15 problem discharge points into Bull's Brook and two in Bull Creek north. Most of these are eroded tributary swales that drain into the creek; several are drain tiles or pipes. Stream bank erosion is considered moderate in most reaches of Bull's Brook and along two reaches of Bull Creek north. Erosion is severe in two reaches of Bull's Brook:

- Stream reaches in the Reserve recommended for stream maintenance or retrofitting to eliminate problem discharge pipes or hydraulic impediments are included as site-specific recommendations.
- Four stream reaches of Bull's Brook and one reach of Bull Creek in the Reserve are recommended for restoration.

Additionally, shoreline stabilization is recommended for some areas of Leopold Lake.

Bulls Creek-Bull's Brook Watershed Goals

- A. Protect and restore natural resources.
- B. Improve water quality.
- C. Reduce flood damage.
- D. Enhance and restore stream health.
- E. Guide new development to benefit watershed goals.
- F. Preserve green infrastructure.
- G. Enhance education and stewardship.
- H. Improve watershed coordination and collaboration.

Although flooding isn't a major problem in the Reserve, there are two identified flood problem areas and potential for flooding is noted in a couple areas along Casey Road. There are seven locations in the Reserve that are identified as having potential for providing additional floodwater storage.

- A map of the potential flood storage locations is included on page 281 of the BC-BB plan.

In addition to addressing natural resources, water quality, and flooding, the BC-BB plan also includes a number of action recommendations related to green infrastructure protection and trail connections; BMPs and low impact development recommendations for new and re-development of land in the watershed; and addresses water quality and runoff impacts from existing roads and proposed transportation improvements.

Lastly, the plan addresses the need for improved education and outreach to watershed residents and communities to engender better collaboration and stewardship of watershed resources. Toward that end, the Bull Creek-Bull's Brook Watershed Council was formed in June of 2010. The Council meets quarterly, supports watershed improvement projects, and sponsors education and outreach events.

A. Ownership in the Reserve

Rather than make prescriptive recommendations for land management, this plan establishes a trajectory intended to bring management activities in line with one another and with the overall vision for the Reserve. As such, implementation of the plan recommendations should be carried out by individual landowners, land managers, and other stakeholders. However, this plan recommends the creation of a planning council, the Reserve Stakeholder Partnership, which can convene regularly to share ideas and information, to discuss the management recommendations of this plan and current management practices, and to work towards common goals for the Reserve while also achieving individual landowner goals. The following recommendation 3 suggests how such a council could be formed.

GOAL: Preserve and improve the Reserve's essential cooperative relationships among land owners, jurisdictions, and tenants to better preserve and manage land and water resources in ways that benefit people, plants, and wildlife.

The Reserve is a mosaic of landowners, local governments, and tenants with a wide variety of goals and aspirations. There has been a significant effort by a number of stakeholders to pursue coordinated and cooperative strategies to protect and manage the Reserve resources. Nonetheless, this multi-faceted arrangement makes coordination difficult, yet it also provides unique opportunities to create a cooperative model of land management that is rarely seen in the region or the country. The vision of the Reserve should be widely communicated to all Reserve stakeholders.

This cooperative undertaking should include strategies to increase the acreage of preserved ecosystems and other land and water resources, even to the point of expanding the Reserve boundary to the east and west. It should also include conservation-based approaches to land use change so that actions that will result in more intensive use of land in and adjacent to the reserve be coupled with conservation- and green infrastructure-based development practices that will protect and enhance Reserve resources.

Recommended Strategies

1. *Work with local government jurisdictions to coordinate vision, goals, and strategies across sectors, ownership, and jurisdiction and to ensure consistency within local plans, programs, and regulations.*

As major public landowners of open space, Lake County Forest Preserve District and Libertyville Township play active roles within the Reserve as it relates to land ownership and management. Because they do not own open space in the Reserve, Warren Township, Avon Township, Freemont Township, Libertyville, Grayslake, Gurnee, and Waukegan are not as deeply involved in its management; however, they may have planning, land use, management, and annexation authority that could impact the Reserve. Stakeholders should meet with staff and elected officials of these jurisdictions annually to establish a shared vision of the Reserve, discuss and coordinate planning and policy, and share resources and expertise. This is particularly important as it relates to parcels that have conservation value and/or are spatially oriented or located in a way that makes them important from a strategic or management perspective. As an example, the Village of Libertyville future land use plan indicates multi-family use for one property in the Reserve. Discussions with Libertyville and land owners should focus on the variety of appropriate uses for that property and, if development is desired, to support environmentally sensitive development details that would preserve valuable qualities of that and adjacent parcels (see recommendation 6). All jurisdictional land use and capital improvement plans, including those for roadway improvements, should be explored to better understand the potential for land use changes and annexation and then discussed with the appropriate jurisdiction. It is possible that boundary agreements or Memorandums of Understanding would be a helpful strategy for ensuring planning and policy consistency across jurisdictions.

2. *Work with public, private, and nonprofit landowners and managers to communicate the vision and goals of the Reserve and to understand and strategize about achieving Reserve and landowner goals.*

For the most part, the landowners who own ten acres or more in the Reserve have been and continue to be engaged with Conserve Lake County about the vision and goals of the Reserve. Many landowners have taken steps to help achieve land and water management goals. Conserve Lake County, the Forest Preserve District, and Libertyville Township should continue to work closely with all landowners to help align their goals, potential land use changes, and land management activities with the vision and goals of this plan for the Reserve.

3. *Conduct regular meetings of Reserve stakeholders (the Liberty Prairie Reserve Stakeholder Partnership) to coordinate natural and agricultural land management activities, transportation, and public access in the Reserve.*

This plan recommends the active involvement of Reserve stakeholders in the creation of a planning council (the Liberty Prairie Reserve Stakeholder Partnership) that meets regularly to share ideas and information, to act as a resource and expertise for landowners, to better coordinate management of agricultural land and natural communities as discussed in this plan, and to work towards common goals for the Reserve while also achieving individual landowner goals. The Partnership should include, at a minimum, the various public and private landowners in the Reserve and other stakeholders, specifically, representation from: State of Illinois, Lake County Board, Lake County Forest Preserve District Board, Libertyville Township Board, Conserve Lake County, Openlands, Liberty Prairie Foundation, CMAP, and private landowners. The Partnership will not incorporate any formal structure or organizational hierarchy, nor in any way impinge or impede landowners from making their own decisions. The Partnership should coordinate these Reserve recommendations with other existing plans for the area including the June 2012 IL Route 53/120 BRAC recommendations, Lake County Division of Transportation 2040 regional trail plans, and the BC-BB Watershed Plan (2008).



Partnerships in the Reserve. Photo courtesy of Conserve Lake County, 2013.

4. When necessary or appropriate, encourage protection of natural areas and agricultural land for priority parcels via acquisition, easement, transfer, dedication, private commitments, or other strategies.

A number of areas within the Reserve are valuable as open space for conservation, agriculture, or other reasons, and there are sensitive resources that should be considered when land management decisions are made. For example, some agricultural and other practices can disturb and dislodge highly erodible soils, which can be carried into sensitive habitat areas in the Reserve.

