



Village of Prairie Grove Comprehensive Plan and Ordinance Assessment

An Implementation Step of the Silver Creek and
Sleepy Hollow Creek Watershed Action Plan

November 2013

Acknowledgments

As an implementation step of the Silver Creek and Sleepy Hollow Creek Watershed Action Plan, the Village of Prairie Grove Comprehensive Plan and Ordinance Assessment is the cumulative effort of many individuals to help improve the natural resources of their community. The Village of Prairie Grove and the Chicago Metropolitan Agency for Planning would like to thank all of the people who participating in this assessment.

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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.

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Introduction

New construction can help bring in new residents, businesses, and investments, which in turn can give a community the resources to revitalize a downtown, build new schools, and undertake additional actions to improve the quality of life for its residents. However, because land development, capital improvements, and other actions directly affect watershed quality and function, the environmental impacts of development can make it difficult to achieve these goals while also protecting water quality and other natural resources. For example, when development occurs in previously undeveloped areas, the land alterations can affect how water moves into and through the landscape. This is primarily due to the creation of impervious surfaces and compacted soils that can no longer filter nor infiltrate as much water compared to the undeveloped landscape, thereby increasing surface stormwater runoff, decreasing groundwater infiltration, and reducing pollutant removal. In addition, conventional stormwater controls collect stormwater from impervious surfaces and transport the flow off site through buried pipes to treatment facilities or directly to receiving bodies of water. This approach efficiently collects and transports stormwater, but also can create high-velocity flows polluted with urban contaminants.

Development also can significantly impact the quality and quantity of natural areas and habitat. The design and layout of the lots, buildings, and streets of new development can lead to further encroachment into remnant natural areas or open spaces. Large, core open space areas, along with connecting corridors, are essential to maintaining well-functioning natural ecosystems that provide high-quality habitat for wildlife and plant communities. Within a development area, construction practices, such as clearing, grading, and tree removal, can remove valuable features of development sites that could otherwise be incorporated into the design and contribute to both the natural environment as well as the quality of life of future residents.

Communities throughout the Chicago region have been regularly updating stormwater regulations to improve the quality and reduce the quantity of stormwater runoff. One of the strategies is to require or encourage the use of green infrastructure and other best management practices (BMPs) that filter, infiltrate, cool, and cleanse stormwater runoff before it reaches the receiving body of water. These techniques also reduce the amount of stormwater runoff during major storm events and thereby prevent flooding of private property and reduce channel and bank erosion within the community's waterways. Steps to improve the infiltration of stormwater can also help communities maintain groundwater capacity and maintain lake levels during drought conditions.

In addition to stormwater ordinances, municipalities are gradually updating local plans and subdivision, zoning, and landscaping ordinances to remove barriers and ensure that development codes reduce natural resource impacts.

While the McHenry County Stormwater Management Ordinance establishes standards for managing stormwater runoff once it is generated, it is the plans and ordinances at the municipal level that have the ability to guide the location of development and reduce the amount of impervious surfaces associated with new construction. These same local land use policies and regulations can also promote the preservation of natural areas and open spaces by encouraging infill development in areas that are already served by existing infrastructure, as well as by allowing flexible layout options to keep natural areas and features intact. Working to ensure that subdivision, zoning, landscaping, and stormwater ordinances are working together can also make it easier for developers to meet multiple requirements simultaneously.

When taken together, these practices offer cost-effective alternatives to conventional practice for both private developers and municipalities. For private developers, green infrastructure practices can reduce initial land acquisition, diminish land clearing and grading, reduce needed stormwater management facilities, and other infrastructure material costs. For example, clustered conservation design subdivisions have been shown to have significantly lower infrastructure costs than conventional subdivisions. And even when natural drainage practices are cost neutral to the developer, the lower life-cycle costs of certain green infrastructure practices should be considered. For municipalities, green infrastructure can lower ongoing maintenance and replacement costs. For example, a narrower neighborhood street will cost less to resurface in the coming years. Recent experience also suggests that green infrastructure designs, like permeable paving, often have longer lives than traditional designs and, hence, lower life-cycle costs. In addition, municipalities can benefit from indirect cost savings, such as reducing expenses related to downstream pipes and culverts, water treatment, and flood damage. The Kane County 2040 Green Infrastructure Plan includes a review of the cost effectiveness of these strategies using local case studies.¹

¹ Kane County, Illinois, "Kane County 2040 Green Infrastructure Plan," 2013. See <http://bit.ly/1dWEUbO>.

Project purpose and background

Completed in 2011, the Silver Creek and Sleepy Hollow Creek Watershed Action Plan was developed for two subwatersheds of the Upper Fox River Basin. The Silver Creek watershed has a drainage area of approximately 11 square miles and includes the Village of Oakwood Hills, portions of the Villages of Prairie Grove and Cary, the City of Crystal Lake, Nunda and Algonquin Townships, and unincorporated McHenry County. The Sleepy Hollow Creek watershed, with a drainage area of approximately 20 square miles, covers portions of the cities of Crystal Lake and McHenry, encompasses the majority of the Village of Prairie Grove, borders the Village of Bull Valley, and includes portions of unincorporated McHenry County. The planning process was driven by local stakeholders (including Village of Prairie Grove and residents) with assistance from CMAP and partner agencies The Environmental Defenders of McHenry County and Fox River Ecosystem Partnership.

Six main goals of the Watershed Action Plan were developed by the planning participants:

1. Maintain/achieve healthy surface waters within the adjacent watersheds of Silver Creek and Sleepy Hollow Creek.
2. Protect the quality of groundwater.
3. Protect the quantity of groundwater.
4. Restore natural areas and increase native species diversity.
5. Increase public awareness and knowledge to motivate needed action to implement the watershed plan.
6. Establish an ongoing community participation group to expand watershed planning and protection efforts and support project implementation.

The Watershed Action Plan inventories existing natural resources and land use features in the watershed planning area; identifies policy, planning, and stormwater management recommendations to protect and improve water quality; and recommends site specific actions and projects. One of the central recommendations is to update municipal ordinances to better protect natural areas and open space, as well as surface water and groundwater quality and quantity.

The Silver Creek and Sleepy Hollow Creek Watershed Comprehensive Plan and Ordinance Assessment is a continuation of efforts to reduce the negative impacts of stormwater runoff, protect natural resources, and improve the quality of life in our region's watersheds. The purpose of this project is to provide suggested comprehensive plan and ordinance revisions to participating municipalities located within the Silver Creek and Sleepy Hollow Creek watersheds—the Cities of Crystal Lake and McHenry and the Villages of Oakwood Hills and Prairie Grove. This report is focused on the Village of Prairie Grove.

As identified in the Watershed Action Plan, this project recommends changes to municipal comprehensive plans, as well as subdivision, zoning, landscaping, and stormwater ordinances, in order to ensure that they complement each other and lead to improvements in water quality and overall watershed health. The recommended changes are strongly encouraged and have the potential to provide significant protection and improvement for the Silver Creek and Sleepy Hollow Creek Watersheds, as well as the Fox River.

Project process

This project included several tasks to develop comprehensive plan and ordinance recommendations for each participating municipality within the Silver Creek and Sleepy Hollow Creek watersheds.

- 1. Establish a steering committee.** A steering committee composed of representatives from each municipality was formed to assist in guiding the development of the recommendations. The committee reviewed materials and provided feedback in coordination with relevant municipal staff and leadership.
- 2. Review best practices.** The project team consulted key resources relevant to reducing development impacts on water quality and other natural resources, collected from a variety of agencies and organizations. A reference list from the research can be found in Appendix B.
- 3. Review Watershed Action Plan.** The project team used the recently completed Watershed Action Plan as essential background information on the natural resource assets and key issues faced in this area. The proposed recommendations for reducing development impacts on water quality and other natural resource and improving watershed health provided the foundation for the recommended actions proposed in this report.
- 4. Review Comprehensive Plans.** The existing comprehensive plans for each of the participating jurisdictions in the watershed were analyzed. The analysis highlights specific areas within the comprehensive plan that the municipality may wish to revise to improve watershed health and to be more consistent with the Watershed Action Plan.
- 5. Review subdivision, zoning, and stormwater ordinances.** The existing subdivision, zoning, stormwater, and related ordinances for each of the participating jurisdictions in the watershed were analyzed. The analysis highlights specific areas of each municipality's ordinance that they may wish to revise to reduce development impacts to the Silver Creek and Sleepy Hollow Creek watersheds.

- 6. Create draft report.** A draft of the final report was created and sent to the steering committee for their review and comment in coordination with relevant municipal staff and leadership.
- 7. Discuss recommendations with municipalities.** A workshop was held with representatives from municipalities within the Silver Creek and Sleepy Hollow Creek watersheds, as well as McHenry County, to discuss and review the reasoning behind key recommendations.
- 8. Create final report.** Recommended changes to the comprehensive plan and subdivision, zoning, landscaping, stormwater, and related ordinances were compiled into individual reports for each municipality.

Relationship with the GO TO 2040 comprehensive regional plan

As part of the larger Chicago metropolitan region, Crystal Lake, McHenry, Oakwood Hills, and Prairie Grove both influence and are influenced by the region. CMAP is the official regional planning organization of the northeastern Illinois Counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. CMAP developed and now guides the implementation of GO TO 2040, metropolitan Chicago's first truly comprehensive regional plan in more than 100 years. To address anticipated population growth of more than 2 million new residents, GO TO 2040 establishes coordinated strategies that will help the region's 284 communities address transportation, housing, economic development, open space, the environment, and other quality of life issues. The plan contains four themes and 12 major recommendation areas:

Livable communities

1. Achieve greater livability through land use and housing
2. Manage and conserve water and energy resources
3. Expand and improve parks and open space
4. Promote sustainable local food

Human capital

1. Improve education and workforce development
2. Support economic innovation

Efficient governance

1. Reform state and local tax policy
2. Improve access to information
3. Pursue coordinated investments

Regional mobility

1. Invest strategically in transportation
2. Increase commitment to public transit
3. Create a more efficient freight network

The livable communities, efficient governance, and regional mobility chapters are most relevant to this Silver Creek and Sleepy Hollow Creek Watershed Comprehensive Plan and Ordinance Assessment, particularly those recommendations that relate to:

- Water and natural resource protection and enhancement
- Green infrastructure protection and enhancement
- Water and energy conservation and efficiency
- Open space and trails enhancement
- Collaborative planning and interjurisdictional communication

GO TO 2040 states, "municipalities are critical to the success of GO TO 2040 because of their responsibility for land use decisions, which create the built environment of the region and determine the livability of its communities. The most important thing that a municipality can do to implement GO TO 2040 is to take this responsibility very seriously." By undertaking this comprehensive plan and ordinance assessment to reduce the negative impacts of development on watershed health, Crystal Lake, McHenry, Oakwood Hills, and Prairie Grove have taken responsibility for guiding their future and have demonstrated their commitment to helping shape the future of the region as well.

