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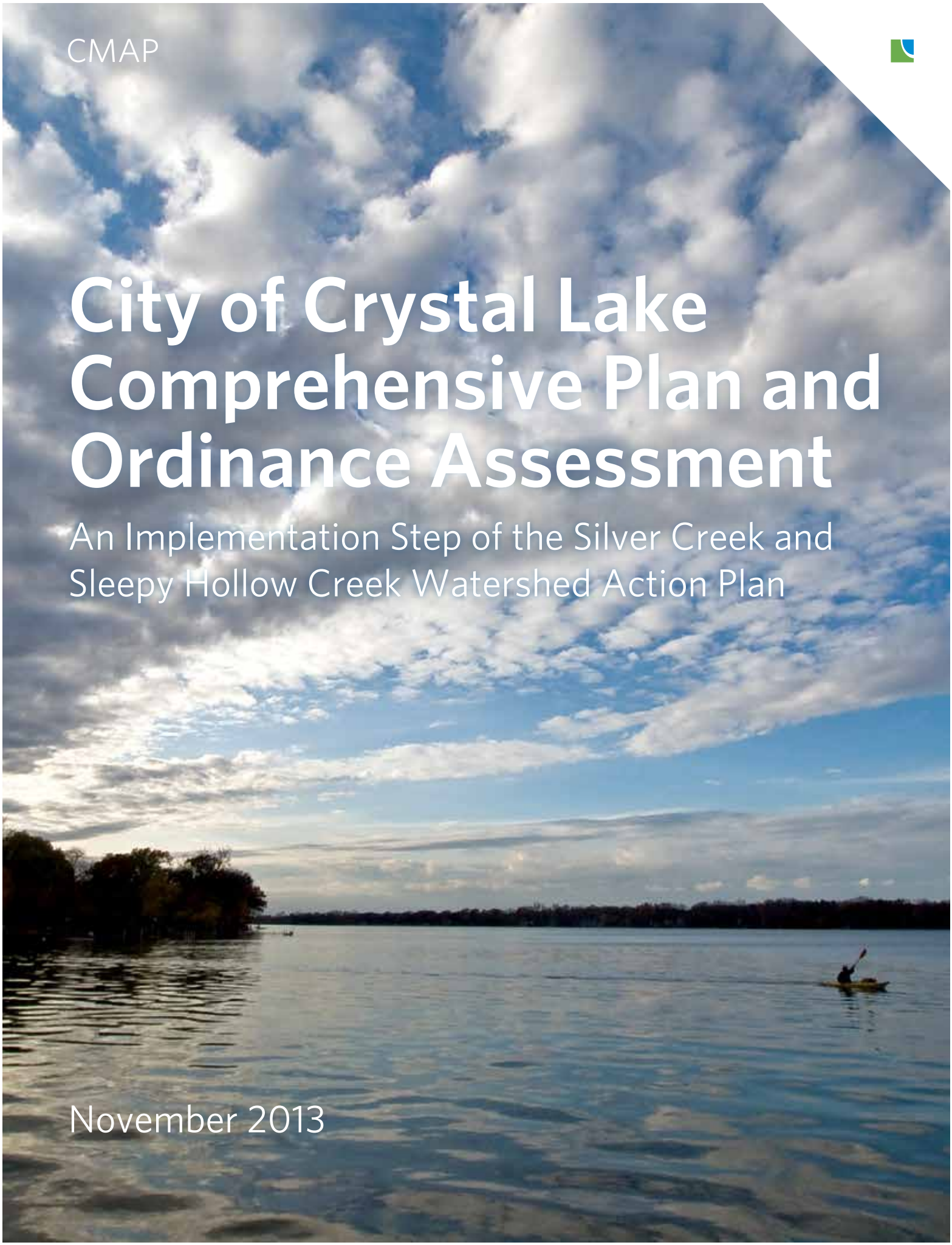

# City of Crystal Lake Comprehensive Plan and Ordinance Assessment

## 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 City of Crystal Lake Comprehensive Plan and Ordinance Assessment is the cumulative effort of many individuals to help improve the natural resources of their community. The City of Crystal Lake 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.

Cover image by Ron Zack.

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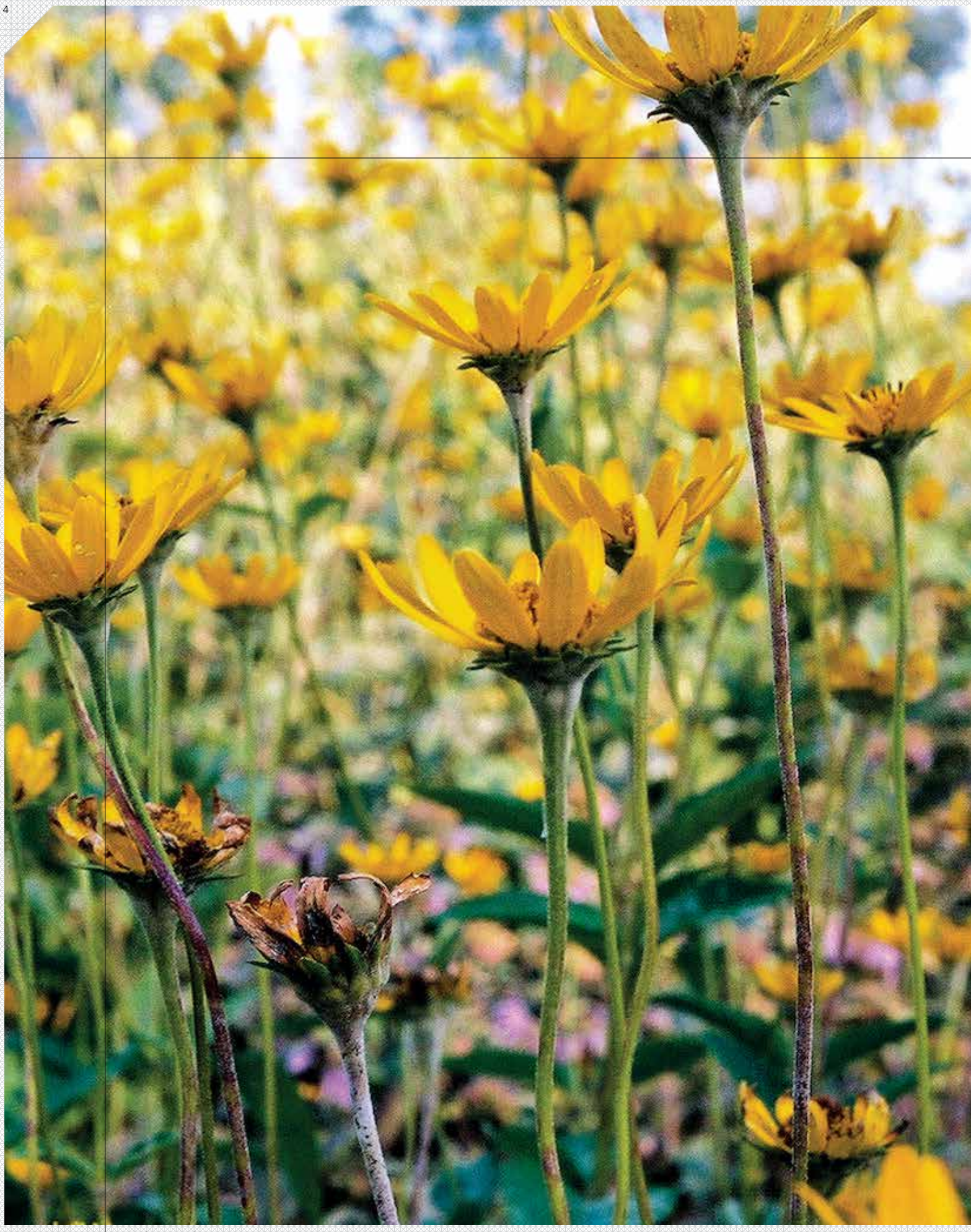


Image by Ron Zack.

# Introduction

Development and redevelopment 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 increasing downstream flooding and erosion. In addition, conventional stormwater controls collect contaminated stormwater from impervious surfaces and transport the flow off site through channels and buried pipes to detention facilities or directly to receiving bodies of water. While this approach efficiently collects and transports stormwater, it can lead to the pollution of local streams and the Fox River, limiting their ability to support fishing, recreation, and water supply uses.

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 can 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 City of Crystal Lake and residents) with assistance from CMAP and partner agencies The Conservation Foundation 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 City of Crystal Lake.

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 City of Crystal Lake. Section 2 identifies areas for improvement within the City's 2030 Comprehensive Plan. Section 3 reviews the existing development-related ordinances and identifies recommended alternatives. Section 4 identifies priority steps the City should take within the next year to implement the recommendations in this report.

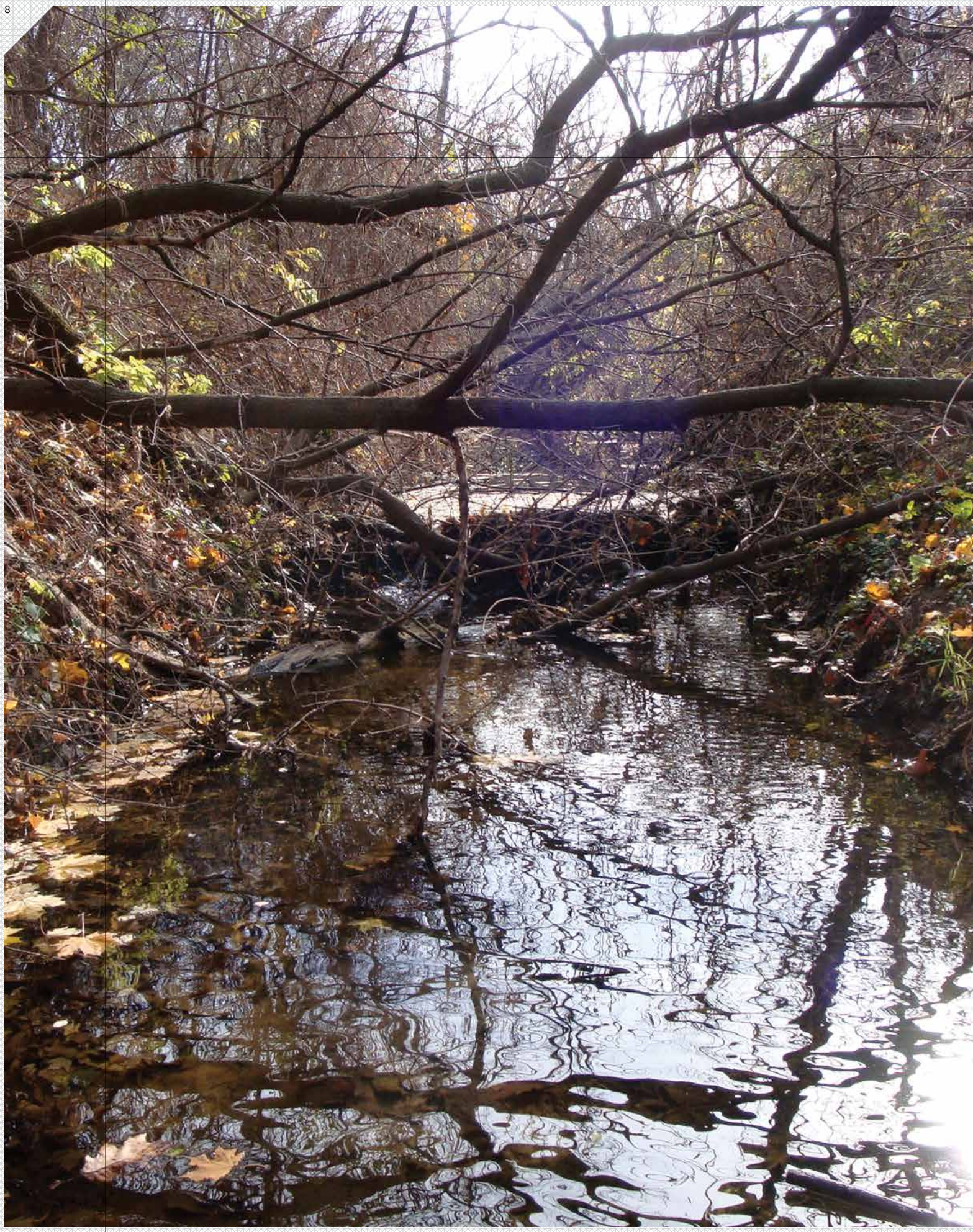


Image by the Stream Team volunteers.