Where preservation or protection of areas with sensitive resources is desired, preservation strategies may include fee simple or easement acquisition or other preservation strategy by public or nonprofit entities, particularly the Lake County Forest Preserve District, Libertyville Township, Openlands, Conserve Lake County, or the Liberty Prairie Foundation. Some parcels may be appropriate for dedication as Illinois Nature Preserves or Land and Water Reserves, while others will remain in private ownership with management agreements in place. Ultimately, the vast majority of the remaining unprotected land should be protected as open space in perpetuity. Consider the Land and Water Reserve as a source of assistance for this recommendation.

- A. If the occasion arises to convey or transfer currently protected lands to a separate agency, this plan recommends the Lake County Forest Preserve District as the primary agency to be the receiver of management and ownership responsibility unless a different and more appropriate entity is identified.
- B. Unprotected, privately owned properties along IL Route 120 between U.S. Route 45 and I-94 are a preservation priority to help preserve the character of the area in light of potential future development and improvement of IL Route 120. The recommendations in the BRAC report to the Illinois Toll Highway Authority for the IL Route 120 and Almond Road intersection should be followed, including limited access to Almond Road from IL Route 120 and a pedestrian underpass to provide access into the Reserve from the Village of Wildwood through a future public trail connecting Wildwood residents south to the Reserves' Casey Trail. Land adjacent to the intersection of IL Route 120 with Almond Road and Milwaukee Avenue is also a high priority to help preserve natural, agricultural, or other open space uses rather than conversion to commercial or other uses at a higher intensity than currently used.

- C. Very low density residential uses that exist on some of the remaining privately owned parcels along IL Route 120, Casey, and Almond Road are considered to be supportive of the goals of the Reserve. Should these unprotected residential parcels come on the market or be proposed for conversion to more intense uses, they should be prioritized for preservation. Similarly, remaining privately owned undeveloped, open space, or agricultural parcels should remain in these uses. That said, there may be instances where a limited, conservation-oriented development (e.g., Prairie Crossing) may be considered to be consistent with Reserve goals where the proposed use would not impact natural or agricultural use or resources.
- D. Residential parcels along the south side of Casey Road east of U.S. Route 45 represent perhaps the single most contiguous block of low density development within or adjacent to natural or agricultural open space. This block of parcels should be considered as having conservation value due to proximity to natural areas.
- E. Undeveloped properties within the Reserve that are planned for use that is of a higher intensity than current use should be carefully considered by the appropriate landowner and jurisdiction to remove future use designation. Such parcels should be examined for the potential negative impact of conversion of parcels to a use other than open space.
- F. Private or trust-owned lands that are anticipated to change ownership, to be passed to heirs, or lands where owner priorities may change or differ across generations should be considered for acquisition, dedication, or conservation easements by one of the conservation organizations already active in the Reserve.
- G. Deed restricted lands, which are at risk of being released from restrictions by landowner majority vote, should be transferred to a more permanent protective status, likely a conservation easement and, if necessary, a land management organization.

5. Consider expanding the Reserve boundary through the acquisition or other preservation of lands outside of the Reserve and changing the location of the boundary.

- A. **Eastern Boundary expansion potential.** Privately-owned properties east of the Reserve boundary should be considered as an eastward expansion of the Reserve, with a likely eastern boundary at O'Plaine Road. Adding natural areas and farmland would increase and improve the conservation value of the Reserve as well as help to connect Independence Grove and the rest of the Reserve trail system east to Waukegan and Illinois Nature Preserve sites along I-94. A meeting with the major landowners in this area to gauge their interest in incorporating some of their land into the Reserve and to share the goals of the Master Plan should be a priority. Work with the Lake County Forest Preserve District, Libertyville Township, and landowners to discuss the potential for this expansion.
- B. **Western Boundary expansion potential.** It may be possible to connect Alleghany Park (Grayslake Park District) and an adjacent deed-restricted (restricted through wetland mitigation) property owned by Waste Management property to the Prairie Crossing and Reserve trails network via a new trail. This future trail would connect southern Grayslake residents to Alleghany Park and three Metra stations before connecting to the Reserve trail system. Additional land acquisitions or donations, including the 220-acre Waste Management wetland mitigation parcel, should be considered by the Lake County Forest Preserve District and the Grayslake Park District. When the existing landfill reaches capacity and it is capped, exit plans call for it to be converted to passive or active open space such as a grassland system or a combination of active and passive uses. It may be possible to expand the Western Reserve boundary to include these elements, as well as open space northeast of the Alleghany-Petersen intersection and the Lake County fairgrounds.

6. Any proposed new development within and adjacent to the Reserve should use conservation design, and green infrastructure standards and practices regardless of jurisdiction. Furthermore, existing development, redevelopment, roads, and other uses with impervious surfaces should incorporate green infrastructure and conservation-based land management measures.

Land use change to more intense uses within the Reserve could potentially impact sensitive resources or create conflicts between natural, agricultural, and new, more intense uses. Open space, conservation, residential, and agricultural uses are the preferred uses within the Reserve. Limited low density residential use at a density of one unit per ten acres or less (likely to be Agricultural or Rural Estate zoning within municipal or county land use plans and regulations) is perhaps the most compatible 'intense' use that should be allowed/proposed in the Reserve. New residential use should follow conservation design standards and practices using Prairie Crossing as one model.

Improvements to existing roads should also use onsite stormwater BMPs and green infrastructure practices to slow, filter, and infiltrate runoff before it impacts the Reserve's water resources. These practices include rain gardens, wet detention basins, permeable pavement, and others. Salinity is increasing in these resources, primarily due to winter snow and ice control practices, which should be modified to minimize the use of salt.

Property management practices should also follow conservation strategies that are compatible with natural areas management, such as the use of native vegetation for landscaping, minimization of pesticide and fertilizer use, and following Conservation@Home practices.

B. Natural Land Management

GOAL: Expand and connect core habitats to create one of the most biologically diverse and enduring natural resource areas in northeast Illinois. Coordinate management activities across public and private lands to improve biological diversity, ecological function, and water quality within the Reserve, especially in the remnant natural communities and Illinois Nature Preserves found therein.

The Reserve provides unique opportunities to restore land and water resources at a landscape scale (thousands of acres) within an increasingly urbanized suburban county. The public-private holding of these natural resources also provides unique opportunities and challenges for effective and coordinated land management activities when striving for improved land, water, and wildlife health.

As was outlined in the existing conditions report there has been an extraordinary ongoing commitment and investment in land management and ecological restoration activities on both public and private lands within the Reserve. Land restoration activities date back to the 1980s, and have resulted in some regionally significant examples of woodland, prairie, and wetland restorations, which can be found on both public and private lands within the Reserve.

The following list was identified by land managers in 2012 as the most pressing land management challenges in the Reserve. These issues threaten the native biodiversity, water quality, and hydrological function that make the Reserve a natural resource of statewide importance. Significant allocation of human resources will be needed in the coming years and decades to ensure that these threats are addressed in ways that protect these valuable natural resources of soil, native biodiversity, and water quality:



Former farm land with oak trees on the field's property. Photo courtesy of Conserve Lake County, 2013.