Report organization

This report is focused on the Village of Prairie Grove. Section 2 identifies areas for improvement within the Village's 2006 Comprehensive Plan and Development Policies. Section 3 reviews the existing development-related ordinances and identifies recommended alternatives. Section 4 identifies priority steps the Village should take within the next year to implement the recommendations in this report.



Image by the Stream Team volunteers.

Comprehensive Plan Assessment

In 2006, the Village of Prairie Grove adopted its Comprehensive Plan and Development Policies. This Plan sets forth long-range recommendations for the maintenance and enhancement of existing community areas, as well as desirable improvements, developments, and redevelopments within the Village and its Planning Area. Using the U.S. Environmental Protection Agency's Water Quality Scorecard and the Watershed Action Plan as a starting point, Prairie Grove's Comprehensive Plan was analyzed to see how it addresses a number of natural resources, water resources, open space, trees, development type and location, transportation, and parking indicators. See Appendix A for the checklist. This section of the report identifies areas for improving the Comprehensive Plan to be better aligned with watershed plan goals.

Overall, while the Plan does recognize the value of sustainable design and natural resources, it can be improved to further protect natural resources and reduce negative development impacts. This section of the report identifies areas for improving the comprehensive plan to be better aligned with watershed plan goals. While this assessment was limited to the Comprehensive Plan, the Village is also guided by the following documents: Wildflowers Annexation and Development Agreement (2007), Illinois Route 176 Corridor (2009), and Town Center and Transit-Oriented Development Plan (2010).

Vision and goals

In the first section, the Plan identifies 12 overarching topic areas with corresponding goals and objectives. Under growth management, the goal is to create compatible and efficient land use patterns that diversify the tax base and facilitate cost-effective and efficient provision of public facilities and services that will support existing development and planned growth, and maintain the Village's rural character. Under this goal, several objectives emphasize focusing new development near already developed areas to preserve farmland and utilizing existing infrastructure. For residential areas, several objectives mirror recommendations made in the Watershed Action Plan, such as clustering new homes on sites containing wetlands, floodplains, large wooded areas, or other natural resources in order to minimize the impact to quality natural areas. Other objectives emphasize preventing urban sprawl and avoiding the creation of small, isolated pockets of residences that cannot be efficiently served by sewer and water. Objectives addressing commercial development are focused on creating a mixed-use town center and discouraging strip commercial development. The Plan also states that all new commercial developments should ensure that appropriate stormwater management and environmental protection provisions are included.

Under natural environment, the Plan identifies the following goal: preserve, protect, and enhance the existing natural resources, wooded areas, rolling topography, scenic vistas, and environmentally sensitive open space areas that are essential to the rural image and character of the Village. The corresponding 14 objectives address key principles ranging from identifying and protecting the environmental corridors, adopting best management practices to reduce the quantity and improve the quality of runoff, protect groundwater recharge areas, acquire land or easements for key natural areas, maintain the functional value of floodplains, wetlands, and wooded areas, promote clustering of homes, protect existing trees, and protect water resources from pollutants. The Plan should be commended for the inclusion of these principles. This concise set of objectives provides a strong foundation for the ordinance recommendations that follow in Section 3 of this report.

When the community embarks on updating this Comprehensive Plan, Prairie Grove should consider a few potential changes to the goals and objectives. Under the goal associated with business parks and light industrial, the Village should consider opportunities to better integrate these uses in a mixed-use setting instead of isolating these uses into separate office parks. Given the emphasis on high-tech, office, and research, many of these uses could be easily integrated into commercial areas. For example, they could help support the town center and provide a lively, attractive setting for employees to work. Under the utilities goal, Prairie Grove should consider adding an objective focused on protecting groundwater and using water conservation and efficiency measures to maintain the community's drinking water supply over the long term.

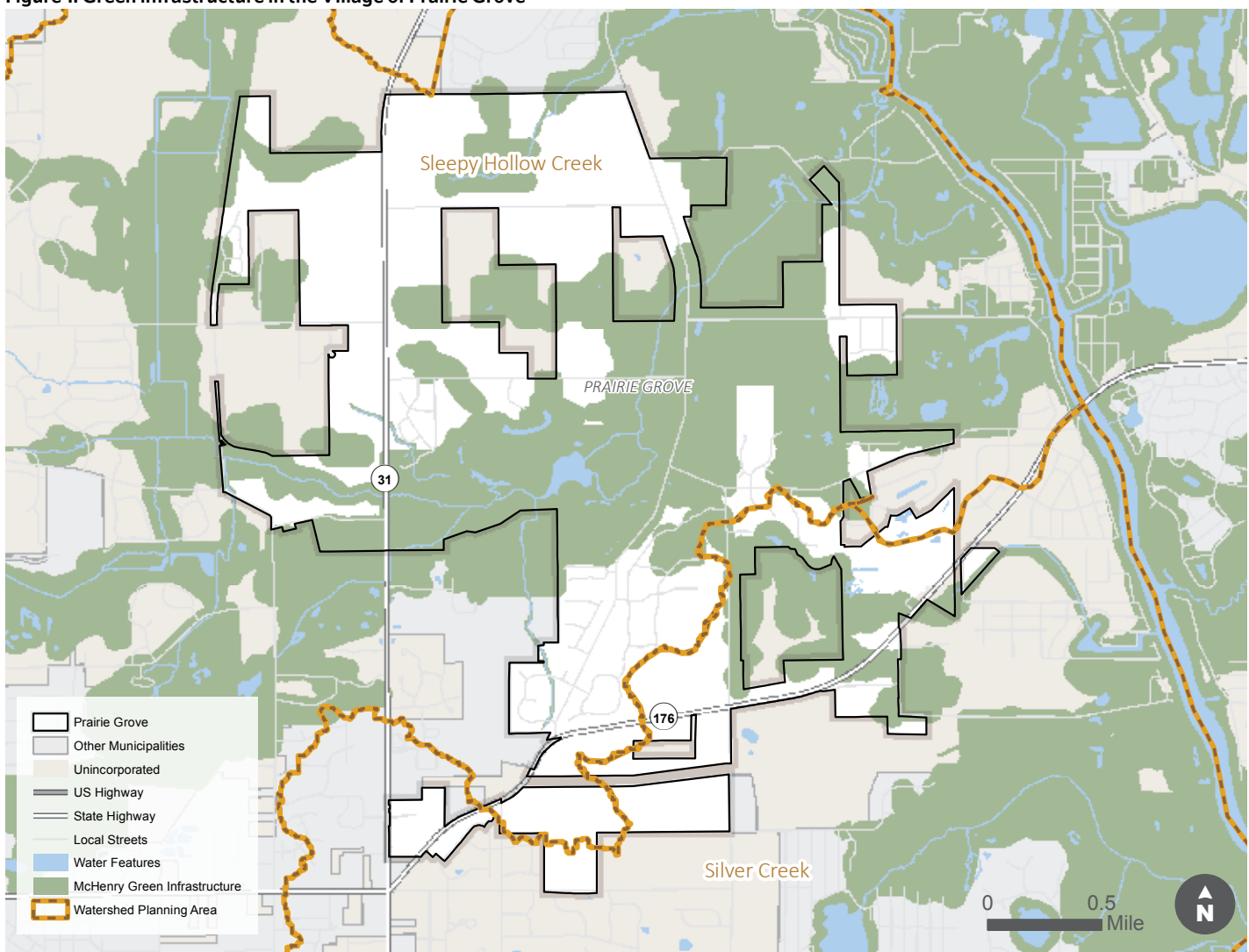
Land use plan

Section 2 begins by presenting the future land use plan and land use categories. The stated goal of the land use plan is to achieve a balance between the preservation of the significant environmental features and open space amenities that define and distinguish the Village, while accommodating and promoting high-quality and desirable new development. However, the section should be amended to provide a description of all of the land use categories identified in the plan. While five residential land use categories are described in the text, only four appear on the map (Figure 3). Notably absent is discussion of residential conservation design, despite its prominence in the Plan's goals and objectives. The existing residential land use category descriptions should be amended to include these design objectives or a new conservation design land use category should be created. If a new conservation design land use category is created, it should be located in

connection with natural resources within the Village using the Nunda Township's Open Space Plan, the McHenry County Green Infrastructure Plan, and the Silver Creek and Sleepy Hollow Creek Watershed Action Plan.

The future land use map should also be amended to accurately include the open spaces identified in the Community Facilities and Open Space Plan (Figure 10). For example, Figure 10 identifies land owned by the McHenry County Conservation District as well as open space areas proposed in Nunda Township Open Space Plan, but neither of these land uses are shown in the future land use map. Instead, these open space areas are mapped as single-family detached residential.

Figure 1. Green infrastructure in the Village of Prairie Grove



Source: Chicago Metropolitan Agency for Planning, 2013; McHenry County Green Infrastructure Plan.

Residential Plan and Policies

The Plan should be amended to clarify discrepancies between the different titles, descriptions, and numbers of residential land use categories. In the land use section, five residential categories (estate residential, single-family residential, neo-traditional, townhomes, and age-restricted) were identified but not consistently mapped. This same issue continues in the Residential Plan and Policies section, where four residential categories are described (in a different manner) and then five categories are mapped.

Regardless of this issue, both the estate residential and single-family residential categories include conservation design principles. While minimum lot sizes are identified, the Plan acknowledges that clustering, while using a smaller individual lot area, will help the community preserve valuable natural resources. Given these stated principles, a conservation design overlay district, which is located in relation to the green infrastructure present in the community, can overlap both estate residential and single-family residential areas.

This section encourages low-density residential land use in Estate Residential areas to contribute to the rural atmosphere that exists within the Village. Low density is defined as lot 1/2-acre in size or greater, ideally on lots of one acre or more. Development at this density (1/2 to 1 acres) without further open space guidelines could lead to the erosion of the very character it was intended to protect. Preserving open space and environmental features through the use of conservation design is a key method for maintaining the rural atmosphere of the Village.

The Plan supports multi-family residential uses and mixed-use development within the Town Center. In the Land Use section, neo-traditional residential, composed of single-family detached residential homes on smaller lots served by alleys and a traditional street grid system, are encouraged. The Plan recognizes the importance of diversifying its current housing stock. National and regional housing studies are showing both demographic and preference shifts that highlight the need for more compact housing types to meet demand. By 2030, the nation is expected to have an oversupply of low-density housing which could lead to a significant devaluation of this housing type.²

Commercial Areas Plan and Policies

The Plan identifies four different commercial area types: corridor commercial, town center commercial, riverwalk commercial, and business park. Corridor commercial areas are targeted for two arterials, Route 31 and Route 176. The Plan envisions that businesses could serve current residents and eliminate their need to drive to other communities for daily goods and services. This goal should be paired with design objectives that make these commercial areas easy to get to by foot or bicycle. The Plan currently calls for several valuable design techniques: clustering of commercial buildings, native landscaping, shared parking areas, and consolidated access drives. These design principles will be essential if the community intends to fulfill the objective of discouraging the establishment or extension of strip commercial development.