# Comprehensive Plan Assessment

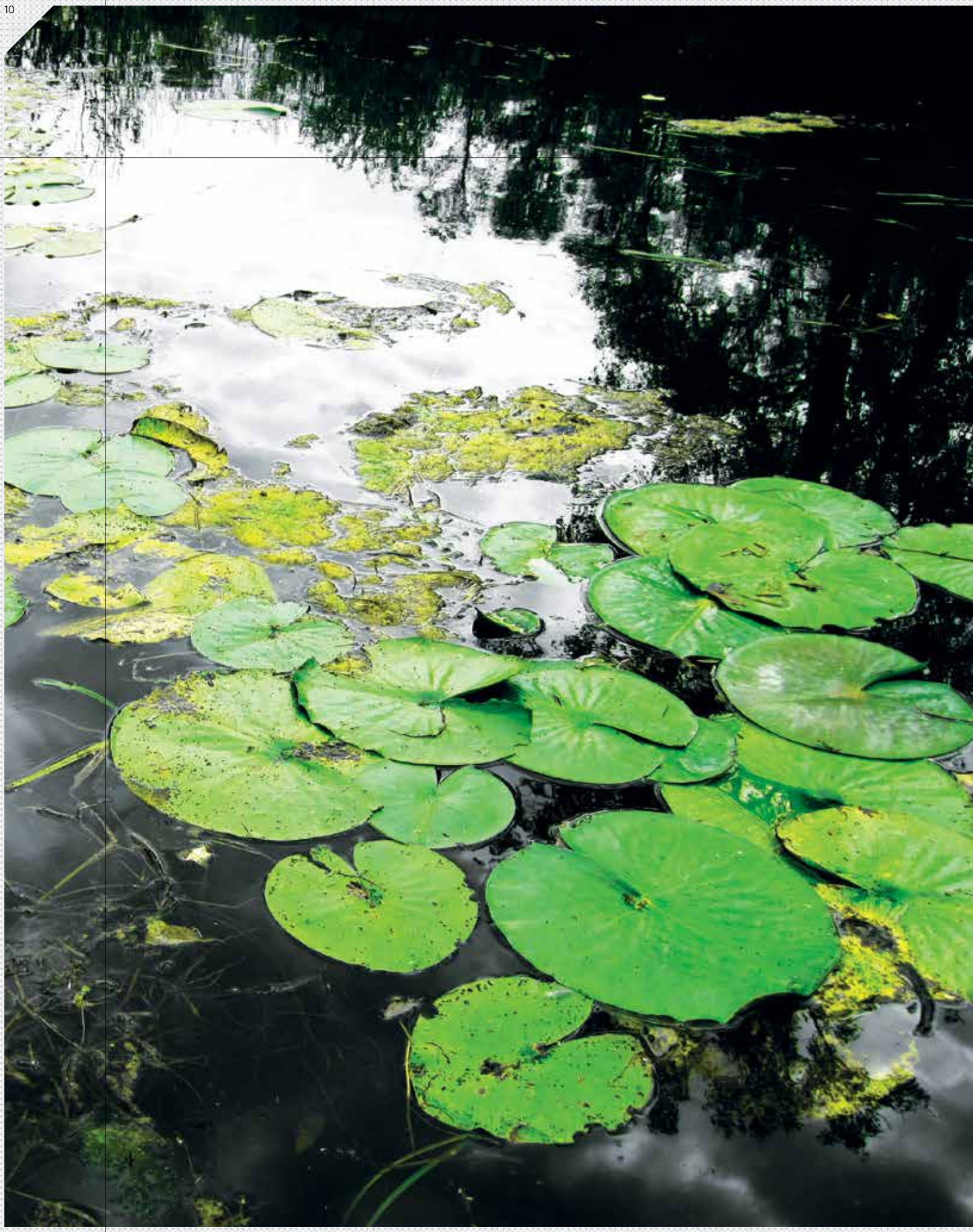
In 2012, the City of Crystal Lake adopted its 2030 Comprehensive Plan, which serves as a guide for citizens, developers, and the City in managing the evolution and growth of the community for the next 20 years. Using the U.S. Environmental Protection Agency's Water Quality Scorecard and the Silver Creek an d Sleepy Hollow Creek Watershed Action Plan as a starting point, the Crystal Lake 2030 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 full checklist.

Overall, the Plan provides a strong policy foundation for protecting and enhancing water resources. The preservation of environmental resources is included within the overall vision statement and appears throughout the document in goals, supporting actions, and success indicators. Green Infrastructure is given its own chapter, with a protection hierarchy for different environmental features as well as neighborhood and site scale strategies focused on biofiltration, native landscaping, and water conservation. Stewardship is an important aspect of the plan. Conservation design, transfer of development rights, and conservation easements are identified as techniques for preserving and enhancing open space and natural areas. Attention is paid to specific areas of potential development, such at the Northwest sub-area and the Crystal Lake watershed. The Silver and Sleepy Hollow Creek Watershed Action Plan is also recognized and supported within the Plan. However, the 2030 Comprehensive Land Use Plan should be updated to better reflect these stated goals and objectives. The map should reflect the Green Infrastructure maps, watershed plan, and other natural features identified in the Northwest sub-area and Crystal Lake Watershed maps. It should also contain a conservation design category to highlight where the community would like to see these principles applied.

The Plan is also focused on creating more compact, mixed-use livable neighborhoods. Infill development is seen as a way to take advantage of existing city services while also protecting natural areas. The Plan also recognizes that compact, mixed-use development is a way to reduce the number of automobile trips. Redevelopment opportunities are also identified for brownfield sites as well as underutilized shopping malls and commercial corridors. Transit-oriented development opportunities – specifically higher density residential and mixed-use projects around the railroad stations – are a priority.

Within the transportation chapter, the plan recognizes transit, automobiles, bicycles, and walking as the primary modes of travel. While standard street cross-sections are presented, alternative street cross-sections are encouraged, which minimize impervious pavement surfaces and utilize natural water conveyance systems. The Plan could go one step further by recommending the use of the alternative street cross-sections as standard practice and reserving the wider street cross-sections for special circumstances. The Plan could be updated to outline goals and objectives for reducing the amount of land devoted to off-street parking facilities.

In summary, the 2030 Comprehensive Plan outlines the essential policies and strategies for encouraging redevelopment within existing, underutilized locations and ensuring that new development protect natural resources. In the next update of the Plan, the City may want to consider streamlining this document to reduce repetition and overlapping items. One approach would be to present all of the goals and supporting actions and indicators in one place to look for ways to consolidate similar action steps while still maintaining the Plan's strong attention to detail. There are several instances where the success indicators are vague or not easily measurable. Indicators are most effective and informative when they utilize specific metrics that can indicate improvement or progress toward a stated goal. Creating one master table that includes all of the indicators may make it easier to spot inconsistencies in terms of level of specificity, feasibility of implementation, or formatting. Also, consider including a smaller number of success indicators which are carefully chosen to reflect the City's priorities. For example, it may be more appropriate to include only one or two indicators that relate to each goal, rather than a specific indicator for each supporting action.



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# Ordinance Assessment

## Summary of recommendations

The following ordinances were analyzed using a checklist developed from a number of best practices:[2] City of Crystal Lake's Unified Development Ordinance (UDO); the McHenry County Stormwater Management ordinance as adopted by the City; and sections of the City's 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 City 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

While the City has the authority to adopt, revise, and enforce provisions in each of these areas, the first four (stormwater drainage and detention; soil erosion and sediment control; floodplain management; and stream and wetland protection) are derived directly from the McHenry County Stormwater Management Ordinance. All municipalities, including Crystal Lake, are required to adhere to the minimum provisions of the countywide ordinance. While the City can adopt more stringent standards, it has largely adopted the standard provisions with little variation. 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, Crystal Lake is encouraged to advocate for these updates to the McHenry County Stormwater Management Ordinance. The City 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 City begins to update the Comprehensive Plan and development-related ordinances.

2 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 pollution[3] 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.

Ideally, 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 City of Crystal Lake 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 during the County's revision process. The City of Crystal Lake could consider City amendments to the updated County Ordinance if some of these items remain unaddressed.

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 City 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.

## 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 City uses the McHenry County 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 disturbed and the 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 Crystal Lake is encouraged to make these changes as City 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 provides 12 general principles that establish how development should fit within the topography and soils of the site.

3 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.

## 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 City follows the minimum requirements established by the Federal Emergency Management Agency and Illinois Department of Natural Resources' Office of Water. 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 County's ordinance allows a number of modifications in the floodway[4] 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 City 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 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 County Ordinance already outlines a number of standards a project must meet if the proposed activity involves channel modification. McHenry County or the City 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.

4 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 City of Crystal Lake uses the McHenry County 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 amendments to the adopted County Ordinance. Alternatively, the City could adopt a separate overlay district for these resources based on 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 or 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 provides a significant amount of open space, wildlife habitat, and scenic beauty. It is recommended that the City 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, allows 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 City of Crystal Lake's UDO requires the identification of natural features during site review for conservation design subdivisions and includes mechanisms to set aside and then maintain open space. The City's Conservation Design ordinance outlines the types of resources that should be protected and provides additional guidelines for setting aside open space and maintaining natural areas, natural features, common open space, buffers, and stormwater best management practices in perpetuity. With this excellent system in place, the recommendations outlined in Table 5 are focused on improvements to the open space management provisions for standard subdivisions. Standard subdivisions should also include plans for funding, management, and maintenance of open spaces and stormwater facilities. The City could use the procedures already outlined for conservation design subdivisions as a model for updates to standard subdivisions.

## 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 City already has the Downtown Business and Virginia Street Corridor Overlay districts, which encourage compact, pedestrian- and transit-oriented, mixed-use redevelopment. It has identified the Crystal Court Shopping Center as a redevelopment opportunity. With the Neighborhood Pattern book, which helps ensure that infill development will fit within the existing character of the community, the City has worked to improve community support for infill. 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, the City already has established a strong conservation design ordinance that is zoned for specific areas within the city and is required to be used when the property is found to contain key natural resources. The City could expand the conservation design overlay district to additional areas of the community known to contain green infrastructure. It can also further incentivize sustainable practices by making conservation design techniques as easy to use as possible. The City should consider requiring or allowing conservation design by-right instead of requiring a Planned Unit Development, see Table 6.

## Landscaping

Natural landscaping can greatly benefit the preservation of water quality and natural hydrology. Native landscaping requires little or no chemical pesticides or fertilizers, which are common pollutants impacting streams and water bodies in watersheds. In addition, the type of landscaping 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.

Landscaping provisions are included within the City's UDO and native landscaping is supported in the City's Comprehensive Plan. Native landscaping should be encouraged and/or required, where appropriate, in common areas in lieu of conventional turf grass landscapes. The City's conservation design guidelines already do an excellent job of encouraging this practice; further improvements include encouraging more of these practices for standard subdivisions, see Table 7. For example, the City could set a minimum percent coverage using native vegetation for the common open space areas of conventional developments.

The City already has a strong tree protection and replacement ordinance in place to provide for the protection of native and desirable trees. A tree preservation plan is required with the application of a building permit or other construction activity, which includes a survey of trees on the property. During construction, activities and materials are not permitted within the Critical Root Zone (CRZ) of trees to be protected. The City should consider modifying the tree survey requirements to include the identification and protection of trees that are outside of the property line but may have their CRZ extending into the construction site.

Street trees are required within the parkway on regular intervals. Currently, the ordinance states that when there is less than eight feet of space between the curb and sidewalk, street trees are not permitted and they should be planted on private property instead. At the same time, the street design standards call for a minimum parkway width of six feet. Setting the minimum parkway width and the width required for street trees to the same amount assures that new streets are consistently designed with street trees in a uniform manner.