- Soil erosion
- Invasive species
- Lack of fire (our natural areas co-evolved with fire)
- Hydrological disturbances
- Salt, sediments, fertilizers, and other water pollutants
- Nuisance wildlife species including deer, beaver, and Canada geese
- Lack of cooperative land and water management
- Habitat fragmentation

Recommended Strategies

1. *Expand and connect core habitat areas (woodlands, wetlands, and prairie) within the Reserve.*

For the purposes of preserving, enhancing, and expanding the Reserve's native plant and animal biodiversity, and to realize the Reserve's regionally-significant conservation potential, it is recommended that multiple large habitat blocks greater than 250 acres be maintained or created throughout the Reserve. Already, several important core habitat areas exist within the Reserve such as Oak Openings, Almond Marsh, and Liberty Prairie Nature Preserves, and others. Additional core habitat areas should be created by converting agriculture-use areas or other degraded lands into native community restorations such as prairie, wetland, and wooded habitat. These restorations efforts will link the Reserve's existing habitat blocks and remnant communities into larger core habitat zones, often with opportunities focused on the habitat needs of imperiled species. Core habitat areas may also be expanded and improved through the use of wetland mitigation banks that can help generate funds for habitat restoration and expansion.

Many species, including the state-listed Northern Harrier, Sandhill Crane, and Short-eared Owl, and at least six grassland birds known from the Reserve are extremely sensitive to habitat fragmentation. These species and additional woodland and wetland birds known from the Reserve have been classified by Illinois Department of Natural Resources as "species of greatest concern" and are particularly sensitive to habitat size. Increasing the size of core habitat areas, without fragmentation, increases the likelihood of attracting these species and preserving the unique assemblages of species already found within the Reserve, especially remnant-dependent insects such as the bog leafhopper and butterflies. Habitat blocks exceeding 250 acres focused on specific habitat type and structure are particularly critical when considering a species' long-term population resilience and health. The Illinois Division of Natural Heritage study titled "Habitat Establishment, Enhancement and Management for Forest and Grassland Birds" (Herkert, Szafoni, Kleen, Schwegman) is of particular value to land managers.

Identifying appropriate locations for core habitat expansion should consider using the Green Infrastructure Vision 2.0 tool developed by CMAP and Chicago Wilderness, which can be used to help identify / model green corridor connections. Resources are available at <http://www.cmap.illinois.gov/green-infrastructure>.

2. *Develop an Integrated Pest Management Program for invasive species.*

Of all of the threats to the preservation of our native biodiversity, invasive species may pose the biggest. Control of invasive species is a forever proposition. Integrated coordination of invasive species management needs to be planned and implemented on natural areas that cross public and private jurisdictions. After creation of the Integrated Pest Management Program, memorandums of understanding should be implemented to control invasive species across the entire reserve area.

3. *Collect baseline data and monitor the results of restoration activities.*

Conducting follow-up biological inventories on lands with established baselines, and establishing new baseline data on high quality natural areas that have none, is strongly recommended. To the degree possible, rigorous monitoring and reporting/ documenting of land management activities should be implemented to track effectiveness of methodologies and protocols employed. The results of inventories and studies should be analyzed to better understand the long-term outcomes of restoration efforts.



Controlling Japanese Knotweed. Photo courtesy of Conserve Lake County, 2013.

4. **Control soil erosion.**

The BC-BB plan identifies that soil erosion continues as a major threat to high quality natural resources and a source of impairments to water quality in lakes, streams, and rivers. Soil erosion problems must be identified and BMPs employed, such as those found in the BC-BB plan. As a first step, consider removing highly erodible⁶ and hydric soils from seasonal crop production and converting to natural prairies, wetlands savannas, or perennial grass crops such as hay. In areas where severe soil erosion has been identified, soil erosion control measures should be immediately implemented. Libertyville Township's Bull Creek headwaters project is a good example of BMPs to correct a worsening erosion problem.

5. **Develop a cooperative plan for controlled burning.**

Fire, when implemented safely and consistently, is one of the most effective and economical land management tools available. For the past two decades public agencies have consistently used fire for management purposes in the Reserve. Some private landowners, including Prairie Crossing Home Owners Association, have also implemented controlled burning as a consistent management tool. A cooperative public-private plan for controlled burning supported by public expertise and training is needed.

6. **Encourage participation in the Conservation@Home program for sustainable landscaping on developed properties within the Reserve.**

Private landowners and residents should be encouraged to join the collective land management strategy by engaging in Conserve Lake County's Conservation@Home program, which provides landowners with information on ways to make properties more supportive of conservation practices and biodiversity goals.

7. **Using the suggestions below as a foundation, develop detailed, site specific management recommendations for land and water resources.**

The majority of open space within the Reserve requires specific management plans and recommendations. In addition to the suggestions below, which were developed with input from land managers, management plans should consult the 2009 BC-BB plan for recommendations, BMPs, strategies, and implementation action steps. That plan includes nine goals, 52 objectives, and 119 actions designed to help improve the watershed.⁷

⁶ Highly erodible soil maps produced by NRCS should be field checked for verification of slope and soil type.

⁷ See <http://www.lakecountytill.gov/Stormwater/LakeCountyWatersheds/Pages/BullCreekDP.aspx>.



Removing invasive species. Photo courtesy of Conserve Lake County, 2013.



A controlled burn in Liberty Prairie in 2004. Photo courtesy of Conserve Lake County, 2013.

The following natural areas are shown in **Figure 11: Key Natural Areas** (page 37). Landowners and managers should consider the creation of a native plant and seed nursery to help supply stock for restoration efforts.

Oak Openings Nature Preserve, 73-acres, Libertyville Township

- Maintain core remnant habitat and expand into adjacent restoration areas through invasive plant species control and native plant management.
- Remove woody invasive species along the Bull's Brook.
- Control invasive plant species, particularly reed canary grass, buckthorn, honey suckle, Canada thistle, phragmites, and other targeted species.
- Conduct periodic controlled burns for prairie and wetland communities.
- Augment restoration with a diverse seed mix.
- Remove highly erodible farm land from production and based on site specific goals, restore these to natural areas and based on site specific goals restore these to natural areas and/or implement more conservation minded farming practices as farm licenses expire.
- Assess long-term trends in plant community composition and structure using statistically-rigorous sampling protocols.
- Assess the need for deer and beaver population control where impact is documented.
- Develop cooperation agreements with adjacent landowners to restore and manage their lands.
- Restoration of oak and native species, shrubs, and open canopies.
- Use a diverse species list and local ecotypes of state-listed species when increasing populations.

Liberty Prairie Nature Preserve, approximately 77-acres, Libertyville Township

- Maintain core remnant habitat and expand into adjacent restoration areas through invasive plant species control and native plant management.
- Control invasive plant species, particularly reed canary grass, buckthorn, oriental bittersweet, and other targeted species.
- Conduct periodic controlled burns for prairie and wetland communities.
- Augment restoration with a diverse seed mix.
- Expand State Nature Preserve.



Monitoring of Rare Species in Liberty Prairie. Photo courtesy of Conserve Lake County, 2013.