Within the town center commercial area, the Plan seeks to build a traditional downtown with mixed-use buildings and pedestrian amenities. This form of compact development helps preserve natural resources by minimizing the development footprint per capita and reducing the need to drive for everyday trips.

The business park, office park, and light industrial use areas are focused on creating isolated office and business parks instead of integrating these uses into mixed-use centers within walking distance of homes and commercial destinations. The Plan should consider locations where office and business land uses do not necessarily need to be designed in a campus-like setting. The Plan states that environmental corridors, wooded areas, and other natural features should be preserved as business parks are developed. Prairie Grove should consider using a Conservation Design Overlay district in these commercial areas as well to help ensure the protection of these natural resources. Within this district, the Plan envisions large setbacks, extensive landscaping between buildings, and wide streets. Instead, using Conservation Design principles, the buildings could be clustered to preserve larger areas of open space and limit the amount of impervious surface.

² Nelson, Arthur C. *Reshaping Metropolitan America: Development Trends and Opportunities to 2030*. 2013. Island Press: Washington D.C.

Transportation Plan and Policies

Section 2 defines the purpose of the Village's transportation system as one to establish the basis for a long-range system of roadways that efficiently supports existing and anticipated development. The roadway corridors will be maintained to enhance the rural character of the community. The Plan identifies natural landscaping as a key design element for maintaining the rural character. Along with preserving existing stands of trees and maintaining or creating natural landscaped areas along collectors and local streets, the Plan should be updated to encourage natural drainage systems, such as swales with native plants, as a way to maintain the rural character.

With limited opportunities for public transit, the Plan focuses on providing pedestrian and bicycle amenities to support alternative ways of moving around the village. Walking and bicycling are a way to reduce vehicle miles traveled and the amount of space required for vehicle movement and storage, which in turn have water quality benefits. The Village should consider the adoption of walkability standards for new subdivisions and identify existing areas that need to be improved. The Plan identifies an area within the proposed Town Center to accommodate a Metra station or a Park-and-Ride. Using permeable materials and practices that infiltrate and filter stormwater runoff will be important to reduce the environmental impact of this, and other off-street parking locations. The Plan should include a discussion on parking. The amount and availability of parking has a large influence on how residents make travel decisions. It also dictates how much land is required for a given development, contributes to stormwater impacts, and influences neighborhood vitality.

The Plan identifies locations to enhance the current street network by adding collector streets and connecting local streets. A compact and connected street network, by providing alternate routes, can allow the community to build narrower street widths. The Plan also recognizes that State may propose widening Route 176 if traffic volumes continue to grow. The Plan identifies a number of design criteria that should be used if the road is widened to lessen the negative impact of a larger road. In addition to sidewalks, bike trails, and access management techniques, street trees, parkway medians, and natural drainage systems should also be used to maintain a more rural character.

Community Facilities Plan and Policies

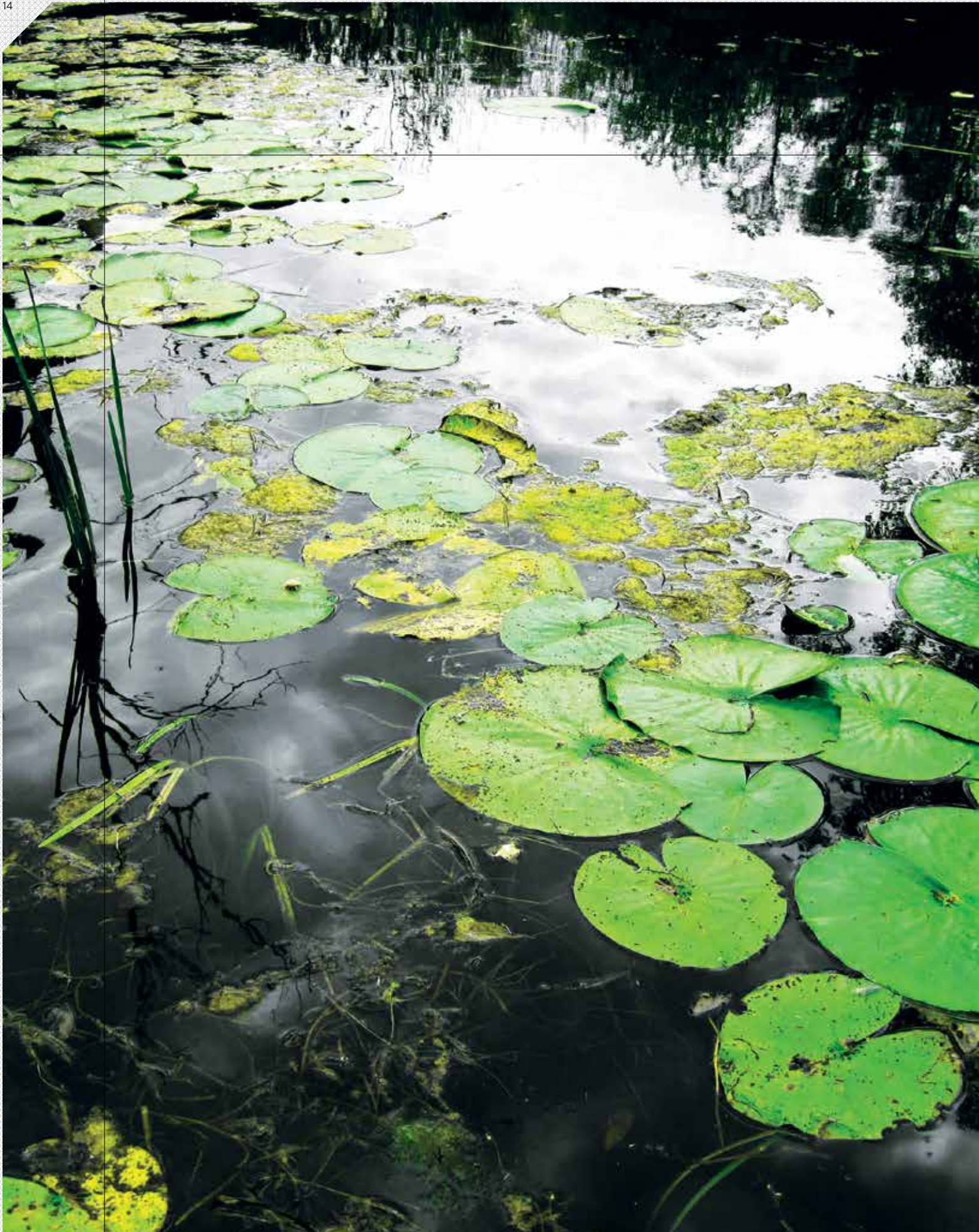
In addition to public schools, fire protection, and Village services, this section of the Plan covers open space. The Plan recommends that the Village should work with the McHenry County Conservation District to protect the community's natural areas. The Plan also encourages the Village to establish open space areas consistent with the Nunda Township Open Space Plan. As previously stated above, the Village should update its future land use map to include areas currently owned by the McHenry County Conservation District as well as the proposed open spaces identified in the Nunda Township Open Space Plan.

The Village of Prairie Grove is solely dependent on groundwater for its drinking water supply, so a safe and adequate groundwater supply is imperative to support public health and a prosperous economy. In addition, over pumping of groundwater can lead to streamflow capture, where groundwater that previously contributed to a stream's baseflow is diverted away into wells; negatively impacting the area's natural resources. The Plan recognizes that groundwater shortages are a growing concern for this area of McHenry County and that, as new development occurs, special consideration should be given to the impact of new development on the quality and quantity of available groundwater. This section should be updated to include strategies for maintaining the community's water supply over the long term. The community should use McHenry County's Sensitive Aquifer Recharge Area (SARA) map, which identifies areas that are susceptible to aquifer contamination as well as groundwater recharge areas, to inform the future land use map. Water conservation and efficiency measures in new development, redevelopment, and landscaping practices should be added to this section.

The Plan encourages the use of natural topography, bioswales, prairies/natural detention areas, and other techniques to manage stormwater. Additional principles, such as minimizing impervious surfaces, encourage permeable pavements, and using native landscaping, should also be included as methods to reduce the quantity and improving the quality of stormwater runoff.

Existing Conditions

Section 5 of the Plan presents a summary of the existing conditions of the community and provides the basis for the Plan's policies and recommendations. While the plan includes an Environmental Features and Open Space map, it does not identify all critical natural resources areas. Additional environmental features of the community should be added, including Sensitive Aquifer Recharge Areas, oak groves, steep slopes, prairies and savannas, and Nunda Township open spaces. Many of these environmental features are already mapped and included in the McHenry County Green Infrastructure Plan.



Ordinance Assessment

Summary of recommendations

The following ordinances were analyzed using a checklist developed from a number of best practices:³ Village of Prairie Grove's Stormwater Management Ordinance, Building Regulations, Subdivision/Planned Development Design Standards, Landscaping Code, Zoning Standards and Municipal Code. The following summary provides insight into the rationale behind the ordinance changes that are recommended in Tables 1 - 11, organized around the 11 major topic areas. The tables contain the full checklist, which includes sections of the municipal code of ordinances that already address water and other natural resource protection goals. The areas where the existing Village or McHenry County ordinance currently meets best practices are highlighted in green. The 11 ordinance subject areas are:

- Stormwater drainage and detention
- Soil erosion and sediment control
- Floodplain management
- Stream and wetland protection
- Natural areas and open space
- Conservation design and infill
- Landscaping
- Transportation
- Parking
- Water efficiency and conservation
- Pollution prevention

The Village of Prairie Grove has the authority to adopt, revise, and enforce provisions in each of these areas. All municipalities, including McHenry, are required to adhere to the minimum provisions of the McHenry County Stormwater Management Ordinance, which are covered in the first four topic areas: stormwater drainage and detention; soil erosion and sediment control; floodplain management; and stream and wetland protection. The Village can adopt more stringent standards. Currently, McHenry County is conducting a comprehensive review and revision of the Stormwater Management Ordinance and one of the primary objectives of the project is to establish regulations to implement the County's Water Resources Action Plan and the Green Infrastructure Plan. Ideally, the County's stormwater committee would consider updating the ordinance based on the recommended changes in these four sections so that improvements could be made uniformly throughout the county. This would result in more comprehensive water quality and natural resource protection; maintain consistent standards between municipalities; and a more level playing field for developers. At a minimum, Prairie Grove is encouraged to advocate for these updates to the McHenry County Stormwater Management Ordinance. The Village also is encouraged to independently adopt improvements to individual ordinance provisions that are in its own interest. Several specific recommendations are provided in the subsequent report sections. Appendix B provides a list of resources and reference materials that were used to guide the recommendations and could be helpful as the Village begins to update the Comprehensive Plan and development-related ordinances.