## Transportation

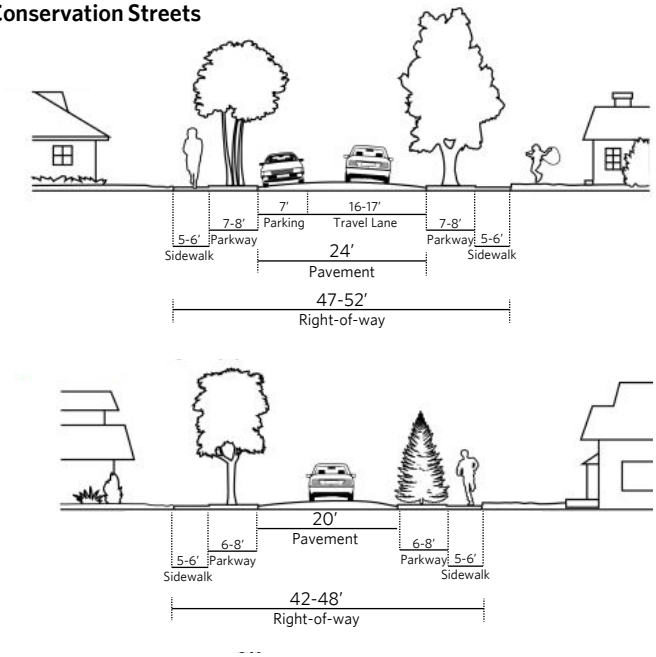
Streets compose a substantial proportion of a community's impervious surfaces and are thereby a significant generator of stormwater runoff. The City's UDO outlines the design and layout of new streets and driveways; a key to ecologically-sensitive design is limiting the amount of impervious cover to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

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 surface when executed over the length of a street. Narrower streets have also 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. The City's Comprehensive Plan and UDO already recognize narrower street widths for conservation developments. The City should update the standard street design requirements to be consistent with conservation design streets so that the environmental and safety benefits can be realized for all new development. These techniques will also be essential for promoting walking as a key mode of travel, a goal of the Comprehensive Plan.

In addition to narrowing the pavement width, the City should also consider updating the requirements for curb radii. Currently, the UDO requires a minimum 30 foot intersection curb radii for all streets. This large curb radii not only increases the amount of impervious surface, it also makes intersections less friendly to pedestrians. Large curb radii, while accommodating the infrequent truck, have a tendency to allow the more common automobile to take turns faster. This places pedestrians in danger of being hit at higher speeds at crosswalk locations. The severity of pedestrian injury is highly correlated with vehicle speed. Large curb radii also increase the pedestrian crossing distance, which places pedestrians in a potential accident zone for a longer period of time. The City should shorten curb radii requirements for neighborhood streets as well as for other areas where pedestrian traffic is desired.

Naturalized stormwater infiltration and conveyance systems as well as permeable paving are currently encouraged for conservation developments. The City should also promote these techniques in other developments. Since new stream crossings can cause significant stream impacts these should be minimized wherever possible and then designed to reduce harmful impacts.

**Figure 2. Cross-sections of narrow streets, similar to Crystal Lake's Conservation Streets**




## 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, further 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 throughout the community, not just for conservation developments. 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 UDO 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. A common example is the requirement to install raised landscaped islands instead of recessed islands that could hold and treat stormwater runoff in parking lots. However, the landscaping guidelines for conservation developments already encourage 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 should be extended to all developments.

## 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 City's UDO and municipal code, 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. The City should be commended for promoting water reuse through its rain barrel ordinance. 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. These 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.

The City has already established management and land use policies for development within the Crystal Lake Watershed. As a groundwater-dependent community, the City can take additional measures to protect its 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 City also should consider such measures as adopting a groundwater protection ordinance citywide, establishing a wellhead protection program, encouraging demand-initiated water softeners, and promoting sensible and eco-friendly salting practices. The techniques used for the Crystal Lake Watershed as well as resources within McHenry County's model groundwater protection program could help the City establish regulations for activities within sensitive groundwater aquifer recharge areas, prohibit phosphorous fertilizers on turf areas, and manage salt storage and handling.

## Current codes and recommended code revisions

Tables 1 - 11 summarize the existing codes and recommended code revisions covering eleven topics for the City of Crystal Lake. 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.

