THE SEQUOIT CREEK WATERSHED MANAGEMENT PLAN
EXECUTIVE SUMMARY

This report is summarizes the findings and recommendations from the watershed management plan the Stormwater Management Commission (SMC) developed for the Sequoit Creek watershed. The Sequoit Creek watershed is part of the Fox River watershed, one of the four main watersheds in Lake County, Illinois. The Sequoit Creek watershed covers about 14 square miles and is home to a population of about 18,000 residents. The primary goal of developing the watershed management plan was address concerns about flooding problems, water quality conditions, threats to natural resources, diminishing open spaces, and the need to take proactive action to prevent such problems from worsening as the watershed continues to rapidly urbanize. In addition, the Sequoit Creek watershed is unique compared to the other watersheds in the county because of its high-quality lakes and natural resources. SMC therefore identified the Sequoit Creek watershed as a priority for developing a watershed management plan. A watershed management plan specifies actions for achieving this goal. The process of developing the Sequoit Creek watershed management plan involved three main tasks:

- Developing goals and objectives with stakeholder input
- Assessing problems and opportunities
- Developing a watershed action plan

Each of these tasks is discussed below.

Developing Goals and Objectives with Stakeholder Input

To ensure that a broad range of perspectives was incorporated into the watershed management plan development process, the Sequoit Creek Planning Committee (SCPC) was created in March 2001. The committee is composed of representatives of municipalities, other local governments, state and federal governments, and homeowner associations as well as watershed residents and experts in various disciplines.

In partnership with the SMC, SCPC took the lead in developing plan goals and objectives by conducting 12 monthly meetings at various locations in the watershed. The general intent of the meetings was to promote local participation in plan development and encourage expression of a diverse range of opinions.

SCPC dedicated the first two meetings to identifying the watershed goals and objectives of stakeholders and other interested groups. SCPC then conducted the remaining 10 meetings to further refine the goals and objectives and to define specific issues of concern through both public meetings and one-on-one meetings with individual stakeholders. Valuable information was gained through these meetings, including opportunities for protecting the watershed's natural resources and solving some flooding and water quality impairment problems.

During the first meeting, SCPC identified and prioritized four primary goals for the watershed management plan. These goals represent a consensus of the stakeholders based on their experience in the watershed, problems they have encountered, and their perceptions and preferences. In order of priority, the four goals are as follows:

- Reduce runoff and improve water quality
- Minimize flood damages
- Improve education and outreach programs for the public, developers, and community leaders
- Protect and restore natural resources

In the context of a watershed, these goals are closely interconnected. Development without application of best management practices (BMP) tends to create more runoff, which carries increased amounts of pollutants into the streams and lakes. The increased runoff volumes and associated pollutant loads exacerbate existing flooding problems and threaten the water quality of the lakes. The developer of the watershed management plan therefore had to recognize the interconnections among these factors while divising effective means for accomplishing the four primary goals.

Assessing Problems and Opportunities

Assessing current conditions and identifying opportunities for improvement in the watershed were accomplished by analyzing extensive information about the watershed. Municipalities, local governments, SMC, and other stakeholders were the main sources of the information, which included inventories of physical infrastructure such as sewer systems, natural drainage systems, detention ponds, transportation routes, trails and greenways, open spaces, potential flood storage sites, and natural resources (including wetlands, lakes, and threatened and endangered species). Lake County's 1994 framework plan and the 2001 draft framework plan provided guidance on regional land use planning and policy through the year 2020. Additional information collected included hydrologic studies, demographic

data, existing and future land use information, water quality data, flood problem area locations, and shoreline erosion studies. Existing land uses and projected land uses through the year 2020 were identified based on existing zoning maps. A summary of the watershed assessment conducted is provided below.

Flooding. Because of its flat topography, a disproportionate amount of the watershed lies in high flood hazard areas. Flooding is prevalent along the main stem of Sequoit Creek and in depressional areas throughout the watershed. According to the most recent floodplain mapping study, about 1 of every 6 acres of dry land adjacent to the watershed's streams and lakes is expected to be inundated during the 100-year storm event. Additional flooding damage is caused by inundation of land adjacent to isolated depressional areas. Up to 80 buildings in the watershed have experienced flooding, and about 234 parcels of land are located in flood hazard areas. An entire subdivision just north of Loon Lake is located in high flood hazard areas. Two critical facilities in the watershed, including the access road to the Antioch wastewater treatment plant, have experienced flooding. Unless preventive action is taken to mitigate the effects of urbanization, flood-related damage is certain to increase in the future.