3 See Appendix B for resources and references used to develop the checklist.

Stormwater drainage and detention

Stormwater runoff is responsible for a number of impacts to communities, including flood damage to susceptible properties, the erosion and destabilization of stream channels and lake shorelines, and a significant portion of nonpoint source pollution⁴ to valuable stream, lake, and wetland resources. Development should use, to the extent practicable, the natural landscape and naturalized drainage and detention features to filter and infiltrate stormwater runoff from impervious surfaces on site. It is also important to reduce the effective impervious area of a site, which means the amount of impervious area that drains water directly into pipes, channels, and sewers without flowing over pervious areas. Methods of reducing the effective impervious areas focus on integrating (versus segregating) the pervious and impervious areas on a site. In particular, it is desirable to route runoff from parking lots, roads, and rooftops through such practices as bioswales, rain gardens, naturalized detention basins, natural landscaping, green roofs, filter strips, level spreaders, and rain barrels and cisterns. Stormwater detention facilities should be designed as multi-purpose, naturalized, wet or wetland basins, naturally landscaped above and below the water line. These practices serve multiple functions including but not limited to recreation, habitat, and improved aesthetics. Below grade stormwater storage, such as in aggregate layers beneath permeable paving systems and rain gardens, also should be allowed as temporary detention mechanisms.

Stormwater runoff should not be directly discharged into natural areas, particularly streams, lakes, and wetlands. Discharge of pretreated stormwater runoff may be allowed via accepted methods of pre-treatment such as naturalized swales, biofiltration practices, naturalized wetland detention basins, and other measures that filter and/or detain runoff. Other communities are beginning to require conformance to numerical water quality performance standards – such as percent removal of sediment or phosphorus.

The Village of Prairie Grove uses the McHenry County Stormwater Management Ordinance to regulate stormwater drainage and detention and there are several areas of this ordinance that could be strengthened to better protect water quality, natural hydrology, and aquatic resources. Table 1 highlights potential amendments to the adopted County ordinance, which could be addressed in the County's revision process. Prairie Grove could consider village

amendments to the updated County Ordinance if some of these items remain unaddressed during the revision process. Table 1 also identifies areas of the Village's subdivision ordinance that should be updated to allow for and encourage the use of natural drainage practices and detention. Prairie Grove's ordinance is relatively prescriptive, encouraging or requiring traditional "gray infrastructure" design approaches. By providing greater ordinance flexibility and removing barriers to preferred natural drainage practices and detention, developers are more likely to willingly implement innovative designs.

In addition, proper management and maintenance of these elements is critical to maintaining their function and effectiveness. Like other "grey" infrastructure, communities may be challenged by the long-term maintenance, legal authority, and staff capacity to enforce compliance. Establishing performance standards at the outset for stormwater infrastructure design and maintenance, particularly landscaping elements, can give measurable objectives for both the land owner to follow and the Village to refer to when action is required. Performance standards should identify proposed methods for establishing the areas and require monitoring and maintenance to ensure that the overall design and function is achieved and maintained. Tables 1 and 5 include recommendations and references for management and maintenance for natural areas. These address ownership, easements, funding arrangements, vegetative performance criteria, and inspections.

Many local governments implement demonstration projects of innovative stormwater management practices to ensure that their local staff has experience implementing and maintaining green infrastructure site designs. For example, Kane County installed a permeable parking lot and bioswale at the County complex in Geneva, in part to evaluate the effectiveness of these practices. The City of Aurora has similarly implemented permeable paving and related green infrastructure at a new police station and has installed numerous bioswales via funding from a recent Illinois Green Infrastructure grant. This level of experience is valuable when discussing new designs with private landowners and developers; Prairie Grove should look to include these practices in upcoming municipal projects.

4 According to the U.S. Environmental Protection Agency, nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. NPS is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters. It can include excess fertilizers, herbicides and insecticides from agricultural lands and residential areas, oil, grease and toxic chemicals from urban runoff and energy production, salt, pet wastes, faulty septic system, sediment from improperly managed construction sites and eroding streambanks, and atmospheric deposition.

Soil erosion and sediment control

Development and construction can result in excessive quantities of soil eroding from a site, which can clog sewers and ditches and pollute and impair rivers, streams, lakes, and wetlands. The Village uses the Prairie Grove Stormwater Management ordinance to regulate soil erosion and sediment control. This largely follows the Northeastern Illinois Planning Commission's (NIPC) Model Soil Erosion and Sediment Control Ordinance which is focused on minimizing the area and time of disturbance, following natural contours, avoiding sensitive areas, and requiring that sediment control measures be in place before significant grading or disturbance is allowed. However, a few updates could be made and Prairie Grove is encouraged to make these changes as Village amendments and/or advocate for these changes at the County level, see Table 2. One recommendation is to add a statement that the delivery of sediment from sites affected by land disturbing activities should be limited, as closely as practicable, to that which would have occurred if the land had been left in its natural undisturbed state.

A second recommendation is to update the main purpose of this section to include a comprehensive list of principles. The NIPC Model Soil Erosion and Sediment Control Ordinance outlines 12 general principles that establish how development should fit within the topography and soils of the site. A third recommendation is to add more details on how inspections will work for phased projects and to specifically require inspections at critical stages of the construction process to assure that development practices and erosion control measures are effective. Erosion control practices can fail over time, especially during lengthy construction processes. While inspections may require more initial staff involvement; the relative costs of inspection can be minimal compared to the problems / damages that could arise without proper practices in place. The Illinois Field Manual for Implementation and Inspection of Erosion and Sediment Control Plans is a good resource for conducting inspections and includes a detailed checklist of inspection criteria.

Floodplain management

Floodplains provide multiple benefits related to environmental quality, natural resource management, and recreational opportunity and are best able to provide these benefits if kept in a natural condition. Alterations within the floodplain often result in increased flood and stormwater hazards, reduced water quality, and loss of habitat and recreational opportunities. The Village follows the Prairie Grove Stormwater Management Ordinance to regulate soil erosion and sediment control. Further improvements, as identified by the NIPC Model Floodplain Ordinance, should be made to preserve and enhance water quality, habitat, recreational opportunities, aesthetics, and provide an additional margin of safety, see Table 3. State law allows local regulations that are more restrictive if they are reasonable.

Currently, the Village's ordinance allows a number of modifications in the floodway⁵ that we recommend removing because of concerns that they will increase flood damages, interfere with natural functions of floodways, and/or impair water quality and habitat. These include new treatment plants and pumping facilities, detached garages, sheds, and other non-habitable structures, parking lots and aircraft parking aprons, and roadways which run longitudinally along a watercourse. Based on the NIPC Model Floodplain Ordinance, it is recommended that the Village restrict modifications in the floodway to the following appropriate uses: public flood control projects, public recreation and open space uses, water dependent activities, and crossing roadways and bridges. For reference, the NIPC Model Floodplain Ordinance provides rationale for limiting specific types of modifications. For example, garages and sheds within the floodway are not advised because historically they have been severely damaged by floods, sometimes get swept away with flowing water, and may disrupt drainage and increase downstream flood damages.

Channel modifications are of particular concern because of their potential impacts on erosion, water quality and habitat, as well as flood height and velocity. The Village's ordinance already outlines a number of standards a project must meet if the proposed activity involves channel modification. The Village should consider adding an analysis of different alternatives and the impacts of the proposed project, considering cumulative effects on the physical and biological conditions of the body of water affected.

⁵ A floodway is not the same as a floodplain. The floodplain is an area of land adjacent to a stream or river that is susceptible to being inundated by water during storm events. The floodplain includes the floodway, which consists of a stream channel and adjacent areas that actively carry flood flows downstream, and the flood fringe, which are areas inundated by the flood, but do not experience a strong current.

Stream and wetland protection

The Village uses the Prairie Grove Stormwater Management Ordinance to regulate stream and wetland protection and there are several areas of this ordinance that could be strengthened to better protect the water quality and function of streams and wetlands. Table 4 highlights potential Village amendments to the adopted County ordinance. Alternatively, the Village could adopt a separate overlay district for these resources and use the NIPC Model Stream and Wetland Protection Ordinance to provide a higher level of stream and wetland protection.

Natural vegetation buffer strips along streams and around wetlands and ponds provide pollution control by allowing vegetation to filter sediments and contaminants from surface runoff before it enters waterbodies. The vegetation also stabilizes the natural drainageways and streambanks from erosion and can provide a significant amount of open space, wildlife habitat, and scenic beauty. It is recommended that the Village update several of the existing buffer requirements to emphasize the use of natural landscaping buffers from the ordinary high water mark of streams, lakes, ponds, or wetlands regardless of their size or quality.

In addition to natural vegetative buffers, establishing development setbacks of 75 to 100 feet from the ordinary high water mark will further minimize adverse water quality, habitat, and drainage impacts. Within the setback, development should be limited to the following types of activities: minor improvements like walkways and signs, maintenance of existing highways and utilities (but no new construction), and park and recreational area development. Conservation design, described in more detail in the following sections, can allow for site designs that can more easily accommodate stream and wetland protection objectives due to more flexible site layout and design requirements.

Natural areas and open space

In addition to the protection of streams, lakes, and wetlands covered above, other important natural resources that should be protected, restored and managed include prairies, savannas, and woodlands. These features often buffer aquatic systems and provide critical landscape linkages for wildlife. The Village of Prairie Grove's Subdivision and Zoning Ordinances require the identification of natural features during site review and includes some mechanisms to set aside and then maintain open space. The recommendations outlined in Table 5 are focused on three main strategies: expanding the definition of natural resources to reflect the existing assets of the Village, providing guidelines for setting aside open space, and then maintaining natural areas, natural features, common open space, buffers, and naturalized stormwater facilities in perpetuity.

The Village's Subdivision Ordinance does not provide specific goals to preserve natural resources beyond tree preservation. The Village should update the main purpose of this ordinance to call for every subdivision to preserve to the fullest extent possible the natural resources of the site, including but not limited to wetlands, lakes, streams, riparian buffers, floodplains, and steep slopes. With the creation of the McHenry County Green Infrastructure Plan, valuable prairies, grasslands, savannas, woodlands, and oak groves have been identified and can be incorporated into the subdivision ordinance as important features to protect.