**Table 1. Stormwater drainage and detention**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Purpose** | Include control of runoff rate, volumes, and quality in the purpose statement? | Mostly addressed | M.C. 595-1 | Protect the hydrologic, hydraulic, water quality, and other beneficial functions of streams, lakes, wetlands, floodplains, and flood prone areas. | Consider updating the purpose to include specific reference to controlling runoff rate, volumes, and quality. | NIPC Model Stormwater Drainage and Detention Ordinance, Section 100.0. |
| 2 | **Minimize stormwater quantity** | Encourage the use of permeable paving, greenroofs, and similar practices that reduce the quantity of runoff that must be handled with innovative or conventional drainage practices? | No | M.C. 595-21.B | Outlines a hierarchy in preparing a drainage plan, which includes preservation of natural resource features, preservation of existing natural drainageways, minimizing impervious surfaces, use of natural landscaping, use of open vegetated channels, filter strips, and infiltration, etc. | Add language about additional best management practices, such as permeable paving, greenroofs, and other techniques that reduce the quantity of runoff and indicate that such practices may allow for an approved reduction in the size of the required conveyance and detention facilities. | Village of Lakewood's Best Management Practices for R-2 Zoning, BMP hierarchy. |
| 3 | **Natural drainage practices** | Encourage or require the use of natural drainage practices (e.g., swales, filter strips, bio-infiltration devices, and natural depressions over storm sewers) to replace storm sewer infrastructure? | Mostly addressed | M.C. 595-17.B, 595-21.B | Recognizes sedimentation facilities, infiltration basins, and wetland detention facilities as treatment methods and establishes a hierarchy of best management practices. | Consider updating to include minimizing impervious surfaces in the site design, reorganizing the hierarchy of treatment methods, and requiring the use of vegetated filter strips and swales. | NIPC Model Stormwater Drainage and Detention Ordinance, Sections 500.0 and 711. |
| 4 | **Detention credits** | Provide detention credit for practices, such as permeable paving or bio-infiltration, that provide temporary storage of runoff in the sub-surface void spaces of stone or gravel? | No | | N/A | Incorporate detention credits for the temporary storage provided by permeable paving or bio-infiltration which use an aggregate base to temporarily store runoff. | Kane County Stormwater Management Article 2, Sec. 200 e5 (as amended in 2009). |
| 5 | **Discharge** | Require that peak post-development discharge from events less than or equal to the two-year, 24-hour event be limited to 0.04 cubic feet per second (cfs) per acre of watershed? | Yes | M.C. 595-21.D | Release rates shall not exceed 0.04 cubic feet per second per acre for the two-year, 24-hour storm event nor 0.15 cubic feet per second per acre for the 100-year, 24-hour storm event. The release rate requirement shall apply to the hydrologically disturbed area of the ownership parcel | | |
| 6 | **Detention design** | Require detention design standards that maximize water quality mitigation benefits, with a requirement for "naturalized" wet bottom and/or wetland basins over dry basins? | No | M.C. 595-21.E | No preference for wet basins over dry basins. | Detention basins shall incorporate design features to capture stormwater runoff pollutants. In particular, designers shall give preference to wet bottom and wetland designs and all flows from the development shall be routed through the basin (i.e., low flows shall not be bypassed). Retention and infiltration of stormwater shall be promoted throughout the property's drainage system to reduce the volume of stormwater runoff and to reduce the quantity of runoff pollutants. Using green infrastructure best management practices to count for detention helps move towards water quality benefits. | NIPC Model Stormwater Drainage and Detention Ordinance, Sections 600, 705, and 706, provides design guidelines. |
| 7 | **Water quality performance standards** | Require conformance to numerical water quality performance standards (such as percent removal of sediment or phosphorus)? | No | | N/A | Consider requiring conformance to numerical water quality performance standards (such as percent removal of sediment or phosphorus). | New practice being used elsewhere in the country. It has yet to be implemented in Northeastern Illinois, but could be in the next few years. |
| 8 | **Detention—on-stream and floodway** | Prohibit on-stream detention and detention in the floodway, unless it provides a regional stormwater storage benefit (e.g., for upstream properties and/or multiple sites) and is accompanied by other upstream water quality BMPs, such as bio-infiltration? | Mostly addressed | M.C. 595-21.E.5 | Floodway and online detention shall meet a number of requirements, including not being located on perennial streams and meeting drainage ratio, volume, and other requirements. | Consider updating to include the environmental criteria listed in NIPC Model Stormwater Drainage and Detention Ordinance Section 708.3 to mitigate the impacts of on-stream detention. | NIPC Model Stormwater Drainage and Detention Ordinance Section 708.3. |
| 9 | **Stormwater discharge** | Prohibit the direct discharge of undetained stormwater into wetlands? | Mostly addressed | M.C. 595-21.F | Drainage into wetlands may be allowed, but only under certain circumstances which vary based on the type of wetlands and if water quality standards are met. | Consider adding guidelines for the discharge, such as requiring that all runoff from the development shall be routed through a preliminary detention/sedimentation basin designed to capture the two-year, 24-hour event with the release rate of 0.04 cfs per acre which should provide a holding time of at least 24 hours, before being discharged to the wetland. | NIPC Model Stormwater Drainage and Detention Ordinance, Section 709.4. |
| 10 | **Maintenance** | Require formal maintenance plans and contracts for the long-term maintenance and vegetative management of all new detention facilities? | Mostly addressed | M.C. 595-21.J | A plan for ongoing maintenance of all stormwater management system components, including wetlands and buffer areas is required. However, specific vegetative maintenance standards are not outlined. | Consider updating to require the maintenance plan to include performance standards for all natural open space areas and naturalized stormwater management facilities and buffers. The performance standards shall identify proposed methods for establishing the areas and shall require monitoring and maintenance for at least three full growing seasons following initial enhancement, restoration, and planting, or until initial performance standards have been met. The standards are intended to address the establishment of native vegetation cover and control of invasive plant species. The maintenance plan should be included in the requirements for site plan submittal. | Performance criteria outlined in the stewardship plan section (A1118) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. NIPC Model Stormwater Drainage and Detention Ordinance, Section 713 and 1100. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 2. Soil erosion and sediment control**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Limiting sediment delivery** | Include a comprehensive purpose statement which limits sediment delivery, as close as practicable, to pre-disturbance levels and minimizes effects on water quality, flooding, and nuisances? | No | M.C. 595-1 | Protect the hydrologic, hydraulic, water quality, and other beneficial functions of streams, lakes, wetlands, floodplains, and flood prone areas. | Add purpose statement that the delivery of sediment from sites affected by land disturbing activities be limited, as closely as practicable, to that which would have occurred if the land had been left in its natural undisturbed state. | NIPC Model Soil Erosion and Sediment Control Ordinance, Section 100. |
| 2 | **Minimize sediment transport** | Include a comprehensive set of principles that minimize sediment transport from the site for all storms up to the ten-year frequency event? | Mostly addressed | M.C. 595-20.A | Soil erosion and sediment control measures are required to minimize erosion, protect nearby properties, limit land disturbance in streams, etc. | Consider updating to include the 12 general principles outlined in NIPC Model Soil Erosion and Sediment Control Ordinance, Section 300.0. Which includes, but is not limited to, the following: development should be related to the topography and soils of the site so as to create the least potential for erosion; areas of steep slopes should be avoided wherever possible, natural contours should be followed as closely as possible; natural vegetation should be retained and protected, etc. | NIPC Model Soil Erosion and Sediment Control Ordinance, Section 300.0. |
| 3 | **Ordinance applicability—size** | Require ordinance applicability for any land disturbing activity in excess of 5,000 square feet? | Yes | M.C. 595-6.D and E | Any development that results in an additional 5,000 square feet of impervious area or which hydrologically disturbs 5,000 square feet or more. | | |
| 4 | **Ordinance applicability—location** | Require ordinance applicability for any land disturbing activity in excess of 500 square feet if adjacent to stream, lake, or wetland? | Yes | M.C. 595-6.G | Any land disturbing activity that will affect an area in excess of 500 square feet if the activity is within 25 feet of a lake, pond, stream, or wetland. | | |
| 5 | **Site design requirements** | Include explicit site design requirements for sediment control measures, conveyance channels, soil stabilization, construction adjacent to water bodies, construction entrances, etc.? | Yes | M.C. 595-20.A | Includes specific site design requirements. | | |
| 6 | **Site design references** | Adopt by reference the "Illinois Urban Manual" published by the Natural Resources Conservation Service and the Illinois Environmental Protection Agency (1995, updated 2010) and the "Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control" published in 1988 (the Greenbook)? | Yes | M.C. 595-20.A.15 | Includes these references. | | |
| 7 | **Maintenance** | Require routine maintenance of all erosion and sediment control practices? | Yes | M.C. 595-20.B | All temporary measures and permanent erosion and sediment control must be maintained. | | |
| 8 | **Inspection** | Require inspection by appropriately trained personnel of construction sites at critical points in the development process to ensure that measures are being correctly installed and maintained? | Mostly addressed | M.C. 595-20.C and D | Includes inspection requirements. | Consider adding language on how inspections will work for phased projects and specifically require inspections at critical stages of the construction process. | NIPC Model Soil Erosion and Sediment Control Ordinance, Section 506; City of Elgin (Article 3, Sec. 300 and Article 7, Sec. 701). |
| 9 | **Enforcement** | Provide effective enforcement mechanisms including performance bonds, stop-work orders, and penalties, as appropriate? | Yes | M.C. 595-37 and 38, 595-5.E, and 595-61 | The ordinance establishes provisions for bonds, stop-work orders, violations, and penalties. | | |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 3. Floodplain management**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Purpose** | Include protection of hydrologic functions, water quality, aquatic habitat, recreation, and aesthetics in the purposes for the ordinance? | Mostly addressed | M.C. 595-1 | Protect the hydrologic, hydraulic, water quality and other beneficial functions of streams, lakes, wetlands, floodplains, and flood prone areas. | Consider expanding purpose statement to the following: To preserve the natural characteristics and functions of watercourses and floodplains in order to moderate flood and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits, and enhance community and economic development. | NIPC Model Floodplain Ordinance, Section 200. |
| 2 | **Floodway restrictions—use** | 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? | No | M.C. 595-22.F | Allows new pumping and treatment facilities; detached garages, sheds, and other non-habitable structures; roadways; and parking lots. | Consider updating to the alternative language presented in NIPC Model Floodplain Ordinance, Section 802.1, which is more restrictive than the appropriate uses allowed by State rules. In particular, uses such as pumping and treatment facilities, garages and sheds, roadways running longitudinally along a watercourse, and parking lots are not considered appropriate because of concerns that they will increase flood damages, interfere with natural functions of floodways, and/or impair water quality and habitat. | NIPC Model Floodplain Ordinance, Section 802.1 Alternative. |
| 3 | **Limit stream channel modification** | Discourage stream channel modification and require mitigation of unavoidable adverse water quality and aquatic habitat impacts? | Mostly addressed | M.C. 595-19 | If the proposed activity involves a channel modification, (i) it shall be demonstrated that there are no practicable alternatives to the activity which would accomplish its purpose with less impact to the natural conditions of the body of water affected; (ii) water quality, habitat, and other natural functions will be significantly improved; (iii) migration of fish and other aquatic organisms will not be adversely affected; (iv) designed to minimize adverse impacts. | Consider updating to add an analysis component of different alternatives and an analysis of the impacts of the proposed project, considering cumulative effects on the physical and biological conditions of the body of water affected. | NIPC Model Floodplain Ordinance, Sections 801.1.q and 802.1.i. |
| 4 | **Floodway restrictions —erosion** | Require effective soil erosion and sediment control measures for ALL disturbances in the floodway? | Mostly addressed | M.C. 595-20, 595-6, and 595-3 | Any development that is located partially or completely in a regulatory floodway is subject to soil erosion and sedimentation control. Development includes any sized building and other activities that might change the direction, height, volume or velocity of flood or surface water, including extensive removal of vegetation. | Consider updating so that all activities in the floodway, including grading, filling, and excavation, in which there is potential for erosion of exposed soil, are required to perform soil erosion and sedimentation control measures and that they are employed consistent with a number of criteria. | NIPC Model Floodplain Ordinance, Section 802.3.(k). |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 4. Stream and wetland protection**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Purpose** | Include a comprehensive purpose statement that addresses the protection of hydrologic and hydraulic, water quality, habitat, aesthetic, and social and economic values and functions of wetlands? | Mostly addressed | M.C. 595-1 | Protect the hydrologic, hydraulic, water quality, and other beneficial functions of streams, lakes, wetlands, floodplains, and flood prone areas. | Consider updating to include the ten objectives in the NIPC Model Stream and Wetland Protection Ordinance, Section 3.00. | NIPC Model Stream and Wetland Protection Ordinance, Section 3.00. |
| 2 | **Protection** | Protect the beneficial functions of streams, lakes, and wetlands from damaging modifications, including filling, draining, excavating, damming, impoundment, and vegetation removal? | Mostly addressed | M.C. 595-23 | Outlines a number of provisions in order to protect the wetland, lake, and stream resources, as well as wetland mitigation requirements. | Establish a minimum setback of development activity from streams, lakes, ponds, and wetlands, see recommendation 5 below. Development activities will only be approved based upon a report, prepared by a qualified professional, which demonstrates that they will not adversely affect water quality; destroy, damage, or disrupt significant habitat area, adversely affect drainage and/or stormwater retention capabilities; adversely affect flood conveyance and storage; lead to unstable earth conditions, etc. | NIPC Model Stream and Wetland Protection Ordinance, Sections 6.03, with the definition of development outlined in Section 4.00.h. |
| 3 | **Modification** | Prohibit the modification of high quality, irreplaceable wetlands, lakes, and stream corridors? | Yes | M.C. 595-23 | Modification is prohibited unless no feasible alternatives exist and all applicable regulatory approvals or clearances are granted. | | |
| 4 | **Wetland modification—stormwater** | Discourage the modification of wetlands for stormwater management purposes unless the wetland is severely degraded and nonpoint source BMPs are implemented on the adjacent development? | Mostly addressed | M.C. 595-21.F | Drainage into wetlands may be allowed, but only under certain circumstances which vary based on the type of wetlands. | Consider updating to state that modification of degraded wetlands for purposes of stormwater management is permitted where the quality of the wetland is improved (e.g. via removal of invasive plant species) and total wetland acreage is preserved. | NIPC Model Stream and Wetland Protection Ordinance, Section 6.03. |
| 5 | **Waterbody setback** | Designate a minimum 75- to 100-foot setback zone from the edge of identified wetlands and water bodies in which development is limited to the following types of activities—minor improvements like walkways and signs, maintenance of highways and utilities, and park and recreational area development? | No | M.C. 595-23 | N/A | Update to state absolutely no development activity (except as provided) may occur within the minimum setback that is defined as 75- to 100-feet from the ordinary high water mark of streams, lakes, and ponds, or the edge of wetlands, or within a designated depressional area. | NIPC Model Stream and Wetland Protection Ordinance, Section 6.03. |
| 6 | **Waterbody buffer** | Establish a minimum 30-foot wide protected native vegetation buffer strip along the edge of identified wetlands and water bodies? | Mostly addressed | M.C. 595-18.A and B | Linear buffers along channels and waterbody buffer between 30-100 feet based on size and quality. | Consider updating buffer requirements so that a natural vegetation strip shall extend landward a minimum of 30 feet from the ordinary highwater mark of a perennial or intermittent stream, lake, or pond and the edge of a wetland regardless of size or quality. | NIPC Model Stream and Wetland Protection Ordinance, Section 6.08; U.S. EPA Aquatic Buffer Model Ordinance. |
| 7 | **Relocation** | Prohibit watercourse relocation or modification except to remedy existing erosion problems, restore natural habitat conditions, or to accommodate necessary utility crossings; and require mitigation of unavoidable adverse water quality and aquatic habitat impacts? | Mostly addressed | M.C. 595-19 | If the proposed activity involves a channel modification, it shall be demonstrated that there are no practicable alternatives, water quality, habitat, and other natural functions will be significantly improved; migration of fish and other aquatic organisms will not be adversely affected; and the activity is designed to minimize adverse impacts. | Consider requiring that allowed modifications follow a relocation plan that must address specific environmental criteria, including, but not limited to the creation of a natural meander pattern, pools, riffles, and substrate; formation of gentle side slopes; utilization of natural materials wherever possible; planting of vegetation normally associated with streams, etc. | NIPC Model Stream and Wetland Protection Ordinance, Sections 7.00, 7.01, and 7.02. |
| 8 | **Restoration** | Encourage the restoration of stream and wetland habitat, hydrology, and morphology on development sites that contain degraded aquatic systems? (This could be accomplished through a streamlined permitting process and/or other development incentives.) | No | M.C. 595-23 | N/A | Update to encourage restoration of stream and wetland habitat, hydrology, and morphology on development sites that contain degraded aquatic systems. Consider combining this with a streamlined permitting process or other development incentive, as well as encouraging it through conservation development provisions. | Minimum performance standards for restoration, planting, maintenance, and monitoring of natural open space and naturalized stormwater facilities are included in Stewardship Plan section (A1118) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 5. Natural areas and open space**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Natural areas protection** | Protect remnant natural areas, including steep slopes, prairies, woodlands, and savannas (in addition to regulated wetlands and floodplains)? | Yes, for conservation developments | Sec 5-300 G2 | For conservation developments, open space includes, but is not limited to woods and savannas, wetland buffers, prairies and grasslands, slopes greater than 12 percent, and inherently unbuildable areas like wetlands, floodplains, etc. | | |
| 2 | | | Yes | Sec A-1600 A and D6d | All proposed plats shall allocate sufficient easement areas for features including, but not limited to stormwater management, tree preservation, environmental conservation, and wetland/wetland buffers. Conservancy easements prohibit any land disturbing activities and are required on the final plat for the following environmental features—excessive slopes, riparian buffers, floodplains, wetlands, and trees and forested areas (meeting Article 4-300 tree preservation). | | |
| 3 | **Open space—amount** | Set aside onsite open space for residential development, generally conforming to the following guidelines: estate residential: 60 percent; moderate residential: 45 percent; urban residential: 30 percent? | Yes, for conservation developments | Sec 5-300 G1 | For residential conservation developments, at least 40 percent of the site shall be set aside as required open space. | | |