- Locate, assess, and monitor state and locally rare plant and animal species population trends.
- Remove highly erodible farm land from production and implement more conservation minded farming practices as farm licenses expire.
- Stabilize the stream bank, and lower erosion potential of water flow from the headwaters of Bull Creek.
- Prohibit and control all-terrain vehicle and snowmobile use particularly in the designated state nature preserve
- Explore potential trail connections to allow residents south of Liberty Prairie to access the Township trail system.
- Assess long-term trends in plant community composition and structure using statistically rigorous sampling protocols.
- Assess the need for deer and beaver population control where impact is documented.
- Use a diverse species list and local ecotypes of state-listed species when increasing populations.



Planting restoration at Sedge Meadow. Photo courtesy of Conserve Lake County, 2013.

Ascension Sedge Meadow, approximately 180-acres, part of Independence Grove Forest Preserve

- Preserve additional lands that would provide additional habitat or buffers.
- Develop cooperation agreements with adjacent landowners to restore and manage their lands.
- Maintain core remnant habitat of federally listed eastern prairie fringed orchid and expand habitat into adjacent restoration areas through invasive plant species control, native plant management, and orchid seed introduction
- Control invasive plant species, particularly reed canary grass, buckthorn, cattail, teasel, and other targeted species
- Conduct periodic controlled burns on woodland, wetland, and prairie communities.
- Augment early successional woodland and wetland restorations with diverse seed mix.
- Expand existing reforestation and prairie/wetland planting areas where fragmentation can be reduced.

- Assess need for deer and beaver population control where impact is documented.
- Assess long-term trends in plant community composition and structure using statistically-rigorous sampling protocols.
- Locate and assess state and locally rare plant and animal species population trends.
- Dedicate area as State Nature Preserve or other protective covenant.
- Determine hydroperiods of surface water runoff through sites ditches; determine if alterations can/should be made.
- Use a diverse species list and local ecotypes of state-listed species when increasing populations.

Saint Francis Woods, approximately 300-acres, part of Independence Grove Forest Preserve

- Control invasive plant species, particularly buckthorn, Oriental bittersweet, hedge parsley, garlic mustard, and other targeted species
- Conduct periodic controlled burns on woodland, forest, and savanna communities
- Augment early successional woodland, savanna, and prairie restorations with diverse seed mix.
- Expand existing reforestation plantings where habitat fragmentation can be reduced.
- Continue deer population control where impact is documented.
- Assess long-term trends in plant community composition and structure using statistically rigorous sampling protocols.
- Locate, monitor, and assess state and local rare plant and animal population trends.
- Follow the Regional Oak Recover Plan recommendations to restore canopy and sub-canopy structure and composition to facilitate the regeneration of desirable shade-intolerant trees, especially oaks, native shrubs, and a healthy diverse ground flora.
- Evaluate heron rookery needs and future viability.
- Use a diverse species list and local ecotypes of state-listed species when increasing populations.

Almond Marsh Forest Preserve, approximately 530-acres

- Control invasive plant species, particularly reed canary grass, buckthorn, cattail, teasel, and other targeted species
- Conduct periodic controlled burns on woodland, wetland, and prairie communities
- Augment early successional woodland, prairie, and wetland restorations with diverse seed mix.
- Expand existing reforestation, prairie, and wetland planting areas where fragmentation can be reduced.
- Conduct management to augment monotypical stands of prairie restoration areas. Enhance with more conservative species.
- Assess need for deer and beaver population control where impact is documented.
- Assess long-term trends in plant community composition and structure using statistically rigorous sampling protocols.
- Locate and assess state and locally rare plant and animal species population trends.
- Determine if water control structures are impacting hydrology and, if so, able to be removed. Conduct hydrological assessment to determine factors driving wetland habitats.
- Follow the Regional Oak Recovery Plan recommendations to restore canopy and sub-canopy structure and composition to facilitate the regeneration of desirable shade-intolerant trees, especially oaks, native shrubs, and a healthy diverse ground flora.
- Use a diverse species list and local ecotypes of state-listed species when increasing populations.



Oak-lined streambank along Bull's Brook. Photo courtesy of Conserve Lake County, 2013.

C. Agricultural Land Management

GOAL: Create a more resilient and robust local food and sustainable agriculture system that contributes to land and water health within the Liberty Prairie Reserve by incorporating farmland stewardship practices that build soil health, reduce erosion, and increase biological diversity.

Biological farming is a systems approach that compliments nature by focusing on practices that build healthy, biologically-alive soils and help protect water quality. Biological farming views soil as a living entity with three properties: chemical (nutrients), physical (air and water), and biological (soil life). The biological farming system requires different management along with a balanced approach to fertilizers that include much more than nitrogen, phosphorus, and potassium (N-P-K) inputs and focus on nutrients in mineralized form as opposed to synthetic or salt-based forms.

The Six Rules of Biological Farming⁸

1. Test and balance your soils. Feed the soil. Healthy soils will feed the crop.
2. Use fertilizers which do the least damage to soil life and plant roots. Monitor salt and ammonia levels. Use a balance of nutrients, with a balance of soluble and insoluble forms to slow release and control pH. Use homogenized micronutrients, add carbon and place the supplements properly to enhance performance.
3. Use pesticides, herbicides, biotechnology, and nitrogen in minimum amounts and only when absolutely necessary.
4. Create maximum plant diversity by using green manure crops and tight rotations
5. Use tillage to control the decay of organic materials and to control soil, air, and water. Combinations of zone tillage, shallow incorporation of residues, and deep tillage work great on many farms.
6. Feed the soil life, using carbon from compost, green manures, livestock manures, and crop residues. Apply calcium from a source readily available to plants.

Several Reserve stakeholders including Lake County Forest Preserve District, Conserve Lake County, Liberty Prairie Foundation, and Openlands are working toward establishing more local food production and sustainable farming throughout Lake County.

The GO TO 2040 plan calls for the entire region to increase local food production and to incorporate more ecologically sustainable farm practices because of the triple bottom line benefits to land health, human health, and the health of local economies. In the Reserve, Conserve Lake County and the Forest Preserve District have committed to sustainable local food production through a ten-year license agreement at Casey Farm.

Since 1998, the Prairie Crossing Organic Farm and Liberty Prairie Foundation's Farm Business Development Center at Prairie Crossing have been regional leaders in local, organic food production with nearly 100 acres in production. The Farm Business Development Center continues to develop new commercial farming operations that have transitioned from the center to successful independent farm businesses elsewhere in Lake County.

Landowners working through land use and management decisions over the coming years will help determine the degree to which core habitat expansion and local, sustainable agricultural production can both be achieved within the Reserve.

⁸ Adapted from the Midwest Bio-Ag Center.

Recommended Strategies

1. Increase soil organic matter and reduce erosion across all agricultural land within the Reserve.

Keeping soil in place is the critical first step of soil conservation. But it is only the beginning. Improving soil organic matter levels can help stabilize soil within fields and protect environmental quality. Soil also has to function well. It must hold nitrogen, phosphorus, and pesticides in place and keep them out of surface water. Soil must deliver nutrients and water to plants as they need them. Soil should minimize the effects of floods and droughts. Organic matter helps soil perform all these functions.

The level of soil organic matter is directly related to the amount of water that soil can absorb and hold. Increasing soil organic matter will in turn decrease soil erosion that stems from heavy rains.

2. Encourage farmers and farmland owners to convert operations to be more complementary to the Reserve natural areas, which may include biologically-based farming practices, sustainable food production, pasturing livestock, and other products and production methods.