Further improvements to the site analysis and design process (see section below on Conservation Design and Infill) will provide better protection of natural resources and allow the community to remove the greenbelt provisions within the Village's zoning ordinance. This will result in a more formalized process for reviewing natural resources of development projects. The Village's Planned Development ordinance currently allows, but does not require conservation design (clustering development, preserving large open spaces, and using natural drainage practices or other stormwater management best practices) in new development. Prairie Grove should develop a conservation design overlay district and use the McHenry County Subdivision Ordinance on Conservation Design or the City of Crystal Lake's Conservation District as models. As a fully operational conservation design overlay district, the Village can then zone this district for areas where natural resources exist as identified through the McHenry County Green Infrastructure Plan and the Watershed Action Plan. Consequently, provisions for Planned Developments could be updated to focus on other community objectives.

For both conventional and conservation design subdivisions, funding, management, and maintenance of natural areas, natural features, common open space, buffers, and stormwater best management practices should be the responsibility of property owners and/or the homeowners association (HOA), who will be responsible for creating and implementing management plans for such areas. Common open space may be managed by a third party non-owner, homeowners association, conservation organization, or the Village. At the time of plan approval, the Village should require establishment of a management funding mechanism and revenue source such as a Special Service Area (SSA) or a backup SSA to fund the recommended management activities if necessary management is not being conducted by the HOA. Other options include deeding the property to a local land conservancy or requiring that the developer establish an escrow account to pay for necessary management.

Conservation design and infill

Redevelopment of previously developed land—known as infill—is one of the best ways to create vibrant downtowns and neighborhoods while also minimizing the impacts of our built environment on the watershed. When combined with stormwater best management practices, redevelopment can actually lead to a net improvement in watershed conditions. The Village already has policies in place that encourage compact, pedestrian- and transit-oriented, mixed-use development. Continuing to encourage infill development is recommended and should be seen as an important technique for improving watershed health.

Where infill development is not possible, greater flexibility within the Village's Zoning and Subdivision Ordinances should be allowed to encourage clustering of buildings and preservation of natural areas, features, and open space, see Table 6. The Village's Town Center concept encourages compact, pedestrian- and transit-oriented, mixed-use development which will help to minimize the impacts of development while also providing a center for the community. As previously discussed, a conservation design overlay district should be zoned for areas with natural resources and should be required or allowed by right. In addition, conservation design guidelines should be required if sites outside of these designated areas are found to contain priority natural resources.

Conservation design would ideally incorporate a six-step site design process:

1. Identify all natural resources, conservation areas, open space areas, and physical features on the site through a site analysis.
2. Perform a site capacity analysis based on the remaining developable land after removing floodplains, streams, wetlands, and other legally undevelopable land. This allows for a more objective analysis of the number of units that the zoning allows and the starting point for density bonuses for design excellence.
3. Locate the buildable area to minimize impacts on natural areas and highly permeable soils and to take advantage of open space and scenic views that were identified in the site analysis.
4. Design the street network to minimize encroachment into sensitive natural areas while still maintaining internal and external connectivity.
5. Allow flexibility in lot and block layouts to provide the required open space and accommodate naturalized stormwater management features and natural landscapes, while also maintaining a connected street network.
6. Minimize clearing, grading, and modification of the site and ensure compatibility with the site's natural areas, features, topography, soils, and water resources.

Landscaping

Natural landscaping can greatly benefit the preservation of water quality and natural hydrology. Native landscaping requires little or no chemical pesticides or fertilizers, common pollutants impacting streams and waterbodies in watersheds. In addition, the type of landscape can influence the amount and rate of stormwater runoff. Wherever feasible and appropriate, deep-rooted natural landscaping should be used in lieu of conventional, shallow-rooted turf grass landscaping, see Table 7. Landscaping provisions are included within the Village's Zoning, Subdivision and Landscaping ordinances.

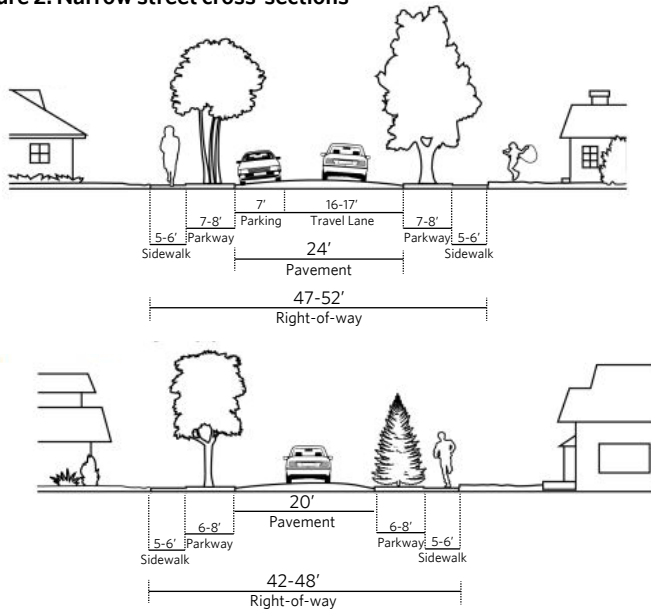
While some areas of the Village's ordinance encourage native landscaping in lieu of conventional turf grass landscapes, other areas of the ordinance unintentionally discourage the use of native landscaping via "weed" prohibition language. Prairie Grove should update these provisions to allow native vegetation, including native grasses, to be exempt from weed provisions. In addition, the Village should encourage or require the use of native plant materials as the default for stormwater management applications, such as biofiltration swales, rain gardens, filter strips, and detention basins, as well as along waterbody buffers and within common areas.

The Village should update their tree preservation ordinance to adequately protect trees during the development process. Recommended improvements include distinguishing native and desirable tree species from undesirable tree species; requiring tree surveys on all properties, not just residences; adding additional protective measures; providing flexibility to allow the removal of trees where appropriate for proper forest and natural area management; and advancing the replacement criteria for the unavoidable removal of desirable species. The Village should redefine the tree preservation area as the Critical Root Zone (CRZ) for each tree preserved. The Village should also consider requiring the identification and protection of trees that are outside of the property line but may have their CRZ extending into the construction site. Lastly, the Village should require street trees for all new developments and subdivisions.

Transportation

Streets compose a substantial proportion of a community's impervious surfaces and are thereby a significant generator of stormwater runoff. The Village's Subdivision Ordinance plays a large role in the design and layout of new streets and driveways; a key to ecologically-sensitive design is limiting the amount of impervious cover to that which is necessary and to the most appropriate areas, see Table 8.

Figure 2. Narrow street cross-sections



Streets should be designed for the minimum required pavement width needed to support travel lanes, on-street parking, and emergency access. Reductions in street width standards are recommended in new subdivisions. Minor decreases in width can result in large reductions in impervious surfaces when executed over the length of a street. Narrower streets have been shown to be safer streets with slower speeds, addressing a common neighborhood concern. Narrower street requirements should be paired with connectivity thresholds to ensure that access is maintained. Connectivity is essential for emergency response, giving emergency vehicles several, more direct routes; shortening response times; and potentially providing service to more buildings per station.

In addition to narrowing the pavement width, naturalized stormwater infiltration and conveyance systems should also be encouraged. Instead of requiring conventional curb and gutters, new subdivisions should be allowed to use swales and rain gardens as part of the stormwater management system along streets. Since new stream crossings can cause significant stream impacts these should be minimized wherever possible and then designed to reduce harmful impacts.

Parking

Parking lot and driveway design should first minimize stormwater runoff and then treat the remaining runoff to the greatest extent practical. A prime focus is to maintain as much pervious or unpaved surface as possible, followed by managing the runoff that does occur. Maintaining pervious surfaces can be accomplished primarily by reducing the overall size of parking lots and driveways and by replacing impervious materials with appropriate pervious materials. Once the amount of impervious surface has been minimized, BMPs that filter and/or infiltrate runoff are the best tools for controlling runoff volumes and protecting water quality; see Table 9.

A number of recommendations are focused on reducing parking requirements as well as parking space and aisle design standards. Additional recommendations include encouraging more shared parking with nearby uses, reducing parking requirements based on location, and including credits for bicycle parking. Encouraging the use of permeable parking surfaces such as interlocking concrete pavers, porous asphalt, and porous concrete is recommended except for specific areas used for transfer or storage of hazardous materials. These types of permeable paving systems, interlocking concrete pavers in particular, have been shown to be as durable as conventional asphalt and concrete paving, require less repair and rehabilitation, and need not be limited to overflow parking areas. However, it should be recognized that permeable paving systems do require sweeping or vacuuming to minimize clogging by fine sediments and maintain their long-term permeability. Driveways also create a significant portion of impervious surface on individual parcels; recommendations encourage reduced widths and lengths, shared driveway designs, and permeable surfaces.

Portions of the existing Village Zoning Ordinance require the physical separation of pervious and impervious surfaces on site, thereby effectively preventing runoff from impervious surfaces from flowing onto or into pervious areas where it can be filtered and infiltrated. For example, the Village currently requires raised, fully curbed landscaped islands instead of recessed islands that could hold and treat stormwater runoff in parking lots. Landscaping ordinances should encourage and/or require the integration of pervious, landscaped areas with the impervious areas of the site. Language to specifically allow or require integration of biofiltration into parking lot islands and street side landscaping strips is recommended.

Water efficiency and conservation

Groundwater withdrawals can negatively impact wetlands, streams, and lakes, as well as lead to shortages in drinking water. While the techniques outlined in the previous sections can reduce impervious surfaces and promote natural groundwater recharge, additional measures are needed to reduce the quantity of groundwater withdrawn for every day uses. With growing concerns about groundwater shortages for portions of southeastern McHenry County by 2030, water efficiency and conservation measures are recommended for sections of the Village's Building, Subdivision, and Water and Sewer ordinances, see Table 10

Water efficiency measures, such as reducing water use by toilets, showers, and faucets, through installation of high-efficiency fixtures, is recommended for new development and redevelopment that meets a specific threshold. CMAP's Model Water Use Conservation ordinance can be used as a reference for a number of updates within the municipal code. Conservation measures, such as establishing landscaping irrigation days and schedules, have been proposed by the Northwest Water Planning Alliance, a consortium of municipal and county governments (including McHenry County) which has created the Regional Water Conservation Lawn Watering Ordinance.