| 4 | **Restoration** | Encourage the restoration of protected natural areas to reduce invasive species and enhance biodiversity? | Yes, for conservation developments | Sec 5-300 G4 | Conservation development shall preserve, restore, and/or create environmentally sensitive areas and shall include plans and the means to restore, manage, and maintain such areas. Degraded remnant natural areas shall be restored to a natural state. | | |
| 5 | **Open space—ownership** | Require the identification of an open space ownership entity, with a preference for a qualified public or private land conservation organization? | Yes, for conservation developments | Sec 5-300 G6 | For conservation developments, open space ownership and funding requirements are outlined. | | |
| 6 | **Open space—easement** | Require the dedication of natural open space via a binding conservation easement or similar binding legal instrument that ensures protection in perpetuity? | Yes, for conservation developments | Sec 5-300 G7; | Conservancy easements are required for dedicated open space in conservation developments. | | |
| 7 | | | Yes | Sec A-1600 A and D6d | All proposed plats shall allocate sufficient easement areas for features including, but not limited to stormwater management, tree preservation, environmental conservation, and wetland/wetland buffers. Conservancy easements prohibit any land disturbing activities and are required on the final plat for the following environmental features: excessive slopes, riparian buffers, floodplains, wetlands, and trees and forested areas (meeting Article 4-300 tree preservation). | | |
| 8 | **Open space—management** | Require secure and permanent funding arrangements for the long-term management and maintenance of open space, natural areas, and stormwater facilities once responsibilities are turned over to a conservation entity or the homeowners/property owners association? | Yes, for conservation developments | Sec 5-300 G8 | For conservation developments, funding requirements and options are outlined. | | |
| 9 | | | Mostly addressed | Sec A-1600 | For standard subdivisions, drainage, stormwater management, and conservancy easements require that the owner or property owners association is responsible for maintenance that maintains the intended purpose of the easement. Funding arrangements are not outlined. | Consider updating easement provisions to include secure and permanent funding arrangements for the long-term management and maintenance of specific kinds or sizes of easements. | Open space ownership and funding section (A1117) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |
| 10 | **Open space—funding** | Encourage the establishment of a back-up SSA in order to provide funds necessary to support the maintenance of open space and stormwater management areas (in the event that the responsible land owner/manager does not meet the required maintenance standards)? | Yes, for conservation developments | Sec 5-300 G8d | For conservation development, a back-up SSA shall be established and detailed in the covenants and restrictions for the development in order to provide funds necessary to support the maintenance and upkeep of land set aside as open space and stormwater management areas. | | |
| 11 | | | No | Sec A-1600 | N/A | Consider updating easement provisions to include a back-up special service area as one of the potential funding options for long-term management and maintenance of specific kinds or sizes of easements. | Open space ownership and funding section (A1117) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |
| 12 | **Open space—management plans** | Require or encourage long-term management/stewardship plans for all common open space areas, natural areas, and stormwater facilities? | Yes, for conservation developments | Sec 5-300 H1 | For conservation development, open space management and stewardship plan, must include a plan that provides a means to properly manage dedicated open space in perpetuity and the long-term means to properly manage and maintain all dedicated open space. | | |
| 13 | | | No | Sec A-1600 | N/A | Consider updating easement provisions to include an open space management and stewardship plan to identify the means to properly maintain and manage specific kinds or sizes of easements. | Stewardship plan section (A1118) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |
| 14 | **Open space—performance criteria** | Establish measurable performance criteria for managed natural areas, including ground coverage, species diversity, and control of invasive species? | Yes, for conservation developments | Sec 5-300 H2 | For conservation development, open space management and stewardship plan shall include performance standards for all open space areas….shall identify proposed methods for establishing the areas and shall require monitoring and maintenance for at least three full growing seasons following initial enhancement, restoration, and planting. | | |
| 15 | | | No | Sec A-1600 | N/A | Consider updating easement provisions to require that the open space management and stewardship plan include performance standards for all natural and open space areas and naturalized stormwater management facilities and buffers. The performance standards shall identify proposed methods for establishing the areas and shall require monitoring and maintenance for at least three full growing seasons following initial enhancement, restoration, and planting. Long-term monitoring after initial restoration has been completed should also be required. | Minimum performance standards for restoration, planting, maintenance, and monitoring of natural open space and naturalized stormwater facilities are included in the Stewardship Plan section (A1118) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 6. Conservation design and infill**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Natural Resource inventory** | Require a site analysis map that includes a natural resources inventory at the Concept Plan stage or prior to the Preliminary Plan stage? | Yes, for conservation developments | Sec 5-200 G2b; Sec 5-300 E1 | Subdivisions preliminary plat shall contain floodplain designation, contours at two-foot intervals, soil borings may be required when it is determined by the City Engineer that questionable soils or groundwater levels exist, and designation of any wetland as defined by the United States Army Corps of Engineers. For conservation developments, prior to submitting an application for a Plat of Subdivision or a Planned Unit Development approval, the applicant must present an existing resources and site analysis plan that provides the natural resource information for the entire site as well as the property within 200 feet of the development site. | Consider extending the requirement to present an existing resources and site analysis plan to all new subdivisions, not just conservation design subdivisions. | |
| 2 | **Site Design** | Require that the proposed development be designed to preserve natural drainage patterns, use and preserve native vegetation, stabilize soils during construction, and protect, enhance, and maintain natural resources (such as remnant woodlands, prairies, and steep slopes)? | Yes, for conservation developments | Sec 5-300 E2 | These features shall be preserved and protected to the greatest extent possible from any negative impacts generated as a result of the development or other land disturbing activities taking into consideration the Open Space Hierarchy protection outlined in this Article. | | |
| 3 | **Clustering** | Encourage or require clustering of residential lots around sensitive natural areas, thereby creating a protected common open space area? | Yes, for conservation developments | Sec 5-300 E3, Sec 5-300 F2 | Site capacity analysis first establishes the gross area with deductions for infrastructure and any unbuildable area (such as wetlands and floodplains). The resulting acreage shall then be multiplied by the maximum allowable dwelling units per acre for the underlying zoning district. Lots, buildings or building sites should be clustered. Such clusters shall be located so as to minimize the negative impacts on the natural, visual, and cultural resources of the site and between incompatible uses and activities. | | |
| 4 | **Density bonus** | Provide density bonuses for conservation developments that exceed minimum standards (such as additional open space, providing for regional trails and greenways, or incorporating environmentally sensitive design features beyond what is required by the Ordinance)? | Yes, for conservation developments | Sec 5-300 E4 | Allows an increase in density if it is demonstrated that the proposed conservation design plan offers a superior layout and quality of design which incorporates environmentally sensitive design features that substantially exceed the minimum requirements of the ordinance. The maximum increase in density shall be limited to 20 percent of the permitted density. | | |
| 5 | **Conservation design—by right** | Allow conservation design as a "by-right" form of development? | No | Sec 4-500 B4e | Any development in the watershed district or conservation overlay district requires a PUD. | Update so that conservation design is allowed by right, not via a PUD. | Campton Hills Zoning Code Analysis and Ordinance Language Recommendations; Applicability section (A1102) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures; Village of Plainfield Conservation District (Zoning 9-52). |
| 6 | **Conservation design—zoning map** | Does the zoning map indicate areas where conservation development is required? | Yes | Sec 5-300 B | Any subdivision of property or PUD within the Conservation Overlay District is required to follow the Conservation development regulations. Properties outside the Conservation Overlay District that meet the automatic and cumulative triggers are also required to follow the Conservation Development regulations. | | |
| 7 | **Mixed use** | Is there a downtown overlay district or another mechanism to encourage mixed-use development in neighborhood centers? | Yes | Sec 1-700 G | Downtown Business (B-4) District permits a mix of uses. Virginia Street Corridor Overlay District allows upper story dwellings above non-residential uses by right. | | |
| 8 | **Impact fees** | Are there reduced impact fees or other incentives to encourage infill development? | No | Ch. 241 | Impact fees are set regardless of location within the community. | Consider tailoring fees based on the location to encourage redevelopment of previously developed land that is already connected to City infrastructure. | |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 7. Landscaping**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Native landscaping** | Include "noxious weed" provisions that might intentionally, or unintentionally, preclude natural landscaping because of vegetation height standards or similar restrictive provisions? | No | Sec 4-400 D1c | Innovative landscape design proposals that promote sustainability, reduce irrigation requirements and that utilize on-site stormwater management techniques are encouraged. | | |
| 2 | **Native landscaping** | Encourage/require the use of native plant materials for the default landscaping of common areas, stormwater facilities, common open space areas, and the buffers of streams, lakes, wetlands, and other natural areas? | Mostly addressed | Sec 4-400 G and A-1100 | Provides a recommended plant list. | Encourage or require the use of native plant materials as the default landscaping of stormwater facilities and for the buffers of streams, lakes, wetlands, and other natural areas and encourage integrating native plant materials in common areas. For standard subdivisions, the City could set a minimum percent coverage using native vegetation. | Natural landscaping standards section (A1110) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Procedures. |
| 3 | | | Yes, for conservation developments | Sec 5-300 F2g, G2, and G4a | Landscaping around the building clusters shall be provided and be comprised to the greatest extent possible of native plant species. Open space is defined as naturally landscaped common areas and buffers, naturally landscaped stormwater detention, and drainage facilities. Open space conservation themes have to be identified and could include native landscape restoration and preservation. | | |
| 4 | **Native landscaping—management** | Require provisions for long-term oversight, management, funding, and performance criteria for common areas and natural landscapes (as referenced above in greater detail)? | Yes, for conservation developments | Sec 5-300 H1 | For conservation development, open space management and stewardship plan, must include a plan that provides a means to properly manage dedicated open space in perpetuity and the long-term means to properly manage and maintain all dedicated open space. | | |
| 5 | **Street trees** | Require planting street trees? If yes, how many trees? | Mostly addressed | Sec 4-400 E3g and h | Parkway trees shall be planted within 35 feet to 50 feet of space between trunks and 40 feet on center spacing (depending on species). Trees should be alternatively spaced along a street, rather than opposite one another. Where less than eight feet of space exists between curb and sidewalk, parkway trees will not be permitted. In such cases, the required number of parkway trees shall be planted on private property. | Make the minimum parkway width (which is set at six feet in Table 4-100 C1) and the width required for street trees the same. | |
| 6 | **Tree protection ordinance** | Require protection of native/desirable trees (i.e., a tree protection ordinance)? | Yes | Sec 4-300 | Outlines a tree preservation ordinance, which requires a tree survey with building permits and prevents construction activities and materials the Critical Root Zone (CRZ). | Consider updating the tree survey requirements to include consideration of trees that are outside of the property line but may have their CRZ extending into the subject site. | Tree protection standards section (A1119.2 C) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Practices; City of Elgin Tree Protection Ordinance (Zoning 19.16). |
| 7 | **Tree replacement** | Require replacement of any trees that are unavoidably impacted by construction activities? | Yes | Sec 4-300 E and F | Outlines tree preservation and protection during construction | | |
| 8 | **Tree replacement—funding** | Require payment into a tree replacement fund or "mitigation bank" when removed trees cannot be replaced/mitigated on site? | Yes | Sec 4-300 D7 | If insufficient space is available, tree banking can be used. | | |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 8. Transportation**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Street network—location** | Require the street network to minimize encroachment in sensitive natural resources and take advantage of open space vistas, while providing an interconnection of internal streets and street connections to adjoining land parcels to create opportunities for future connectivity? | Mostly addressed | Sec 5-300 E2 | For conservation developments, the street layout should minimize encroachment onto sensitive natural resources such as wetlands, designated natural areas, woodlands, significant tree stands, an wildlife habitats, and should be designed to take advantage of open space vistas. | Update to require that stream crossings be limited to the minimum necessary to provide safe circulation and ensure two ingress/egress locations. Stream crossings shall be located to minimize stream disturbance. Bridges or culverts of sufficient size shall be used for all perennial stream crossings to preserve stream channel width and natural stream substrates. Use street layout standards established for Conservation Developments for all subdivisions with streets. | Campton Hills Zoning Code Analysis and Ordinance Language Recommendations. |
| 2 | **Street connectivity—external** | Require connections to surrounding areas? | Yes, conservation developments | Sec 5-300 E2 | For conservation developments, interconnection of internal streets and street connections to adjoining land parcels should be provided to create opportunities for future connectivity. | Expand to all subdivisions, not just conservation design developments. New streets shall connect to existing streets in the surrounding area unless connections cannot be made because of physical obstacles. Consider adding a connectivity measurement to ensure future connections at regular intervals that promote walkability. For example, the standard of one through-street intersecting or terminating at the project boundary at least every 800 feet could be established, with exceptions for natural resources, open spaces, existing buildings, and other physical obstructions. | LEED for Neighborhood Development Walkable Streets prerequisite. |
| 3 | **Street connectivity—internal** | Require subdivisions to achieve a certain score on an index for internal street connectivity? | No | Sec 4-100 D1b; Sec 4-100 D1c(i)II | Encourages interconnectivity and the use of rectilinear or grid patterns to interconnect streets as well as a mix of street types. | Consider establishing a maximum block length of 800 feet and a preferred length of 300 feet to 600 feet for residential subdivisions or establishing a minimum street intersection density to ensure connectivity. For example, LEED-ND requires projects to have an internal connectivity of at least 140 intersections per square mile. | LEED for Neighborhood Development Walkable Streets prerequisite. |
| 4 | **Street—widths** | Encourage narrower street widths to reduce the amount of impervious surface? | Yes, conservation developments | Table 4-100 C13 | Sec 4-100 E street standards for conservation design, generally narrower than those outlined in Table 4-100 C13. | | |
| 5 | | | No | Table 4-100 C1 | Local streets are required to have 60 feet ROW, 28 feet roadway width. | Design residential streets for the minimum required pavement width needed to support travel lanes, on-street parking, and emergency access. These widths should be based on desired traffic speeds, respond to surrounding development context, and could be more similar to those already used in conservation developments. | Model language in Conservation Design Resource Manual, NIPC and Chicago Wilderness; Center for Watershed Protection Better Site Design; ITE Designing Walkable Urban Thoroughfares: A Context Sensitive Approach; CNU Emergency Response & Street Design; Village of Plainfield Traditional Neighborhood District (Zoning Sec. 9-54). |
| 6 | | | No | Sec 4-100 E1b | For conservation developments, the applicant must demonstrate through a traffic study by one of the City's approved traffic consultants that access to the development has the capacity to handle traffic generated by the proposed project and the site layout is developed according to standards that promote road safety, provide adequate access for emergency vehicles, and allow for adequate vehicular circulation and movement. | Consider removing this requirement for conservation developments to create a more even playing field for both types of subdivisions. | |
| 7 | **Curb radius** | Encourage short curb radii for intersections? | No | Table 4-100 D2 | Minimum of 30 foot intersection Curb Radii is required for all streets. | Consider shortening curb radii for intersection where pedestrian activity is encouraged. Shorter curb radii make streets more pedestrian-friendly by lowering the speeds of turning vehicles. | Institute of Transportation Engineers' Designing Walkable Urban Thoroughfares: A Context-Sensitive Approach. |
| 8 | **Cul-de-sacs** | Discourage cul-de-sacs and promote smaller scale design? | Mostly addressed | Sec 4-100 D1f; Sec 4-100 E4c | Cul-de-sac streets shall be limited to a maximum of 15 percent of total road footage in a residential development, maximum of 10 percent in a non-residential or mixed-use development. Each cul-de-sac shall have a terminus of nearly circular shape with a minimum diameter right-of-way of 140 feet with an unpaved center island. For conservation developments, cul-de-sacs should be designed as semi-circular and circular loop roads. A minimum 30 foot outside radius around a landscaped island with a minimum 10 foot radius is required. The center landscaped areas should be depressed and potentially can be designed for stormwater storage. | Use cul-de-sac design standards established for Conservation Developments for all subdivisions with streets. | Center for Watershed Protection Better Site Design. |
| 9 | **Curb and gutter requirements** | Encourage/require the use of natural drainage practices? | Yes | Sec 4-100 Di | Barrier curbs and gutters shall be required on streets unless otherwise approved by the City Engineer. In areas where barrier curbs and gutters have been waived, the rural cross section shall incorporate a ribbon curb, per the City's Standard Details in the Appendix. | | |
| 10 | | | Yes, conservation developments | Sec 4-100 E1a(v) | The use of enclosed drainage curb and gutter systems is discouraged in favor of vegetated swales/bio-filtration and ribbon curb where feasible and where a significant environmental benefit will be realized. | | |
| 11 | **Paving materials—streets** | Promote use of pervious materials for streets? | Yes, conservation developments | Sec A-700 | For conservation developments, outlines pavement design and construction requirements, including an alternative pavement design section where the designer can utilize an alternate pavement structure with a structural number that meets or exceeds the standard designs established, if approved by the City Engineer. | Update to encourage permeable pavement (interlocking concrete pavers, porous concrete, or porous asphalt) and outline standards that designers can use in their designs. | Center for Watershed Protection Better Site Design; Campton Hills Zoning Code Analysis and Ordinance Language Recommendations. |
| 12 | **Sidewalks** | Promote connected sidewalks in new developments and use of pervious materials? | Mostly addressed | Sec 4-100 2a | Sidewalks shall be five feet wide. | Consider encouraging wider sidewalks in areas where pedestrian traffic warrants, such as on retail or mixed-use blocks. | LEED for Neighborhood Development Walkable Streets prerequisite. |
| 13 | | | No | Sec 4-100 E2a | Sidewalks shall be installed on at least one side of a street and may be required by the City Council to be installed on both sides of a street. The City Council may waive all or a portion of the sidewalk requirement. | Require sidewalks on both sides of the street unless site constraints prohibit their installation. | |