Farming and agricultural land management practices can impact natural resources in a variety of ways, though some practices are considered more complementary to natural resource management goals than others. Conventional farming practices can be improved through the inclusion of biologically-based farming practices, which follow the Six Rules of Biological Farming. The soil management recommendations are appropriate across a broad range of production systems, from annual row crop or vegetable systems to perennial pasture or fruit crops. Within a specific production system, more detailed farmland management practices should be developed. These practices may be incorporated into farm leases and licenses as they are renewed, as explored in recommendation 5.

Organic and sustainable food production operations can also be complementary to natural resource management goals. In fact, as sustainable farming becomes more prevalent, and the demand for organic and locally grown products increases, there is a growing advantage for land owners to transition land into sustainable local food production. The growth of the local food sector will continue to shape the future of farming in the Reserve. Local food production is in many ways a different system of farming requiring different lease structures and building infrastructure than the conventional corn and bean rotation farming that has dominated the use of the land since the 1950s. Local food production includes diverse vegetable operations, grass/pasture-based small livestock operations, fruit orchards, and native nut and berry permaculture operations, even medicinal plant production.

Another potentially complementary agricultural operation is rotational grazing and pasturing of an appropriate number of livestock on fields planted with cool season grasses. This practice not only results in lean, grass-fed meat and dairy products that are healthier for human consumption than grain-fed products, but also creates a vegetative cover that helps build soil carbon and fertility, reduces soil erosion, increases groundwater recharge, supports wildlife, and helps protect and improve water and air quality.

Figure 4: Agricultural Landowners (page 25) identifies eight properties with access to infrastructure important for small scale, fruit and vegetable farming operations, such as water, electricity, and residential and other structures. While these properties may currently be ready for food production operations, infrastructure can be added to other properties to make them more attractive for growing food, though this can be an expensive investment for some landowners and tenants. Nonetheless, the presence of these infrastructure assets should be used to help prioritize sites for conversion to food production.

Soil Organic Matter

It is recommended that farmers and/or landowners sample soil organic content to establish baseline soil organic levels. Baselines will help establish priorities for where to increase soil organic matter and will assist in understanding how various soil building strategies perform over time. Some baseline soil organic matter sampling has been done within the Reserve (Casey Farm and Prairie Crossing) and the results showed low levels of between 1.5 percent to 2 percent soil organic matter. This minimal level of soil organic matter is contributing to soil erosion and soil loss, especially during early spring and late fall heavy rain events when soil is exposed. Increase in soil organic matter of 1 percent holds an additional 60,000 gallons of water per acre within the soil system.⁹ A target of at least 5 percent soil organic matter on agricultural lands within the Reserve is recommended, and some areas of the Prairie Crossing farm are measuring 6-7 percent organic matter following approximately 15 years of active soil management.

Examples of Biologically-based Farming Practices

Cover cropping. Cover crops provide numerous benefits, particularly soil fertility and erosion control. Regarding fertility, plowing down a winter cover of hairy vetch and rye can produce more than 120 pounds of nitrogen for the subsequent crop, reducing the amount of additional fertilizer needed. Soil cover, as provided by a cover crop, is the single greatest protection against water and wind erosion.

Soil amending. Amending soil with compost provides a significant boost to soil microbial life, providing a kickstart to boosting soil organic matter, good soil structure, and the availability of the nutrients to plants.

Mineral vs. chemical fertility inputs. Most chemical based nitrogen sources are toxic to soil life. Their use impedes the development of healthy soil. Anhydrous ammonia NH_3 is particularly problematic. Mineral forms of fertilizer on the other hand are both relatively stable and available to the beneficial soil organisms.



A crimper with cover crops on agricultural land. Photo courtesy of Conserve Lake County, 2013.

3. *Consider the conversion of agricultural land that has highly erodible or hydric soils to core natural areas*

Erodible and hydric soils tend to be sensitive to disturbance and should be managed with care.¹⁰ Landowners with highly erodible soils should develop and implement transition plans to minimize erosion as soon as possible, either by adjusting land, water, and soil management practices, or by removing from annual production altogether. One of the best ways to protect water quality in Bull's Brook and Bull Creek is to reduce the severity of soil erosion within the watershed. Over the past 10 years public and private farmland owners have taken more than 75 acres of hydric and steeply sloped highly erodible soils out of production and begun restoring them to natural areas. Farm fields that contain highly erodible soils should be evaluated for their best resource use — keeping them in agricultural production with better soil management practices, converting them to perennial pasture lands, or conversion to core natural areas. Farmers should be required to prepare soil erosion and sediment control plans to minimize water and wind erosion of farmland. Plans should include cover cropping, contour plowing, appropriate tillage timing, and maintaining filter strips and grassed waterways.

Some of the farmed areas that are adjacent to high quality core habitat areas, as shown in **Figure 16: Agricultural Land, Open Space, and Management Areas** (page 68), should also be considered for conversion/restoration from agriculture to native habitat.

¹⁰ The Natural Resource Conservation Service data for erodible soils should serve as reference for where highly erodible soils are likely to occur and should be field verified for slope and soil type to guide management and land use decisions.

4. Investigate the use of performance standards and lease terms to encourage better land management practices.

Landowners should investigate performance standards and leasing arrangements that encourage agricultural practices that support land and water health goals without dictating what to grow and what practices to use. This is particularly important for sensitive and at-risk landscapes, as well as those lands adjacent to core habitat areas.

With performance standards, land managers are encouraged to meet specific targets for indicators such as soil organic matter, soil erosion, water use, and runoff water quality. Performance criteria may be consistent across the board or may be tied to the characteristics and location of specific parcels.

Despite potential challenges — such as setting performance measures and targets, forging common ground between stakeholders, and enforcing the standards — such standards can be integrated into leasing and licensing terms for tenant farmers.¹¹ In such a system the tenant retains control over decisions regarding what to produce and in what combination, as long as the performance criteria established in the lease are met. Lease arrangements can also have “modification periods” built into the terms so that operations and/or performance measures can be assessed and modified without new leases or negotiations.

Frequently, shorter leasing terms do not easily allow farmers enough time to implement the type of agricultural practices that would meet ecological performance standards, which can be viewed as an investment in the land by the farmer. For instance, if a farmer works under an annual lease, they could be less likely to practice crop rotation, invest in increasing the organic matter of the soil, and other actions that are advantageous for the health of the land and water. Short lease terms also increase the risk and uncertainty for farmers making other investments in infrastructure, from wells to outbuildings to electricity. However, lease tenure (sometimes called “tenure security”) also has to make sense for land owners, who often prefer not to tie up their lands in a single use for a long period of time, which can be perceived as reducing control over the use and management of property.

Generally, three- to five-year leases are being considered as a target minimum lease period in Lake County, depending on the crop. This length can provide some security for tenants while allowing the landowner some flexibility to modify the lease terms as needed, including performance standards, to encourage the farmer to care for the

long-term health of the land. However, while three to five years may be appropriate for land where infrastructure and good soil health are already present, longer term leases may be required to allow a farmer to achieve a return on investment for installing infrastructure or improving soil health. In summary, some land is appropriate for shorter lease terms, and other land is not. When considering the length of lease the landowner should consider pros and cons as well as a variety of factors including soil health, future use, restoration potential, and the presence of infrastructure.