Pollution prevention

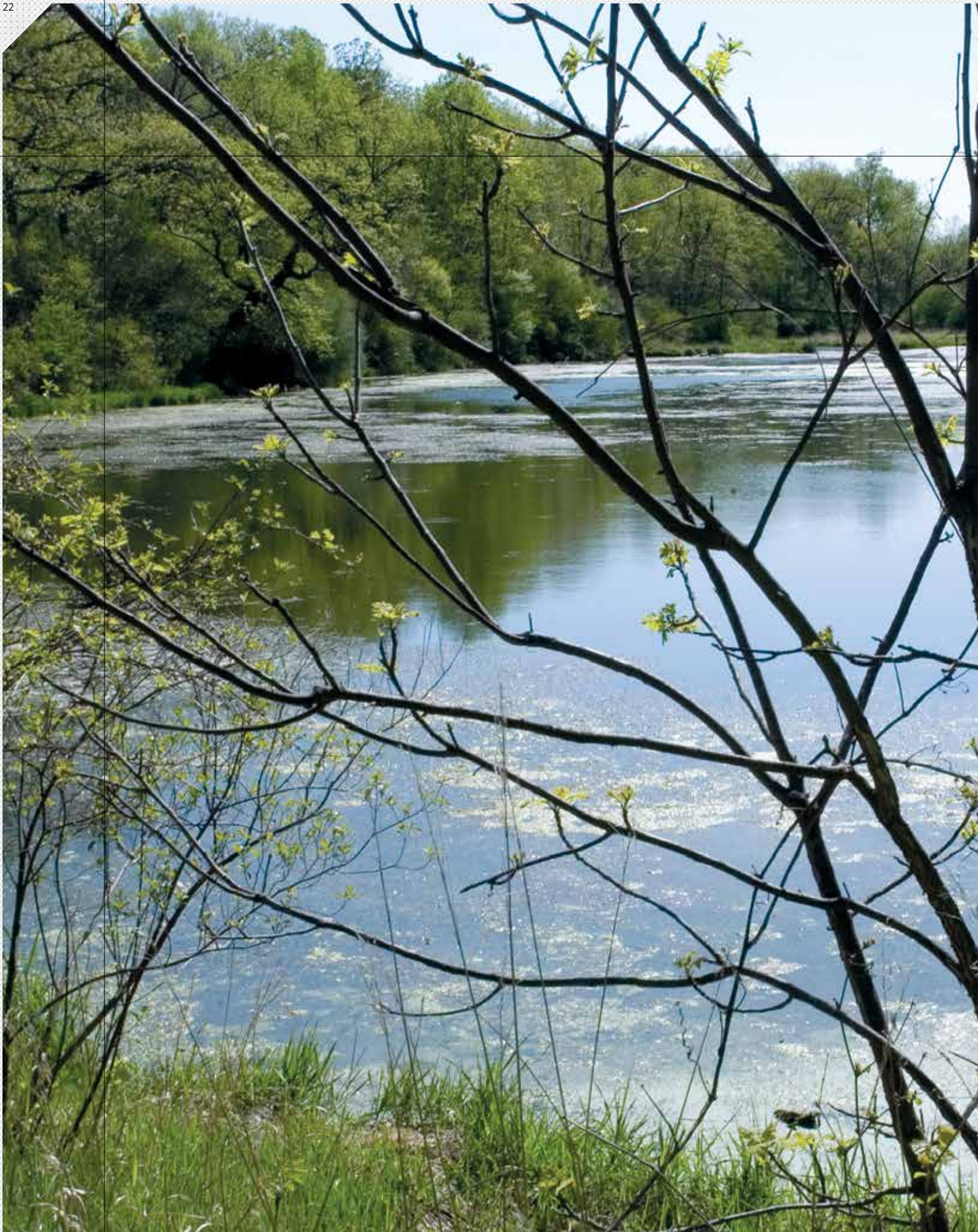
Nonpoint source pollution is a leading cause of water quality problems across the country. Pollutants have harmful effects on our drinking water supplies, recreation, fisheries, and wildlife. Not only are our surface waters degraded, but studies have shown that Illinois groundwater quality is being degraded and that chloride concentrations are trending upward in shallow wells throughout the region.

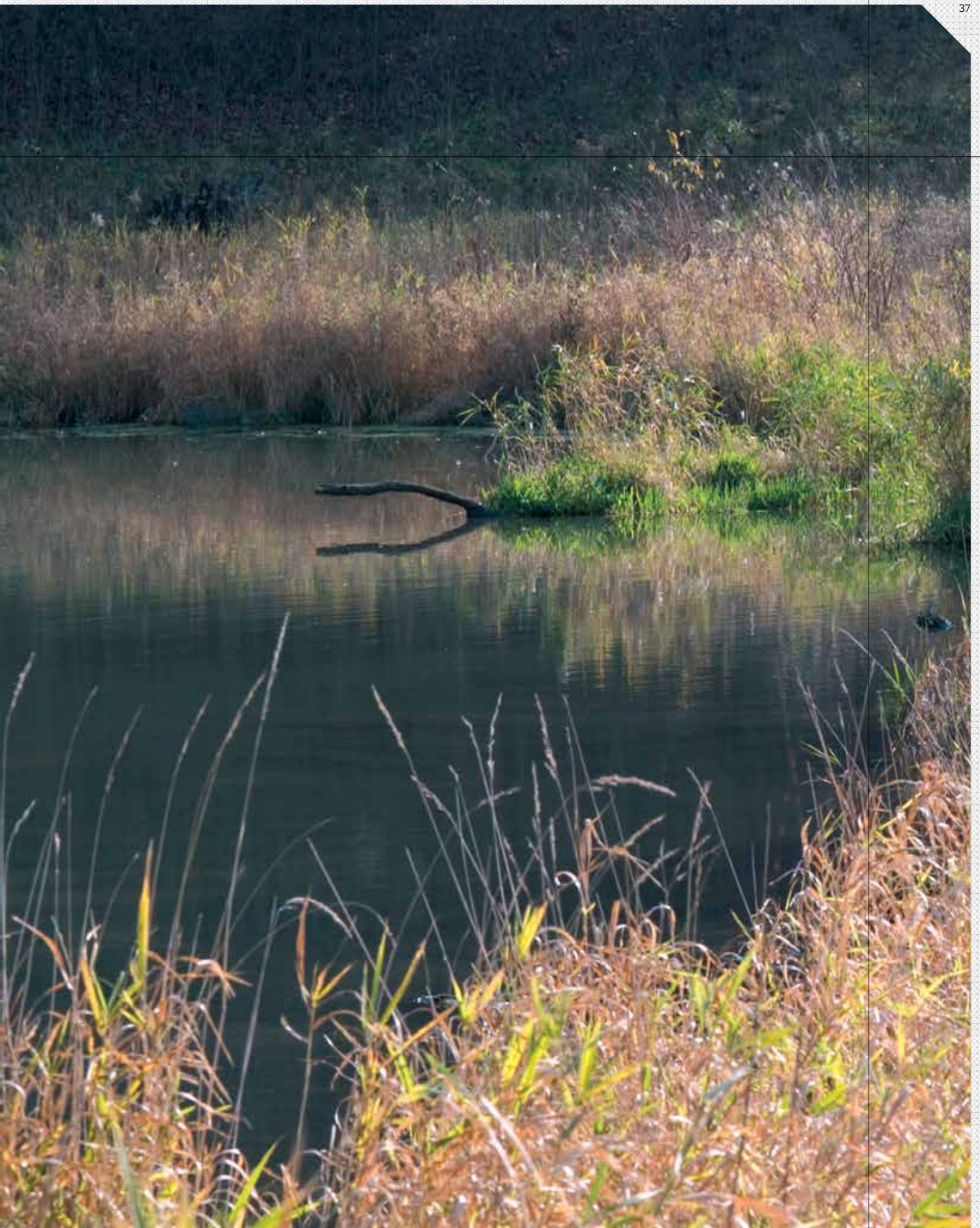
As a groundwater-dependent community that appreciates clean surface waters, the Village can take additional measures to protect their surface and groundwater resources from contamination, see Table 11. For example, steps to reduce phosphorus applications to lawns, more strictly regulate storage locations for hazardous substances, and encourage proper disposal of pet waste can all help protect surface water quality. For groundwater protection, the Village should also consider such measures as adopting a groundwater protection ordinance, establishing a wellhead protection program, encouraging demand-initiated water softeners, and promoting sensible and eco-friendly salting practices. Conservation design can be designated for groundwater recharge areas to help balance the protection of this resource with new development. McHenry County's model groundwater protection program has a number of resources the Village could use, including establishing regulations for activities within groundwater protection areas, prohibiting phosphorous fertilizers on turf areas, and managing salt storage and handling.

Current codes and recommended code revisions

Tables 1 through 11 summarize the existing codes and recommended code revisions covering eleven topics for the Village of Prairie Grove. Each table is divided into eight columns, each described below.

- 1. Reference number.** This first column numbers every recommendation and is provided for reference.
- 2. Category and checklist question.** The second, third, and fourth columns identify the main topic area, the checklist question that was used to evaluate the current ordinance, and a quick statement of whether the current ordinance meets the best practice objective.
- 3. Local code reference.** If the municipality's existing ordinance addresses the category area in the third column, the location of that language within the community's code is referenced in the fifth column. If the code does not address the category, then an appropriate location for inserting the recommended language within the codes is identified and listed in this column (e.g., Subdivision Code Section 19.72 – 3).
- 4. Current standard.** The sixth column briefly summarizes the municipality's current standard (e.g., bike trails must be a minimum of eight feet wide). If the ordinance does not address this particular standard, then "N/A" or not applicable is indicated.
- 5. Recommended standard or action.** The seventh column contains the recommended language for insertion into the community's ordinance or a recommended action. Wording options are provided (e.g., require/allow, may/shall) depending on the municipality's preference.
- 6. References.** The eighth column identifies references, including model ordinance language, examples from neighboring municipalities, and other design guidelines. The references are intended to provide the municipality with materials that can be used to update the current municipal ordinance.