| 14 | | | Yes, conservation developments | Sec 4-100 E2d | For conservation developments, the use of alternative paving materials for sidewalks such as permeable pavers may be permitted. | Allow alternative paving materials for all subdivisions with sidewalks, not just conservation developments. | Blackberry Creek Zoning Code Analysis and Ordinance Language Recommendations; LEED for Neighborhood Development Walkable Streets Prerequisite. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 9. Parking**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Purpose** | Does the purpose include a statement about tailoring parking requirements to meet average day-to-day demand as opposed to peak demand? | No | Sec 4-200 A | To provide an appropriate amount of off-street parking and loading uses for development within the City; to provide standards that prevent undue congestion in the streets and relieve traffic congestion in the streets; to minimize any detrimental effects of off-street parking areas on adjacent lands; and to ensure the proper and uniform development of parking areas throughout the city. | Establish off-street vehicle and bicycle parking requirements that balance the City's goal to encourage walking, bicycling, and transit use with the goal to provide adequate off-street parking to meet the needs of shoppers, visitors, and residents and reduce on-street parking demand on nearby residential streets. Parking requirements are designed to accommodate average day-to-day demand, as opposed to peak demand, in order to reduce excessive off-street parking and free up land for other uses. | |
| 2 | **Applicability** | Apply off-street parking requirements only to parcels of a certain size or greater? | No | Sec 4-200 B | All buildings, structures, and land uses and all modifications shall be provided with accessory off-street parking or loading facilities. | Create an exemption for small non-residential lots regardless of use. | Village of Riverside: no off-street parking spaces required for non-residential uses under 3,000 sq. ft GFA. City of Evanston: no off-street parking spaces required for buildings between 2,000 to 3,000 sq. ft. GFA in specific districts. |
| 3 | **Requirements** | Establish parking requirements as a maximum or a minimum? | Minimum | Table 4-200 D; Sec 4-200 D5 | Parking requirements are set as minimums. However, off-street vehicle parking spaces shall not be provided in an amount that is more than 125 percent of the minimum standards established in Sec 4-200 D for parking lots with fewer than 200 spaces and 115 percent of the minimum standards established in Sec 4-200 D. | In addition to the minimum requirements, establish a maximum threshold (for example, 10 percent over the requirement) to prevent projects from including too much off-street parking. Require that all parking provided in excess of the maximum shall be designed and maintained as permeable paving. | Center for Watershed Protection Better Site Design; Campton Hills Zoning Code Analysis and Ordinance Language Recommendations. |
| 4 | **Parking ratio—office** | Require a parking ratio for a professional office building that is three spaces or less, per 1,000 square feet? | No | Table 4-200 D | One space per 250 square feet of Gross Floor Area (GFA). | Recalibrate based on surveyed usage and consider model standards that require a minimum of two spaces per 1,000 feet of GFA. Space requirements could be tied to providing or supporting alternatives to driving. For example, bicycle parking or carpool programs. | NW Connecticut Model Zoning Regulations for Parking; State of Oregon's Model Development Code and User's Guide for Small Cities. |
| 5 | **Parking ratio—retail** | Require a parking ratio for retail that is three spaces or less, per 1,000 square feet? | No | Table 4-200 D | Varies depending on retail type. For a miscellaneous store retail, 3.5 spaces per 1000 s.f. of GFA are required. | Recalibrate based on surveyed usage and consider model standards that require a minimum of two spaces per 1,000 sq. ft. of GFA for Big Box or Large Scale Retail, one space per 1,000 sq. ft. of GFA for Free Standing Retail, and three spaces per 1,000 sq. ft. of GFA for small shopping centers. | |
| 6 | **Parking ratio—residential** | Require a parking ratio for a single family home that is two spaces or less? | No | Table 4-200 D | 2.25 spaces per dwelling unit. | Consider one space per studio and one-bedroom units, 1.5 spaces per two-bedroom units, and two spaces per three-bedroom or larger units. Maintain maximum. | |
| 7 | **Requirements—flexibility** | Provide flexibility regarding alternative, reduced parking requirements and discourage over-parking of developments? | No | Sec 4-200 D4 | If the normal parking demand generated by a use is greater than the parking requirement as determined by this Ordinance, adequate parking to meet the demand must be provided. | Provide flexibility to reduce parking spaces if it can be demonstrated that the original parking requirement is in excess of the day-to-day demand for parking. | Campton Hills Zoning Code Analysis and Ordinance Language Recommendations. |
| 8 | | Allow a reduction in the number of current parking spaces? | Mostly addressed | Sec 4-200 D4 | The Zoning Administrator shall have the authority to allow a reduction of up to 10 percent of the required number of parking spaces if in his/her opinion, a special site specific condition warrants the reduction. | Consider increasing the amount of the reduction up to 50 percent if alternative needs or approaches can be demonstrated. | |
| 9 | **Off-site parking** | Provide flexibility regarding alternative, reduced parking requirements (e.g., shared parking, off-site parking), and discourage over-parking of developments? | Mostly addressed | Sec 4-200 B7 | When required accessory off-street parking facilities are provided on a lot other than on which the principal use is located, they shall be in the same possession, either by deed, lease, license, or easement, as the property occupied by such principal use. | Separate from, or in conjunction with Shared Parking provisions, an applicant may use off-site parking to satisfy their parking requirements. Off-site parking shall be within 300 to 1,000 feet of the property for which it is being requested. Off-site parking spaces provided by a separate private property owner shall be subject to a legally binding agreement that will be presented during the Site Plan Review process or as a condition of approval. | NW Connecticut Model Zoning Regulations for Parking. |
| 10 | **Shared parking** | Provide flexibility regarding alternative, reduced parking requirements (e.g., shared parking, off-site parking), and discourage over-parking of developments? | Mostly addressed | Sec 4-200 B6; Sec A-900. | For joint or shared parking facilities, the total number of parking spaces to be provided shall not be reduced by more than 25 percent of the originally required cumulative number of spaces for all uses. | Allow two or more land uses to share 100 percent of off-street parking if there is not overlap in demand. Also allow sharing between uses that do have some parking demand overlap. For example, allow up to 30 percent of the parking spaces required for the predominant use on a site may be shared with other uses operating during the same time of day and days of the week. | NW Connecticut Model Zoning Regulations for Parking; City of Elgin Shared Off-Street Parking Facilities (Zoning 19.45.055); Village of Plainfield Shared parking (Zoning Sec. 9-74). |
| 11 | **Requirements—location** | Provide for uses in downtown areas by reducing or not requiring parking given the walkable, transit-served location? | Mostly addressed | Sec 4-200 B5 | Structures and all uses located in the Downtown District are allowed a reduction in the required number of parking spaces to provide 70 percent of the required number of spaces for a similar new building or use. If meeting requirements would constitute a hardship or make the redevelopment of properties in the downtown business district economically impractical, the city will receive a cash contribution in lieu of on-site parking facilities. | Consider exempting the downtown area from providing parking, creating an exemption for small, non-residential lots, or allowing for further reductions in the required number of spaces for this area. | City of McHenry, NW Connecticut Model Zoning Regulations for Parking. |
| 12 | | | Mostly addressed | Sec 3-400 B8 | Because of the availability of on-street parking spaces in the corridor, a reduced number of off-street parking spaces is justified in this overlay district. All uses located in the district are allowed a reduction in the required number of parking spaces to provide 70 percent of the required number of spaces per Sec 4-200. | Consider creating an exemption for small, non-residential lots or allowing for further reductions in the required number of spaces for this area. | NW Connecticut Model Zoning Regulations for Parking. |
| 13 | **Credits—on-street parking** | Allow a reduction in off street parking requirements when nearby on street parking is available? | No | Sec 4-200 D4 | N/A | Parking space credit will be given for on-street parking space located either directly adjacent to the property line or within a certain number of feet from the property on the same side of the street. | State of Oregon's Model Development Code and User's Guide for Small Cities. |
| 14 | **Credits—bicycle parking** | Allow a reduction in off street parking requirements when bicycle parking is provided? | No | Sec 4-200 H5 | All development with surface parking areas with 50 or more spaces shall provide bicycle-parking facilities at the following ratio: 1 bicycle parking space per every ten off-street parking spaces within the Downtown Business District and the Virginia Street Corridor Overlay District or one bicycle parking space per every 20 off-street parking space elsewhere in the City. | Establish minimum required bicycle parking spaces for different uses using model standards. Consider allowing the amount of vehicle parking spaces to be reduced by one space for every eight bicycle parking spaces provided. | Campton Hills Zoning Code Analysis and Ordinance Language Recommendations. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 9. Parking (continued)**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 15 | **Size—parking stall** | Require parking stalls to be less than or equal to 9 ft. by 18 ft.? | Mostly addressed | Table 4-200 H | Minimum areas for parking spaces: 90 degree space: 9 ft. by 19 ft.; On-street space: 9 ft. by 23 ft., Compact space: 8 ft. by 16 ft. | Establish standard parking space size as follows: Regular, 90 degrees space: 9 ft. by 18 ft.; On-street: 8 ft. by 23 ft.; Compact space: 7.5 ft. by 15 ft. | Center for Watershed Protection Better Site Design, State of Oregon's Model Development Code and User's Guide for Small Cities. |
| 16 | | Allow for reduction in parking stall size to account for vehicle overhang onto landscaped islands or perimeter landscaping? | No | Sec 4-200 C8; Sec 4-200 H | All off-street parking and loading areas shall provide curbs, motor vehicle stops, or similar devices so as to prevent vehicles from overhanging on or into public right-of-way, sidewalks, walkways, adjacent land, or landscape areas. | Up to two feet of the required vehicle parking space depth used for a vehicle overhang may be improved and maintained as a landscaped island or perimeter landscaping. | |
| 17 | **Size—compact stalls** | Specify that a percentage of all parking stalls can be dedicated for compact cars, with correspondingly smaller stall dimensions? | Yes, for conservation developments | Sec 4-200 E5a | New parking lots and structures may include a maximum of 10 percent of designated spaces for compact cars for conservation developments. | Allow a portion of compact car spaces for all parking lots and structures, not just those in conservation developments. Consider increasing the amount of compact spaces to up to 50 percent of all required vehicle parking spaces, excluding accessible spaces. | |
| 18 | **Size—parking aisles** | Establish narrower aisle widths to minimize impervious surfaces? | Mostly addressed | Table 4-200 H | Minimum aisle widths: 0 degree (parallel): one-way: 15 ft.; two-way: 24 ft.; 45 degree: one-way: 13 ft.; two-way: N/A; 60 degree: one-way: 16 ft.; two-way: N/A; 90 degree: one-way: N/A; two-way: 24 ft. | Encourage one-way aisles with angled parking to significantly reduce the overall size of the parking lots. Maximum aisle width: 0 degree (parallel): one-way: 12 ft.; 45 degree: one-way: 12 ft.; 60 degree: one-way: 16 ft.; 90 degree: two-way: 24 ft. | Blackberry Creek Zoning Code Analysis and Ordinance Language Recommendations. |
| 19 | **Driveways** | Encourage/require reduced driveway widths? | No | Sec A-400 F1 and F2 | Commercial driveway width: minimum of 24 ft., maximum of 36 ft. for two-way operation. Driveway length, or throat length, ranges between 50-75 ft. on unsignalized access drives to 100-300 ft. on signalized access drives. | Design commercial driveways for the minimum required pavement to access the site. Establish a minimum width of ten ft. for a one-way operation. | Center for Watershed Protection Better Site Design. |
| 20 | | Encourage/require reduced driveway widths for single-family developments? | Mostly addressed | Sec A-400 F1 and F2 | Residential driveway width: minimum of 9 ft., maximum of 20 ft.; Residential driveway length: minimum of 20 ft. | Design residential driveways for the minimum required pavement to access a garage, nine ft. or less for one lane or 18 ft. for two lanes. Set two lanes as the maximum width for a driveway. | |
| 21 | | Encourage reduced front setbacks to limit the length (and amount of impervious surface) associated with a driveway? | No | Sec 3-200 A | Dimensional standards in Residential Districts, minimum front setbacks range from 30 to 50 ft. | Reduce front setbacks of the principal building (not garages) to limit the amount of impervious surface associated with a driveway. | |
| 22 | **Driveways—shared** | Encourage/require shared driveways? | Yes, for conservation developments | Sec 4-100 E4b | For conservation developments, shared or common drives shall be permitted and shall comply with the following standards, provided there is a recorded covenant applicable to the properties utilizing such drive which establishes standards for its maintenance and use. A common drive may serve multiple units and may be built to serve residential or non-residential uses. A common drive shall extend from a public or private street and may connect to other existing or planned public or private streets. A maintenance agreement running with the land for the shared driveway must be executed by all units served and recorded with the County Recorder's office. | Expand to allow shared or common drives for all development, not just for conservation design. | |
| 23 | **Paving materials** | Promote use of pervious materials for paved areas, including parking lots and driveways? | Yes, for conservation developments | Sec A-700, Sec 4-100 E4a, Sec 4-200 C3, and Sec 4-200 E5e | Private drives, parking areas, and walkways in a Conservation Design Development may be built with alternative surfaces and designs, including permeable pavers, subject to the approval of the City Engineer. For conservation developments and in certain areas, where permeable soils are present and allow proper drainage, the City Engineer may permit the use of permeable paving materials. For conservation developments and where groundwater will not be adversely affected, alternative paving materials, such as permeable pavers are permitted for overflow parking and other low volume parking areas (subject to City Engineer's approval). The use of alternative paving materials must meet the guidelines of the Crystal lake Watershed Design Manual. | Expand to allow permeable pavement for driveways in other developments besides conservation developments and establish technical guidance. Encourage the use of pervious materials over conventional pavement for parking spaces, as well as parking aisles, provided that the grades, subsoils, drainage characteristics, and groundwater conditions are suitable. Encourage the use of "cool" pavement—with a solar reflectance index (SRI) of at least 29—to reduce the urban heat island effect. | Center for Watershed Protection Better Site Design; LEED for Neighborhood Development Heat Island Reduction Credit. |
| 24 | **Landscaping—amount** | Specify a minimum percentage of pervious landscaping for parking lots? | Mostly addressed | Sec 4-400 F1 and 2 | No landscape requirements for lots less than ten spaces. For lots between ten and 200 spaces, islands are required for every ten spaces, islands should be at least eight feet by minimum stall depth. For lots with more than 200 spaces, a continuous landscape strip between every four rows of parking, minimum of eight feet in width as measured back of curb to back of curb is required. One to four shade trees (depending on total lot size) shall be provided within each landscape island or for every 40 lineal feet of continuous island. | Update purpose of landscaped islands to include minimizing impervious surface area and maximizing the opportunity to infiltrate and filter stormwater runoff from the lot. Encourage or require that parking lot runoff shall be routed to internal and/or peripheral swales and bio-swales. Consider increasing the minimum amount of tree canopy coverage. | Village of West Dundee Parking Lot Design and Maintenance Standards (Zoning 10-9-1-6 C); Parking lot standards section (A1111.1) of the McHenry County Subdivision Ordinance on Conservation Design Standards and Practices. |
| 25 | **Landscaping—design** | Encourage/require the use of recessed landscape islands (vs. raised islands) to facilitate the infiltration and filtering of parking lot runoff? | Yes, for conservation developments | Sec 4-200 E5c and d | Standards for parking areas in conservation developments, bio-infiltration, filter strips, and other practices shall be included in all off-street parking facilities for ten or more vehicles; the use of enclosed drainage curb and gutter is discouraged in favor of vegetated swales, where feasible. | Expand the standards for parking areas in conservation developments to parking areas throughout the community. | |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 10. Water efficiency and conservation**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Water conservation—indoor** | Encourage plumbing fixtures and fittings and appliances in all new and remodeled construction to not exceed specific flow rates and must be a labeled Water Sense product if available? | No | M.C. Sec 392 | Uses the Illinois State Plumbing Code with amendments | Update to require new and remodeled construction to use the most current, water efficient plumbing fixtures, fittings, and appliances (i.e. WaterSense products). Tailor requirements for residential, commercial, industrial, and institutional uses. | CMAP Model Water Use Conservation Ordinance, 1.0, 2.0, 3.0, 8.0, 9.0, 10.0, 11.0, 12.0, and 13.0. |
| 2 | **Water conservation—outdoor** | Set guidelines for vegetation, such as limiting turf area and location and soil depth, and irrigation equipment, irrigation days and schedules, and irrigation permits? | No | M.C. Sec 4-400 | Landscaping guidelines do not encourage minimizing the amount of turf area. Topsoil depth for areas planted with turf grass is not specified. | Update to minimize the amount of turf area and require a minimum of six inches of topsoil depth for areas planted with turf grass. | CMAP Model Water Use Conservation Ordinance, 4.0. |
| 3 | | | Mostly addressed | M.C. Sec 322-1 | The city is authorized to regulate the use of water during periods of peak demand in order to conserve water and ensure adequate water pressure. Regulations shall be enforced using a three color coded system that restricts watering outdoor landscape to early morning and evening hours, hourly restrictions as well as odd and even days, and complete prohibition. Establishes prohibitions from watering streets or sidewalks during summer months. | Update to set requirements on landscape irrigation equipment, tailoring requirements for residential, commercial, industrial, and institutional uses. | Northwest Water Planning Alliance's Regional Water Conservation Lawn Watering Ordinance; CMAP Model Water Use Conservation Ordinance, 5.0., 6.0, 7.0, 14.0, 15.0, 16.0, 17.0, and 23.0. |
| 4 | **Rainwater harvesting and water reuse** | Establish a water reuse model ordinance to encourage preservation of groundwater supplies? | Mostly addressed | M.C. Sec 424 | Provides design specifications for rain barrels. | Pending state legislation permitting the use of greywater harvesting for non-potable purposes, the City should prepare to allow rainwater harvesting for landscape irrigation for toilet flushing. | CMAP Model Water Use Conservation Ordinance, 18.0 and 19.0; McHenry County Water Reuse Model Ordinance. |
| 6 | **Water waste prevention** | Prohibit water waste or inefficient use of water? | No | M.C. Sec 515 | N/A | Update to reduce the general misuse or inefficient use of potable water, which could include adding language prohibiting unauthorized use of hydrants. | CMAP Model Water Use Conservation Ordinance, 20.0. |
| 7 | | | No | M.C. Sec 515 | N/A | Consider adding requirements for fixing leaks in private water lines within a specified number of days of notification by water utility or discovery of leak. | CMAP Model Water Use Conservation Ordinance, 21.0. |
| 8 | | | Yes | M.C. Sec. 890.1190b | A water meter shall be installed on every water service pipe entering every building. | | |
| 9 | **Water pricing** | Establish a conservation pricing structure or other economic incentive to promote water conservation? | Mostly addressed | M.C. Sec. 515-15 | Monthly user rates using a uniform rate structure. | Consider implementing conservation pricing structures and economic incentives that encourage desirable water management practices. Conservation pricing structures include seasonal rates (higher per unit water rate during the peak usage summer months) or increasing block rates in which the unit price of water increases as the quantity of water used increases. | CMAP Model Water Use Conservation Ordinance, 32.0. |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