One alternative to fixed lease terms is to establish length of lease based on performance. For example, if a tenant farmer is able to build soil organic matter and reduce soil erosion consistently over time the farmer may be entitled to a longer lease in the future.

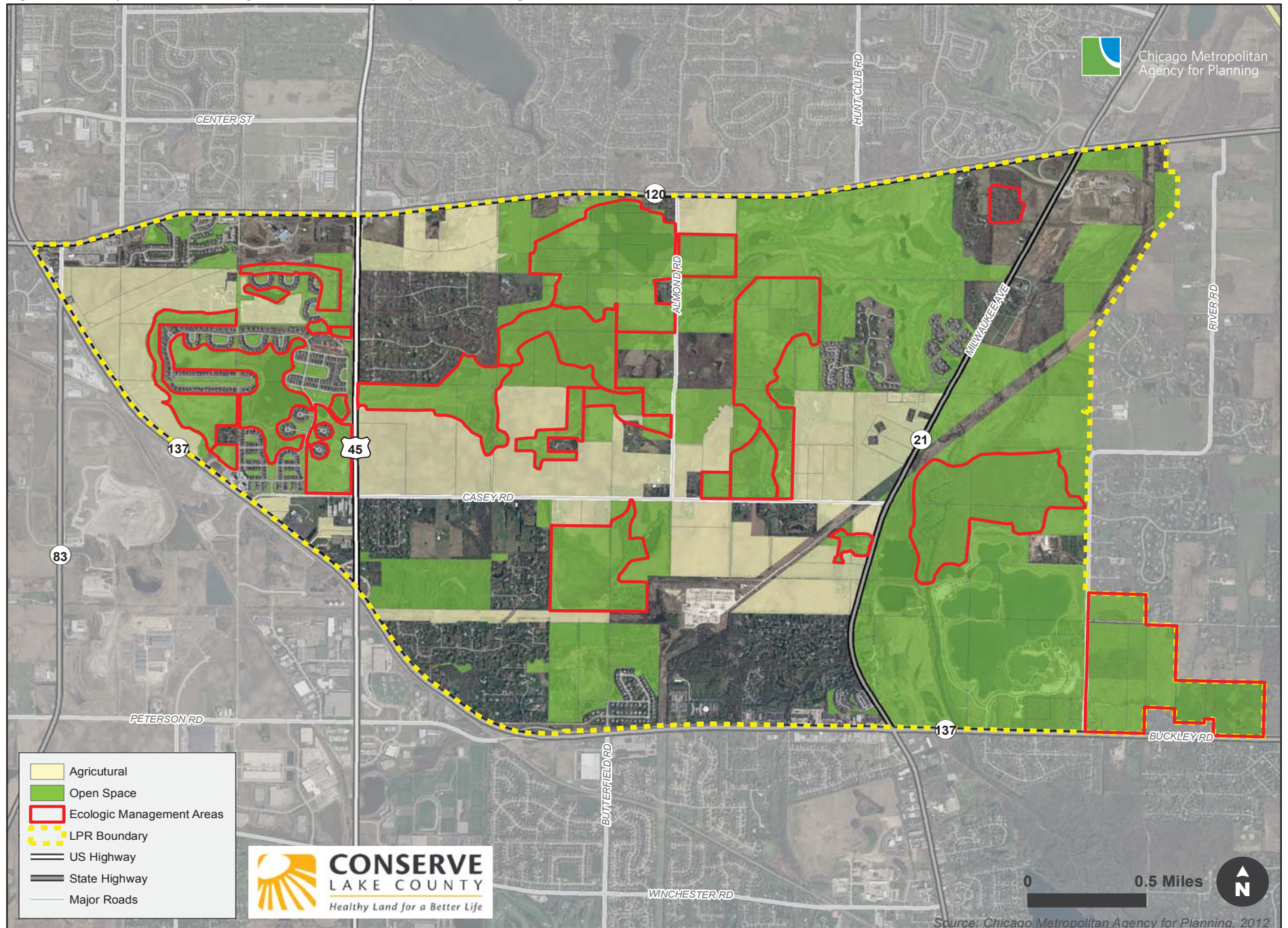
5. Explore arrangements within longer term leases that help to manage cost and risk for tenants.

Arrangements can be made within a longer lease to share the cost and risk and stabilize farm income while taking on agricultural practices that are more complimentary to natural resource management goals but may take some time to perfect. For instance, Annual Rent Adjustment alters a farmer’s rent from year to year within a longer-term lease, adjusting the rental rate to suit the farmer’s level of productivity and profit. This option recognizes that crop yields and profits can be lower during the earlier years of farming operations, and therefore the arrangement can build in a gradually increasing rental rate as the yields increase. As sustainable practices become established and the farmer becomes successful and practiced at managing the land appropriately, and as income is stabilized or increased due to increased farm productivity, rent can increase in accordance with revenue or profit.

Additionally, crop and profit sharing arrangements naturally lead both the landowner and the farmer to practice sound land management to increase production yields and, therefore, profit. This and other cost-sharing arrangements also come with shared risks. Alternatively, a landowner could reduce rent in return for the implementation of agricultural practices intended to meet performance criteria, for example, rents can be reduced as soil organic matter increases, or as crop rotation is implemented. This approach establishes a shared interest in the long-term health of the land, and demonstrates support for the farmer to pursue more sustainable practices like crop rotation.

¹¹ License agreements, as compared to leases, may give landowner more rights and control than leases over activities on rented land.

Figure 16: Liberty Prairie Reserve Agricultural Land, Open Space, and Management Areas



D. Transportation Networks: Trails and Roads

GOAL: Create a Liberty Prairie Reserve that is safe and accessible to nearby residents, pedestrians, equestrians, bicyclists, and automobile drivers and preserves its rural roads.

The Reserve is bordered by heavily trafficked roads and bisected by rural roads with high scenic value. It also provides recreational and transportation assets in the form of trails that connect to a larger sub-regional trail system providing access to forest preserves and other destinations. Understanding that transportation systems need to change and evolve to address changing demands and conditions, Reserve stakeholders favor a balanced approach to systematic change that accommodates their goals and aspirations as well as the needs of those trying to move about the county. Moreover, significant investments of time, money, and thought have been made in the Reserve, and it is in the interest of stakeholders to protect and steward those investments in the future.

Transportation system improvements should include strategies to expand and improve the trail system for a variety of users, including making them safe and accessible for law enforcement. Road and parking related improvements should be considered within the context of the unique and sensitive resources in the Reserve and the investments that have been made there. If deemed to be absolutely necessary, these improvements should take advantage of design and engineering strategies that minimize impact of roads and automobiles on environmental resources.



Almond Road and IL Route 120 from the North. Photo courtesy of Conserve Lake County, 2013.

Recommended Strategies

1. *Ensure future IL Route 53/120 improvements include not only environmental features but also consider trails and connections.*

The IL Route 53/120 BRAC developed a framework of Guiding Principles and Key Recommendations (see Text Box on page 69) for the future construction of a multi-modal corridor that is environmentally sustainable and socially responsible.