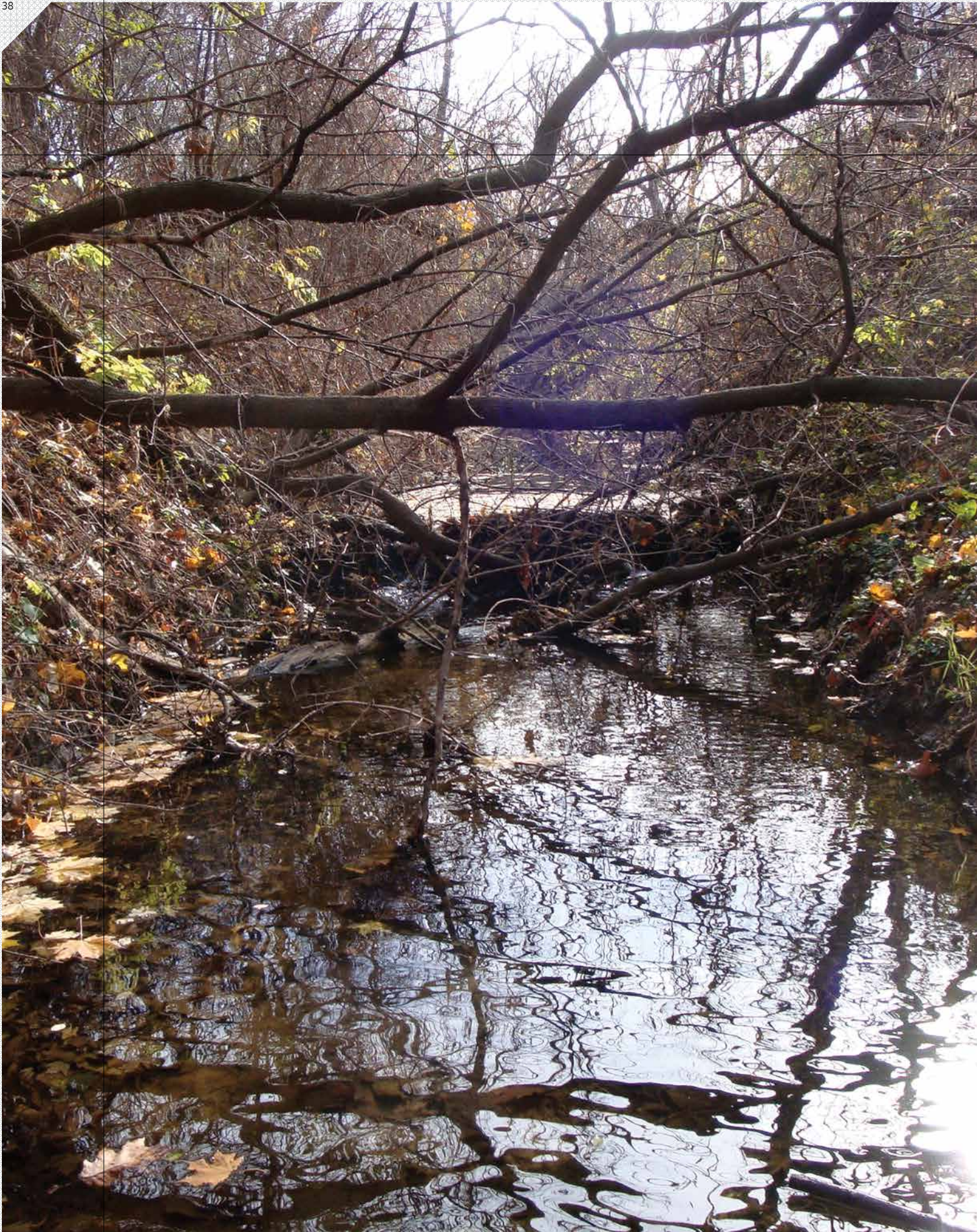


Image by the Stream Team volunteers.

Implementation Steps

This report identifies a number of recommendations to help better align the Village's Comprehensive Plan and development-related ordinances with watershed protection. Updating the Village's Comprehensive Plan can set the stage for more specific ordinance changes in the future. While all of the recommendations within this report merit consideration, there are a number of key steps the Village can prioritize to implement the recommendations in this report within the next year:

1. Incorporate the McHenry County Green Infrastructure Map into the Village's Comprehensive Plan.
 2. Create a new Conservation Design Overlay District using McHenry County's Conservation Design ordinance as a model and zone areas of the Village using the Green Infrastructure Map as a foundation.
 3. Advocate for amendments to the McHenry County Stormwater Management Ordinance and/or consider Village amendments that encourage additional natural drainage practices, further improvements to soil erosion and sediment control, updated limits on floodplain activities, and additional measures to protect streams and wetlands.
 4. Adopt water efficiency and conservation measures to ensure that new development and significant redevelopment uses water efficient plumbing fixtures and appliances and advances landscape irrigation practices to minimize water loss.
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Appendix A: Comprehensive Plan Checklist

	CHECKLIST QUESTION	YES/NO	NOTES	PAGE
NATURAL AND WATER RESOURCES				
1	Identify and map critical natural and water resource areas?	Y	The future land use map identifies parks and open space. The environmental features map identifies wetlands, flood zones, streams and water features, open space/parkland, McHenry County Conservation District (MCCD) parcels and wooded areas. No groundwater recharge areas are shown in any of the maps.	85, 88, 93
2	Contain a natural resource protection element with goals calling for preservation of identified critical natural resource areas?	Y	Goal to preserve, protect and enhance the existing natural resources, wooded areas, rolling topography, scenic vistas and environmentally sensitive open space areas. Objective to preserve the rural image and character of the Village. Key objectives include identifying and regulating environmental corridors that pass through the Village, adopting best management practices, protecting groundwater recharge areas, etc.	14-15
3	Contain a water quality protection element with goals calling for protection of identified water bodies and other water resource areas such as wetlands?	Y	Objective to regulate environmental corridors that include wetlands, surface water courses. Objectives also include protecting groundwater recharge areas and protecting Thunderbird Lake and the Fox River.	14-15
4	Identify key natural resource areas for protection in jurisdiction's parks and open space plan?	Y	Existing Community Facilities and Open Space map identifies a park/open space category. Community and Neighborhood parks are also identified and conservation areas. The Plan identifies the MCCD and Nunda Township Open Plan. Nunda's Plan proposes to preserve landscape diversity through farmland protection, preservation and protection of wetlands, wildlife habitat, etc. Watershed areas and woodlands not specifically defined in the Community Facilities and Open Space Section.	41, 93, 97
5	Identify key critical water resource areas for protection in jurisdiction's parks and open space plan?	Y	The Community Facilities and Open Space map includes the Silver Creek and Stickney Run Conservation Area, Sterne's Woods & Fen, Thunderbird Lake and parcels within the Nunda Township Open Space Plan.	97
6	Establish and enforce areas which are available for development and which lands are a priority for preservation?	Y	Parks, open space, recreation category in land use map identify areas that should be preserved. Areas include parcels within the Nunda Township open space plan.	23
7	Outline protection measures for source water protection areas through land use controls and stewardship activities?	Y	1. Identifying and protecting Thunderbird Lake and the Fox River by acquiring land or easements and setting these easements aside as permanent open spaces is listed as an objective of the plan. 2. Larger development, will likely be designed with water and sewer to minimize impacts to groundwater. 3. The Plan includes a map that identifies parcels within the Nunda Township Open Space Plan. The purpose of the plan is to achieve groundwater recharge soils through the acquisition of wetland and high quality natural areas.	15, 41, 43
8	Identify and map aquifer recharge/ source water areas and/or wellheads and recommend protective measures?	N	N/A	

	CHECKLIST QUESTION	YES/NO	NOTES	PAGE
OPEN SPACE				
9	Identify adequate open space in both developed and greenfield areas of the community?	Y	1. Plan goals include establishing a park dedication requirement for passive and active recreational areas. 2. Identifies and supports the Nunda Township Proposed Open Space plan which includes 25 open space parcels, four of which are included in the Village limits. Nunda Township Plan proposes to achieve this through acquisition of vistas, etc.	16, 41, 43, 97
10	Contain an open space/parks element that recognizes the role of open space in sustainable stormwater management?	Y	Detention and retention ponds should include natural topography, open ditches, bioswales, prairie/natural detention areas and other stormwater BMPs.	42
TREES				
11	Include tree preservation and replacement as community goals?	Y	Preserve mature trees by establishing and enforcing the Village's tree preservation ordinance.	15
12	Support the planting of street trees by all private and public development projects?	Y	Industrial and business parks uses should promote tree-lined streets. Plan supports private stormwater management BMPs including natural topography, bioswales, and prairie/natural detention areas.	13
DEVELOPMENT TYPE AND LOCATION				
13	Direct development to previously developed areas?	Y	Objective encourages infill development of vacant parcels. Mixed use of planned developments near proposed Town Center also included as an objective. The Town Center Commercial area is a mixed use development, an indicator of subdivisions on infill lots.	10, 11
14	Identify potential brownfield and greyfield sites and support their redevelopment?	Y	Transportation Plan proposes concept of a Riverwalk area which would include redevelopment of the riverfront and closing Wright Road.	36, 52
15	Direct growth to areas with existing infrastructure, such as sewer, water, and roads?	Y	Village relies mainly on well and septic. While new low density residential may be developed with well and septic, newer larger developments will be designed with water and sewer service. Two new developments, Terra Cotta and Riverwalk, are directed to areas with existing roads.	41, 52-53
16	Are mixed-use and transit-oriented developments allowed or encouraged?	Y	A Town Center around a new train station is identified in the Plan. Mixed use developments, Terra Cotta Development and the Riverwalk District, identified within plan.	9, 49-54
17	Identify appropriate areas for higher-density mixed-use developments (e.g., at transit stops) and recommend policies to encourage their development?	Y	Transportation Plan identifies a 20-acre parcel in the proposed Town Center. The site can accommodate a Metra station or a Park and Ride facility. Mixed use encouraged near the Town Center (along Route 31).	28, 32

	CHECKLIST QUESTION	YES/NO	NOTES	PAGE
TRANSPORTATION AND PARKING				
18	Emphasize alternative modes of transportation (walking, biking, and transit) to reduce vehicle miles traveled and width and prominence of roads/streets?	N	New development and open space should be accessible through biking/hiking trails. Trails should be linked throughout the Village through a shoulder system. Emphasis placed on leisurely cycling versus an alternative mode of transportation to reduce vehicle miles traveled.	33
19	Call for distributing traffic across several parallel streets, reducing the need for high capacity streets with wide rights-of-way?	Y	Collector streets system should be developed as a generalized grid throughout the Village and connect all local streets to arterial roads. Collector streets should accommodate more vehicles than a local street. Both collector and local streets are recommended to prevent overuse of roadways.	32
20	Include or recommend the creation of a formal bicycle/pedestrian master plan?	Y	Previous planning efforts established a plan for a bike/trail system along the Village roadways. The Plan calls for continued support of this plan.	42
21	Recommend supporting "safe routes to school" programs or other pedestrian/bike safety initiatives?	Y	The Plan recognizes the need for a safe location for school buses to enter and exit the school site and proposes a new bus access as part of the new school site.	38
22	Recommend improvements to walking/ biking conditions	Y	As improvements are made to Route 31, sidewalks and/or bike trails should be installed within the right-of-way along both sides. Previous planning efforts established a proposed bike/trail system along roadways within the Village that connect Village roadways to existing open space and recreational areas.	31, 43
23	Promote green infrastructure practices in street design?	Y	Existing tree stands should be maintained along roadways and natural/landscaped areas to enhance neighborhood appeal. Discussion may be expanded to include BMPs including bioretention curb extensions, sidewalk planters, permeable pavement, etc.	32
24	Promote green infrastructure practices in street design?	Y	Existing tree stands should be maintained along roadways and natural/landscaped areas to enhance neighborhood appeal. Discussion may be expanded to include BMPs including bioretention curb extensions, sidewalk planters, permeable pavement, etc.	32
25	Recognize the advantages to reduced parking requirements generally and specifically for mixed-use and transit-oriented developments?	~	Objective of Business Park/Light industrial recognizes the need for consolidated parking areas and drives services two or more uses. The Plan indicates a future Metra station is proposed with proposed parking that accommodates Metra's parking requirements.	13
26	Recommend alternative, flexible approaches to meeting parking demands (e.g., shared parking, counting on-street spaces towards site parking requirements)?	Y	Corridor commercial areas discussion encourages shared parking and consolidation of access drives.	28
27	Recommend provision of bicycle parking spaces/storage lockers and concomitant reduction in vehicle parking space requirements?	N	N/A	
28	Recognize transportation demand management as an approach to reducing vehicle miles traveled and parking requirements?	N	N/A	
29	Call for landscaping in parking lots to help reduce stormwater runoff?	~	Generous landscaping is proposed in business park, office park and light industrial uses areas. Discussion focused on aesthetic benefits versus stormwater runoff.	29

Appendix B: References

Algonquin, Illinois, “Conservation Design Standards and Procedures, Zoning Sec. 21.11 J.” See <http://www.algonquin.org>.