**Table 11. Pollution prevention**

| | CATEGORY | CHECKLIST QUESTION | YES/NO | CODE SECTION | CURRENT STANDARD | RECOMMENDED STANDARD OR ACTION | REFERENCE |
|---|---|---|---|---|---|---|---|
| 1 | **Groundwater protection** | Regulate activities within groundwater protection areas? | Yes, for the Crystal Lake Watershed | M.C. Sec 630-6 | Management policies and land use practices are outlined to protect the natural hydrological and water quality management system of the Crystal Lake Watershed; specifically, natural areas of runoff detention and groundwater recharge shall be protected from urban development. | Expand to other areas of the municipality. Minimize intensive development activities, minimize impervious surfaces and mass grading, and employ stormwater best management practices that promote infiltration and treatment where possible in sensitive groundwater aquifer recharge areas, including Class III Special Resource Groundwater areas. | City of St. Charles, IL Chapter 13: Groundwater Protection; City of Marengo, IL, M.C. Chapter 30: Groundwater protection; Fox River Grove, IL, M.C. Article IX, Section 23-200 Groundwater protection; McHenry County Groundwater Protection Action Plan; U.S. EPA Model Ground and Surface Protection Overlay District. |
| 2 | **Phosphorus reduction** | Discourage the use of phosphorus in manufactured fertilizers in order to reduce the amount of phosphorus that enters water resources? | Yes, for the Crystal Lake Watershed | M.C. Sec 630-8 E (5) | Encourages restricted use and practices for lawn fertilizer application for the Crystal Lake Watershed. | Expand to other areas of the municipality. Prohibit commercial and non-commercial application to any turf area any fertilizer, liquid, or granula, which contains any amount of phosphorus or other compound containing phosphorus, such as phosphate, except naturally occurring phosphorus in unaltered natural or organic fertilizing products such as yard waste compost. | McHenry County Phosphorus Model Ordinance; Village of Long Grove (8-14-2). |
| 3 | **Coal tar sealants** | Discourage use of coal tar sealants to prevent loss of aquatic life? | No | M.C. Sec A-700 | N/A | Prohibit the use, sale or retail display of sealcoat products for use on an asphalt or concrete surface, including driveways or parking areas, which contain high levels of carcinogens and are harmful to aquatic life. | McHenry County Coal Tar Sealants Model Ordinance. |
| 4 | **Chloride management** | Adopt storage and handling ordinances that ensure proper salt, storage, handling and transport? | No | M.C. Sec 595-22 C (4) | No developments in the Special Flood Hazard Area shall include locating or storing chemicals, explosives, buoyant materials, animal wastes, fertilizers, flammable liquids, pollutants, or other hazardous or toxic materials below the flood protection elevation unless such materials are stored in a specified way. | Expand the geography of this requirement to also include buffer areas to waterbodies and specifically address the storage and handling of salt. | |
| 5 | | | Yes, for the Crystal Lake Watershed | M.C. Sec 630-8 E (1) | For the Crystal Lake Watershed, encourages improved housekeeping practices, frequent street sweeping, controlled use of salt for road deicing in winter, and maintenance of vegetated ground covers. | | |
| 6 | **Pet waste disposal** | Has a pet waste disposal ordinance? | Mostly addressed | M.C. Sec 166-12 | Requires clean up of animal waste on any school ground, public street, alley, sidewalk, tree bank, park or any other public grounds or any private property within the city. | Consider updating to explicitly state that pet owners should remove and properly dispose of any excreta deposited by her/his pet on public or private property. Proper disposal can be achieved either through the placement of waste in designated receptacles or containers that are regularly emptied by the municipality, or by flushing the waste. | State of New Jersey Pet Waste Model Ordinance. |
| 7 | **Private sewage treatment and disposal ordinance** | Adopted the McHenry County Private Sewage Treatment and Disposal Ordinance? | Yes | M.C. Sec. 515-12 | The type, capacities, location and layout of a private sewage disposal system shall comply with all requirements of the Illinois Department of Public Health Private Sewage Disposal Code, 225 ILC. | | |

The community's ordinance was evaluated using a checklist developed from a number of best practices, see Appendix B. The areas where the existing City or County ordinance currently meets best practices are highlighted in green.