Any future highway construction should follow the recommendations adopted by the BRAC, avoid environmentally sensitive habitats in the Reserve, minimize and mitigate direct and indirect impacts, and promote alternatives to driving while improving conditions for motorized traffic. The Advisory Council's guiding principles place a high value on environmental responsibility and minimal impact, and offer a new approach to the traditional highway corridor. In addition to the principles and recommendations, the BRAC vision includes design and performance standards intended to create a modern, visionary, and 21st Century roadway that uses the most progressive and environmentally responsible practices available. The BRAC's specific natural resource recommendations included explicit monetary commitments to 750 acres of land protection and restoration, view shed enhancement, trail connections, water management strategies, noise mitigation, and perhaps most importantly, long-term stewardship. The Reserve should be aggressive in ensuring these recommendations are met and confirming that the Reserve has appropriate access to these resources.

Design and Performance Standards for the IL Route 53/120 Corridor

Design Standards

- Utilize a Classic Parkway Design with Tolling
- Include Four Travel Lanes
- Design Roadway for a Maximum Operation Speed of 45 Miles per Hour
- Use Pricing for Congestion Relief
- Utilize Onsite Stormwater Management Techniques that Mimic Natural Systems
- Enhance the Views of Residents and Drivers
- Use Innovative Roadway Lighting Techniques when Necessary
- Make Local Roadway Improvements for Safety and Congestion Relief
- Maintain Local Road Connections
- Consider Local Road Roundabouts
- Improve Connections for Bicyclists and Pedestrians in the Project Corridor
- Ensure Pedestrian Safety
- Provide Accommodation for Transit

Specific Advisory Council Recommendations for Liberty Prairie Reserve

- Maintain alignment of a narrow four lane boulevard on current IL Route 120 roadbed from Almond Road to Sears Boulevard before moving south to new right-of-way.
- Eliminating salts in the de-icing program for the road.
- Providing significant funding for additional land protection and restoration.
With a proactive plan in place, the Reserve should advocate for a significant portion of the \$81 million set aside in the budget for land protection and restoration.
- Providing a trail underpass under the new road to provide a safe connection between the Reserve and the communities to the north.
- Minimizing to the greatest extent possible cut-through traffic in the Reserve by closing any connection or providing only a right-in right-out on the Almond Road south.

Performance Standards

- Protect Open Space
- Mitigate 100 percent of Direct Impacts
- Compensate for Wetland Impacts
- Compensate for All Other Impacts
- Ensure Plant Community Health
- Reduce Stormwater Runoff Volume
- Ensure the Highest Water Quality
- Protect and Enhance Streams
- Use Alternative De-icing Approaches
- Improve Air Quality
- Reduce Neighborhood Traffic
- Reduce Travel Time
- Maintain Existing Speeds on Local Roads
- Minimize Traffic Noise
- Minimize Energy and Material Use

2. Add trails where appropriate to connect internally and to areas outside of the Reserve

Development of a well-connected regional trail system adds many benefits to the Reserve, the County, and the region. Connecting the DPRT on the east through the Reserve to nearby Lake County Forest Preserve District and Libertyville Township Open Space lands and paths will increase recreational access and provide regional trail connectivity. Additionally, connections from the trails to surrounding residential neighborhoods would improve residents' access to amenities inside the boundaries of the reserve. Recommended segments and connections include the following (see **Figure 14: Roads and Trails** on page 46 for locations of existing and proposed trails, the numbering system on the map coincides with the following recommendations):

- A. To improve safety for pedestrians, bicyclists, and other users while preserving the character of the rural roads in the Reserve, investigate the feasibility of installing an off-street path along Almond Road and part of Casey Road. These paths would connect the residential neighborhoods to the north and east with the amenities in the Reserve and the DPRT, as well as the Metra stations.
- B. At the intersection of Almond Road and IL Route 120, a safe crossing for pedestrians and people on bicycles is needed — an underpass would be ideal and is recommended in the BRAC report.
- C. A trail connecting the Prairie Crossing Metra station to Grayslake Park District's Alleghany Park via Fort Hill Trail is recommended, and should connect to any trails that are added with reconstruction of the IL Routes 53 and 120.
- D. A trail extending south from Almond Road at Casey Road would connect to the regional trail system, as well as residential neighborhoods to the south.
- E. There is currently a footpath that extends northeast from a bicycle and pedestrian trail segment that crosses U.S. Route 45. An extension of this footpath east to Almond Road is recommended.
- F. In the area around the Almond Marsh, a series of short, looping footpaths with educational signage and information should be investigated for feasibility to be constructed to take visitors through the variety of natural community types found there and that meet long term management goals. These footpaths would serve an educational purpose that was first identified in the OPRP.



Bicyclists on Almond Road. Photo courtesy of Conserve Lake County, 2013.

- G. Two trail segments have been approved for construction. The most significant trail is the Casey Trail connection to the DPRT and Independence Grove Forest Preserve, which will be completed in 2013-14 when the Illinois Department of Transportation finishes the underpass. The second approved trail segment is from the current path terminus (east of the DPRT on River Road) to the residential neighborhoods east of the Reserve.
- H. Create trail connections to residential neighborhoods north and south of IL Route 137 within and immediately outside of the Reserve, via Butterfield Road or the ComEd right-of-way east of Butterfield Road.
- I. A sidewalk along Milwaukee Avenue has also been approved for construction and a connection to the DPRT along IL Route 137 will be completed in 2013.

3. Incorporate educational interpretive signage into trail systems.

Educational interpretation signage can be incorporated into appropriate sections of the trail system to tell the story of how the Reserve came to be, the habitats, species, co-management of agricultural lands, nature, and residential areas. Signs and trail markers should be designed to fit in with the character of the Reserve constructed of durable, natural materials.

4. Use Crime Prevention Through Environmental Design safety measures.

The Forest Preserve District has lower rates of crime than the County as a whole, and there is no evidence that new trails lead to increased crime at neighboring properties, but safety is nonetheless an important consideration when developing new trails. Using the principles of Crime Prevention through Environmental Design (CPTED) can help ensure continued safety. CPTED deters criminal behavior through environmental design. The main four principles of CPTED are:

- A. Use natural surveillance with lighting and landscaping so that people on the can “see and be seen.” While the trails may be closed at night, the parking areas should be kept lit with environmentally-sensitive lighting, possibly hybrid lights using solar and (bird-friendly) wind energy.
- B. Control access areas and guide people to proper entrances with walkways, fences, lighting, signage, and landscaping.
- C. Clearly distinguish the boundaries between public and private spaces
- D. Maintain and manage the trails so that they look pristine. The “Broken Window Theory” suggests that one “broken window” or nuisance sends a message of disrepair that leads to more “broken windows.” People don’t feel bad about littering in an area that is already covered in trash, but they will think twice about tossing their garbage if the area looks well-maintained.



Cyclists and walkers sharing the path in Independence Grove. Photo courtesy of Kim Karpeles.

5. Ensure trail management and security in the Reserve.

It is important to consider who might be responsible for the continued maintenance and security of new trails, as well as to identify sources of funding to support those activities

- A. Each landowner manages and patrols trails under their jurisdiction. Management and patrolling of any new trails in the Reserve will need to be addressed by individual landowners unless otherwise arranged.
- B. Trail markings are helpful to give the trail users a sense of direction and orientation to determine where they are along the trail. Educational and interpretive signage is more important along the footpaths within the reserve than it is on the regional trail connections. Trail markers and maps should use materials that match the surrounding environment, yet stand out enough to be noticed. The Oak Prairie Reserve Plan (OPRP) recommends a simple low-maintenance signage system built with treated timber posts in various sizes, and with appropriate attachments (map, directional signage, etc.).