Association of Illinois Soil and Water Conservation Districts, “Illinois field manual for implementation and inspection of erosion and sediment control plans,” 1990.

Campton Hills, Illinois, “Village of Campton Hills Comprehensive Plan and Code Assessment,” 2010.

Center for Watershed Protection, “Better Site Design: Code and Ordinance Worksheet,” 1998. See http://www.cwp.org/documents/cat_view/77-better-site-design-publications.html.

Chicago Metropolitan Agency for Planning, “Ferson-Otter Creek Watershed Plan,” 2011. See <http://cmap.is/198vurA>.

Chicago Metropolitan Agency for Planning, “Model Water Use Conservation Ordinance,” 2010. See <http://cmap.is/1biqDop>.

Chicago Wilderness, Chicago Metropolitan Agency for Planning, “Green Infrastructure Vision,” 2012. See <http://www.cmap.illinois.gov/green-infrastructure>.

Congress for the New Urbanism, “Emergency Response and Street Design,” 2009. See <http://www.cnu.org/emergencyresponse>.

Crystal Lake, Illinois, “Conservation Developments, UDO Subdivision Standards: Article 5, Section 5-300.” See <http://www.crystallake.org/index.aspx?page=367>.

Crystal Lake, Illinois, “Street Standards for Conservation Design, UDO Development & Design Standards: Article 4, Section 4-100 E.” See <http://www.crystallake.org/index.aspx?page=372>.

Crystal Lake, Illinois, “Tree Preservation, UDO Development & Design Standards: Article 4, Section 4-300.” See <http://www.crystallake.org/index.aspx?page=377>.

Crystal Lake, Illinois, “Landscaping and Screening Standards, UDO Development & Design Standards: Article 4, Section 4-400 F1 and F2.” See <http://www.crystallake.org/index.aspx?page=379>.

Elgin, Illinois, “Tree Preservation, Zoning 19.16,” See <http://www.cityofelgin.org>.

Elgin, Illinois, “Shared Off-Street Parking Facilities, Zoning 19.45.055,” See <http://bit.ly/16mZfV5>.

Elgin, Illinois, “Parkway Rain Garden Program,” See <http://bit.ly/12rik7Z>.

Evanston, Illinois, “Exemption of Required Parking Spaces, Municipal Code 6-16-1-4.” See <http://bit.ly/12AYXeE>.

Fox River Grove, Illinois, “Groundwater Protection Regulations – Chemical Substance Controls, Article IX, Section 23-200.” See <http://bit.ly/19gZoxv>.

Geosyntec, “Hickory Creek Watershed Plan Ordinance Review and Checklist,” 2011. See <http://www.hickorycreekwatershed.org/learn/plan>.

Geosyntec, “Jelkes Creek-Fox River Watershed Action Plan, Appendix C: Ordinance Checklist Highlights/Summary of Results,” 2012. See <http://www.kanedupageswcd.org/Jelkes/Docs/JelkesCreekPlan12-12.pdf>.

Institute of Transportation Engineers, “Designing Walkable Urban Thoroughfares: A context Sensitive Approach,” 2010. See <http://www.ite.org/css>.

Kane County, Illinois, “Blackberry Creek Watershed: Zoning Code Analysis and Ordinance Language Recommendations,” 2004. See <http://www.co.kane.il.us/kcstorm/blackberry/zoning/FinalReport.pdf>.

Kane County, Illinois, “Kane County Stormwater Management Ordinance,” 2009. See <http://www.co.kane.il.us/kcstorm>.

Lakewood, Illinois, “Best Management Practices for R-2 Zoning, BMP hierarchy,” 2012. See <http://bit.ly/13RLU44>.

Low Impact Development Center, et al, “Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets,” 2008. See http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_munichandbook_green_streets.pdf.

Low Impact Development Center, et al, “Managing Wet Weather with Green Infrastructure Municipal Handbook: Rainwater Harvesting Policies,” 2008. See http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_munichandbook_harvesting.pdf.

Low Impact Development Center, et al, “Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Infrastructure Retrofit Policies,” 2008. See http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_munichandbook_retrofits.pdf.

Low Impact Development Center, et al, “Managing Wet Weather with Green Infrastructure Municipal Handbook: Incentive Mechanisms,” 2008. See http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_munichandbook_incentives.pdf.

Marengo, Illinois, “Groundwater Protection ordinance, Chapter 30” See <http://bit.ly/11aP3di>.

McHenry County, Illinois, “Green Infrastructure Plan,” 2012. See <http://bit.ly/12mkvbK>.

McHenry County, Illinois, “Wastewater and Sewage Treatment and Disposal, County Code, Article X,” 2007. See <http://bit.ly/ZF1yjP>.

McHenry County, Illinois, “Groundwater Protection Action Plan,” 2009. See <http://www.co.mchenry.il.us/departments/waterresources/Pages/GroundwaterProtectionProgram.aspx>.

McHenry County, Illinois, “McHenry County Water Resources Action Plan,” 2010. See <http://bit.ly/13xzKhM>.

McHenry County, Illinois, “McHenry County Phosphorus Model Ordinance.” See <http://bit.ly/13tKYtw>.

McHenry County, Illinois, “Addendum to the McHenry County Subdivision Ordinance Conservation Design Developments: Standards and Procedures,” 2009. See <http://bit.ly/14sjwrt>.

McHenry County, Illinois, “Water Reuse Model Ordinance.” See <http://bit.ly/13RLNFK>.

Minnesota Planning, “Model Community Conservation Subdivision District, From Policy to Reality: Updated Model Ordinances for Sustainable Development,” 2008. See http://www.crplanning.com/_ordinances/pud.pdf.

Minnesota Planning, “Planned Unit Development Ordinance, From Policy to Reality: Updated Model Ordinances for Sustainable Development,” 2008. See http://www.crplanning.com/_ordinances/conservation.pdf.

New Jersey Department of Environmental Protection, “Pet Waste Model Ordinance,” See http://www.state.nj.us/dep/stormwater/tier_A/ordinances.htm.

Northeastern Illinois Planning Commission, “Conservation Design Resource Manual,” 2003. See <http://bit.ly/105Lydz>.

Northeastern Illinois Planning Commission, “Green Landscaping: Greenacres, a source book on natural landscaping for public officials,” 1997. See <http://www.epa.gov/greenacres/toolkit>.

Northeastern Illinois Planning Commission, “Natural Landscaping for Local Officials: Design and Management Guidelines,” 2004. See <http://bit.ly/15LnknQ>.

Northeastern Illinois Planning Commission, Illinois Department of Natural Resources, and Office of Water Resources, “Model Floodplain Ordinance for Communities Within Northeastern Illinois,” 1996. See <http://cmap.is/15UXgGJ>.

Northeastern Illinois Planning Commission, “Model Stormwater Drainage and Detention Ordinance: A Guide for Local Officials,” 1994. See <http://cmap.is/1cRfXz4>.

Northeastern Illinois Planning Commission, “Model Stream and Wetland Protection Ordinance for the Creation of a Lowland Conservancy Overlay District,” 1999. See <http://cmap.is/18horf3>.

Northeastern Illinois Planning Commission, “Model Soil Erosion and Sediment Control Ordinance: A Guide for Local Officials,” 1991. See <http://cmap.is/1cAiAGE>.

Northwestern Connecticut Council of Governments, et al. “Model Zoning Regulations for Parking for Northwestern Connecticut,” 2003. See <http://www.nwctplanning.org/ParkingStudyPhase2.pdf>.

Northwest Water Planning Alliance, “Regional Water Conservation Lawn Watering Ordinance,” 2013. See <http://bit.ly/105IBZX>.

Oregon Transportation and Growth Management, “Neighborhood Street Design Guidelines: An Oregon Guide for Reducing Street Widths,” 2000. See <http://www.oregon.gov/LCD/docs/publications/neighstreet.pdf>.

Oregon Transportation and Growth Management Program, “Model Development Code and User’s Guide for Small Cities, 2nd Edition,” 2005. See <http://www.oregon.gov/LCD/TGM/docs/modelcode05/pdf/guide.pdf>.

Park Forest, Illinois, “Sustainability Audit of Zoning and Subdivision Codes,” 2011. See <http://www.cmap.illinois.gov/park-forest>.

Plainfield, Illinois, “TN Traditional Neighborhood District, Zoning Sec. 9-54.” See <http://bit.ly/16mXPtV>.

Plainfield, Illinois, “CV Conservation District, Zoning Sec. 9-56.” See <http://bit.ly/1aZsKom>.

Plainfield, Illinois, “Shared Parking, Zoning Sec. 9-74.” See <http://bit.ly/135V77V>.

Riverside, Illinois, “Required Off Street Parking Spaces, Municipal Code 10-8-8 and 10-8-9,” See <http://bit.ly/1bon8Lv>.

Saint Charles, Illinois, “Groundwater Protection, Municipal Code Chapter 13.18,” See <http://bit.ly/16AiOYs>.

Swink, Floyd and Gerould Wilhelm, *Plants of the Chicago Region*, Bloomington: Indiana University Press. 1994.

U.S. Environmental Protection Agency, “Green Infrastructure Case Studies: Municipal Policies for Managing Stormwater with Green Infrastructure,” 2010. See <http://1.usa.gov/cgrVHw>.

U.S. Environmental Protection Agency, “Water Quality Scorecard: Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scales,” 2009. See http://www.epa.gov/smartgrowth/water_scorecard.htm.

U.S. Environmental Protection Agency, “Model Ordinances Language: Aquatic Buffer Model Ordinance,” See <http://water.epa.gov/polwaste/nps/mol1.cfm>.

U.S. Environmental Protection Agency, “Model Ordinances Language: Ground and Surface Water Protection Overlay District,” See <http://water.epa.gov/polwaste/nps/mol7.cfm>.

U.S. Environmental Protection Agency, “What is Nonpoint Source Pollution?” See <http://water.epa.gov/polwaste/nps/whatis.cfm>.

U.S. Green Building Council, “LEED for Neighborhood Development Rating system,” 2011. See <http://www.usgbc.org/neighborhoods>.



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