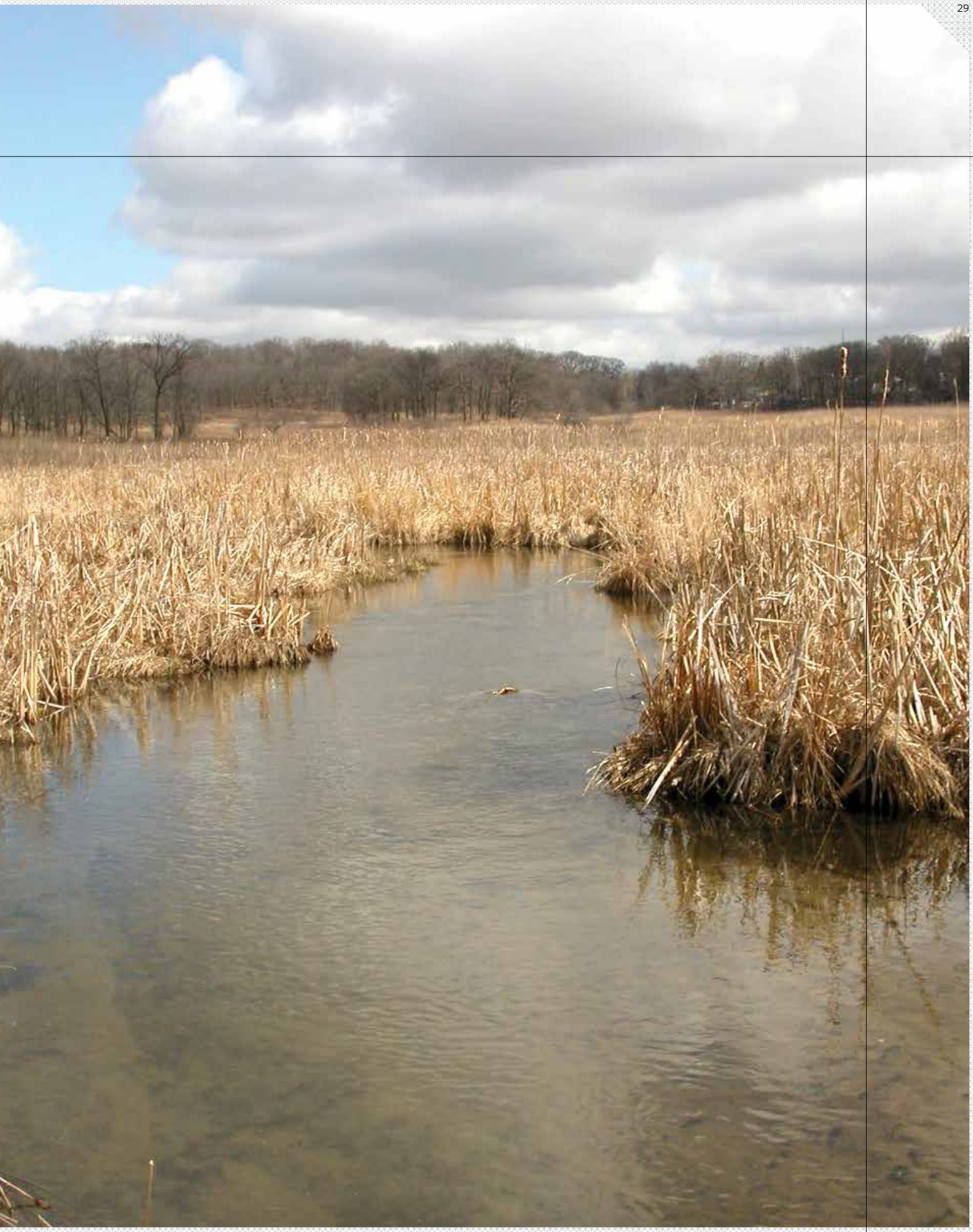


Image by the Stream Team volunteers.

Image by the Chicago Metropolitan Agency for Planning.

# Implementation Steps

This report identifies a number of recommendations to help better align the City's Comprehensive Plan and development-related ordinances with watershed protection. Updating the City'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 City can prioritize to implement the recommendations in this report within the next year:

1. Incorporate the McHenry County Green Infrastructure Map into the City's Comprehensive Plan.
2. Update the Integrated Design District or create a new Conservation Design Overlay District using McHenry County's Conservation Design ordinance as a model and zone areas of the City using the Green Infrastructure Map as a foundation.
3. Advocate for amendments to the McHenry County Stormwater Management Ordinance and/or consider City 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.

# 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** | **Throughout. Crystal Lake watershed, marshes, woodlands, prairie areas, wetlands. Whole chapter devoted to Green infrastructure.** | **11** |
| 2 | **Contain a natural resource protection element with goals calling for preservation of identified critical natural resource areas?** | **Y** | **Preserve, protect, enhance large areas and identifies conservation easements, clustering, and transfer of development rights programs. Limit development on hydric soils.** | **21, 132** |
| 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** | **Crystal Lake watershed stormwater manual; separate chapter devoted to green infrastructure.** | **85, 108, 112** |
| 4 | **Identify key natural resource areas for protection in jurisdiction's parks and open space plan?** | **Y** | **Crystal Lake Park District and City facilities have preservation goals.** | **65, 66** |
| 5 | **Identify key critical water resource areas for protection in jurisdiction's parks and open space plan?** | **Y** | **Crystal Lake watershed, marshes, woodlands, prairie areas, wetlands. Separate chapter devoted to green infrastructure.** | **11** |
| 6 | **Establish and enforce areas which are available for development and which lands are a priority for preservation?** | **Y** | **Throughout.** | **27** |
| 7 | **Outline protection measures for source water protection areas through land use controls and stewardship activities?** | **Y** | **Limits on rural residential in Crystal Lake watershed. Buffers and identifying connection opportunities.** | **41, 77-79** |
| 8 | **Identify and map aquifer recharge/ source water areas and/or wellheads and recommend protective measures?** | **Y** | **Increase in underground aquifer levels. Wellhead protection identified on map.** | **115, 145** |
| | **OPEN SPACE** | | | |
| 9 | **Identify adequate open space in both developed and greenfield areas of the community?** | **Y** | **Expand acquisitions, donations, easements, openspace in subdivisions.** | **65, 66** |
| 10 | **Contain an open space/parks element that recognizes the role of open space in sustainable stormwater management?** | **Y** | **Rain gardens, bioswales, natives are identified as potential techniques.** | **37** |

This checklist was developed from the U.S. Environmental Protection Agency's Water Quality Scorecard.

| | CHECKLIST QUESTION | YES/NO | NOTES | PAGE |
|---|---|---|---|---|
| | **TREES** | | | |
| 11 | **Include tree preservation and replacement as community goals?** | **Y** | **Tree preservation is a goal; as well as larger scale habitat and green infrastructure.** | **11** |
| 12 | **Support the planting of street trees by all private and public development projects?** | **Y** | **support private stormwater best management practices (raingardens, bioswales, natives).** | **37** |
| | **DEVELOPMENT TYPE AND LOCATION** | | | |
| 13 | **Direct development to previously developed areas?** | **Y** | **Infill growth and mixed use - indicators of approval of subdivisions and building permits on infill lots; retention of second story dwelling units.** | **16** |
| 14 | **Identify potential brownfield and greyfield sites and support their redevelopment?** | **Y** | **Redevelop Crystal Court Shopping Center; redevelop brownfield sites, underused manufacturing; redevelop along Route 14; façade improvements to Virginia Street.** | **20, 26** |
| 15 | **Direct growth to areas with existing infrastructure, such as sewer, water, and roads?** | **Y** | **Advantages of using existing infrastructure are identified throughout the plan. Plan calls for extension of services to northwest sub-area in order to replace well and septic, but should be logical and in line with the plan.** | **11, 20, 91, 144** |
| 16 | **Are mixed-use and transit-oriented developments allowed or encouraged?** | **Y** | **Land use chapter has a mixed-use district, goal of creating more compact, mixed-use, livable neighborhoods. High density residential near the train is supported, downtown housing, multi-family housing goals.** | **14, 30, 38, 52, 55** |
| 17 | **Identify appropriate areas for higher-density mixed-use developments (e.g., at transit stops) and recommend policies to encourage their development?** | **Y** | **Near Three Oaks Recreation Area, Crystal Lake and Main Street, Existing downtown (near rail station) and infill.** | **15** |
| | **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?** | **Y** | **Limit the number of trips generated; bike and pedestrian emphasis. Encourage office land uses near transit and bike routes, transportation goals list all modes.** | **18, 19, 43** |
| 19 | **Call for distributing traffic across several parallel streets, reducing the need for high capacity streets with wide rights-of-way?** | **Y** | **Interconnected street networks recognized as efficient.** | **36; 41** |
| 20 | **Include or recommend the creation of a formal bicycle/pedestrian master plan?** | **Y** | **Pedestrian Access plan for commercial corridors, process of drafting a bicycle facility master plan.** | **25, 49** |
| 21 | **Recommend supporting "safe routes to school" programs or other pedestrian/bike safety initiatives?** | **Y** | **Complete streets and safe routes are included in the plan.** | **46, 49** |
| 22 | **Recommend improvements to walking/ biking conditions** | **Y** | **New sidewalks, street furniture, landscape, signage, bike racks identified. Bike and sidewalk improvements near train stations.** | **18, 48** |
| 23 | **Promote green infrastructure practices in street design?** | **Y** | **Standard street design encourage to be modified in conservation developments as well as other locations where it benefits environment.** | **43, 46, 89** |
| 24 | **Recognize the advantages to reduced parking requirements generally and specifically for mixed-use and transit-oriented developments?** | **N** | **Calls for more parking for Metra commuters, Crystal Court redevelopment site plan has a large amount of parking.** | **48, 59** |

| | 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? | Y | Limit the number of trips generated; bike and pedestrian emphasis. Encourage office land uses near transit and bike routes, transportation goals list all modes. | 18, 19, 43 |
| 19 | Call for distributing traffic across several parallel streets, reducing the need for high capacity streets with wide rights-of-way? | Y | Interconnected street networks recognized as efficient. | 36; 41 |
| 20 | Include or recommend the creation of a formal bicycle/pedestrian master plan? | Y | Pedestrian Access plan for commercial corridors, process of drafting a bicycle facility master plan. | 25, 49 |
| 21 | Recommend supporting "safe routes to school" programs or other pedestrian/bike safety initiatives? | Y | Complete streets and safe routes are included in the plan. | 46, 49 |
| 22 | Recommend improvements to walking/ biking conditions | Y | New sidewalks, street furniture, landscape, signage, bike racks identified. Bike and sidewalk improvements near train stations. | 18, 48 |
| 23 | Promote green infrastructure practices in street design? | Y | Standard street design encourage to be modified in conservation developments as well as other locations where it benefits environment. | 43, 46, 89 |
| 24 | Recognize the advantages to reduced parking requirements generally and specifically for mixed-use and transit-oriented developments? | N | Calls for more parking for Metra commuters, Crystal Court redevelopment site plan has a large amount of parking. | 48, 59 |
| 25 | Recommend alternative, flexible approaches to meeting parking demands? | Y | Cross-access and shared parking agreements. | 18 |
| 26 | Recommend provision of bicycle parking spaces and reduction in vehicle parking spaces? | N | Bicycle facilities are encouraged near Metra stations. | 48 |
| 27 | Recognize transportation demand management as an approach to reducing vehicle miles traveled and parking requirements? | Y | Not specifically transportation demand management by name, but other strategies are identified to reducing vehicle miles driven is recognized as a goal. | 48, 89 |
| 28 | Call for landscaping in parking lots to help reduce stormwater runoff? | Y | Stormwater best management practices, runoff reduction hierarchy. | 124 |

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