6. Consider end users when designing paths.

The majority of trails through the Reserve should be designed for pedestrians, bicyclists, skiers, horseback riders, and other low impact users. The 1991 OPRP recommends that in some cases the uses be separated for highest quality experience. Equestrian use of trails close to stables is important, but concerns over hoof divots and invasive plant species should be considered when determining access to sensitive habitats such as those found in the Reserve. The OPRP also recommends that horseback riding occur on trails distinctly separate from the walking and biking paths, often just a clearly marked earthen path.

Some trails, as indicated on the map, should be strictly for pedestrians, serving to enhance environmental awareness while protecting the sensitive habitat. Footpaths designed for low-density use should follow Lake County Forest Preserve District guidelines for footpaths to accommodate single-file travel.

7. Design improvements that respect sensitive habitats.

Transportation improvements should consider impacts on the environment and character of the Reserve. The design, location, and construction of roads, trails, and paths require special attention when done in close proximity to wetlands. Floodplains and wetlands should be avoided unless it is infeasible to do so, and then design should consider minimizing impact.

- A. Continue to work with the Illinois Tollway and BRAC to ensure that future improvements to IL Route 53/120 corridors minimize impact on natural resources, particularly Almond Marsh, as consistent with the IL Route 120 vision: a 21st Century “modern boulevard” that adheres to the guiding principles, key recommendations, and design and performance standards outlined in the BRAC Resolution and Summary Report completed June 2012. Specifically, road improvements should preserve the environment and character of the area, minimize environmental and long-term development impacts, promote environmental enhancements and sustainable practices in all aspects of project development, implementation and operations, and create a modern boulevard that serves as a national and international model.
- B. Because of the sensitive nature of the Almond Marsh, and the impacts that different recreational uses can have, it is recommended that a system of pedestrian-only trails be evaluated for feasibility and considered for the Almond Marsh area, and they can be used for environmental education classes. They should be natural earth-worn trails designed for single-file traversing.
- C. Most other paths will be intended for bicycle, pedestrian, and / or equestrian use and access, and a well-compacted crushed stone surface is recommended to ensure consistently dry conditions with good drainage. A width of 8 to 12 feet is recommended for safe passing — as indicated in the OPRP.

8. Improve safety on Reserve roads by reducing speeding and dangerous driving

Speeding along Almond and Casey Roads has resulted in several fatalities, many injuries, and countless animal deaths. The roads are used as shortcuts to avoid traffic on nearby roads, and distracted drivers have been known to drive off the narrow road. With trails established for pedestrians and bicyclists along Almond and Casey Roads, the addition of rumble strips to roadway edges will help prevent drivers from running off the road, but they are significant hazards for cyclists, so other solutions should be sought. Informational electronic signs displaying drivers' speed can be effective at reducing speeding, but additional speeding enforcement may be necessary. Consider a uniform speed limit for Reserve roads. Consider limiting access to the Reserve at Casey and Almond Roads. The creation of a Slow Zone, enforced with speeding cameras, could also be considered if speeding continues to be a problem. Also consider encouraging bicyclists to use the trails and trail system rather than Reserve roads. Finally, when resurfacing or improving roads consider adding a minimum of three feet of paved shoulders for safer cycling and driver interface.

9. Implement shared parking agreements.

The development of new parking within the Reserve is not recommended because of negative environmental impacts of additional traffic. However, Libertyville Township would like to provide a small parking lot to allow residents to access Township holdings in the Reserve. Beyond this, the best solution for creating additional parking without having negative impacts is to create shared parking agreements with existing nearby parking lots on the edges of the Reserve and close to trails or other access points. The local Metra station to the west of the Reserve or the Connections Day School both have parking lots which are underutilized on the weekends. Signage between the parking and the trails will be necessary. Also, consider shared parking agreements with nearby Independence Grove Forest Preserve and/or Libertyville Division of Motor Vehicles parking lots. There is a significant amount of nearby parking that trail users can easily access, and Township will explore ways to improve access to its land holdings to nearby residents.

4. Conclusion

This Master Plan for the Liberty Prairie Reserve proposes a model of exceptional land, water and biodiversity health where public and private landowners manage their land in ways that sustain people, plants and wildlife. We envision people enjoying, enhancing, and restoring the Reserve's rich array of natural areas. Additionally the Reserve's agricultural values and heritage will be celebrated and continued in ways that support clean water, healthy soils, and a diversity of agricultural products and foods.

Since the original OPRP was adopted in 1991, physical, environmental, economic, and socio-political changes in and around the Reserve have created the need to update the plan to continuing to actively manage the natural, agricultural, and historic assets in and around the Reserve in the most appropriate way. The updated plan approaches this goal through a framework of recommendations intended to help guide decision making to ensure that land use, management, and change are complementary to the overarching goal of the Reserve: to protect and enhance land and water health within the mosaic of land uses in the Reserve. It is the hope of this plan that improved coordination of land management activities can make them more complementary and mutually beneficial, and that moving agricultural operations in the direction of management practices that improve natural resources and expand core habitats, as well as towards a greater degree of local food production, are just two elements of this complementary approach.

Land owners, land managers, local government staff and elected officials, county staff and elected officials, and representatives of regional and state agencies are encouraged to adopt this plan as an indication of general agreement with its philosophy and recommendations. Through ongoing meetings and discussions about best approaches to managing the Reserve landscapes, additional best practices and recommendations will emerge, approaches and recommendations will change, and updates to this plan will need to be made. A planning council of dedicated stakeholders in the Reserve (the Liberty Prairie Reserve Stakeholder Partnership) is envisioned as an initial step towards achieving these goals and implementing strategies to achieve the best possible outcome for the Reserve and its residents.

Liberty Prairie Reserve Acronyms

AADT	Average annual daily traffic
BC-BB Plan	Bulls Creek-Bull’s Brook Watershed Plan
BMPs	Best Management Practices
BRAC	Blue Ribbon Advisory Council
CMAP	Chicago Metropolitan Agency for Planning
CPTEP	Crime Prevention through Environmental Design
DPRT	Des Plaines River Trail
HUD	U.S. Department of Housing and Urban Development
LTA	Local Technical Assistance
MD-N	Milwaukee District North
NCS	North Central Service
OPRP	Oak Prairie Reserve Protection and Management Plan



Chicago Metropolitan
Agency for Planning

233 South Wacker Drive, Suite 800
Chicago, IL 60606

312.454.0400
info@cmaphillinois.gov

www.cmaphillinois.gov



CONSERVE
LAKE COUNTY
Healthy Land for a Better Life

32492 N. Almond Road
Grayslake, IL 60030

847.548.5989
www.conservelakecounty.org



Photo courtesy of Conserve Lake County, 2013.

Photo courtesy of Sandi Whitmore.



FY13-0111



Photo courtesy of Conserve Lake County, 2013.

Photo courtesy of Janet and Phil Hauck.