Water Quality. The good news is that the water quality of the watershed's lakes and streams is generally good. Most water quality problems in the watershed are caused by runoff and discharges from nonpoint sources such as construction sites, developed and agricultural areas, and faulty septic systems. Fecal coliform bacteria whose principal sources are probably failing or inadequately designed septic systems cause the most serious water quality problem in the lakes. Fecal coliform concentrations exceeding health guidelines result in beach closures. The municipalities of Antioch and Lake Villa are the fastest growing in the watershed; therefore, nonpoint source pollutants associated with construction site runoff and stormwater are likely to increase in these areas unless adequate resources are committed and Watershed Development Ordinance (WDO) requirements are fully enforced. The existing water quality monitoring program in the watershed does not include adequate biological, sediment, and toxicological parameters. Inclusion of these parameters in the program in the future will be important for assessing the effectiveness of the watershed management plan.

Natural Resources. The Sequoit Creek watershed is uniquely endowed with ecologically significant areas such as high-quality wetlands, the Cedar Lake Bog Nature Preserve, lakes, and forest preserves that provide habitat for several threatened and endangered species. A comprehensive inventory of the threatened and endangered species in the watershed has never been completed; consequently, the actual number and distribution of these species in the watershed are unknown. According to available data, the

Sequoit Creek watershed contains about 5 percent of the state's listed threatened and endangered species. Of the listed species present, five are fish and six are birds. Most of these species are located in Sun Lake and the Sun Lake Forest Preserve, West Loon Lake, Deep Lake, the Cedar Lake and Cedar Lake Bog Nature Preserve, the Deep Lake Road low shrub bog, the Petite Lake Road marsh, and the Little Silver Lake shrub bog. Issues of concern in the watershed include invasive species in Cedar Lake, loss of existing habitat through channelization, loss of open land to development, and the potential for continuing water quality degradation.

Open Land. Open land constitutes about 46 percent of the watershed. According to future land use projections, this proportion is expected to decrease to 31 percent in 2020, mainly because of development of existing agricultural land.

Trails and Greenways. Presently no trails or greenways exist in the watershed. The Lake County Department of Transportation (LCDOT) has recently developed a countywide plan to establish a trunk system of trails that local municipalities can connect to is developed. Stakeholders should identify and pursue feasible opportunities to connect the watershed to these trails.

Developing a Watershed Action Plan

Upon completion of the detailed assessment of the current and projected future condition of the watershed, a set of recommended actions was prepared. This set of actions constitutes the watershed action plan. The action items were selected to achieve the four goals and associated objectives identified by SCPC.

The objectives associated with reducing runoff and improving water quality are to

- Reduce existing pollutant loads to Sequoit Creek from runoff and point sources
- Reduce nutrient, sediment, and fecal coliform loads to Sequoit Creek and lakes in the watershed
- Reduce existing erosion problems throughout the watershed
- Minimize pollutant loads and erosion problems in future developments

The objectives associated with minimizing flood damages are to

- Preserve floodplains
- Reduce flood peaks and runoff volumes
- Improve and maintain drainage systems
- Protect property and critical facilities in flood hazard areas

The objectives associated with improving education and outreach programs for the public, developers, and community leaders are to

- Develop a school program based on the watershed
- Provide watershed information and education resources for community leaders and the public
- Promote stewardship of Sequoit Creek and lakes in the watershed by increasing public participation

The objectives associated with protecting and restoring natural resources are to

- Protect and restore ecologically significant areas
- Protect threatened and endangered species
- Create greenways and trails
- Protect open land

The watershed action plan contains a comprehensive list of recommended actions for achieving the goals and objectives. The list includes (1) programmatic actions that are intended to be applicable throughout the watershed, such as regulatory measures, regular maintenance activities, and educational programs and (2) location-specific actions such as bank stabilization, detention pond retrofitting, stream restoration, septic system upgrades, construction of regional detention facilities and shoreline erosion protection, and floodplain buyouts. Key actions included in the plan call for municipalities to

- Use land use planning as a tool for reducing ground surface imperviousness by limiting development density, incorporating concepts of low-impact development in zoning regulations,

imposing use restrictions on ecologically sensitive areas, preserving aquifer recharge areas, and preserving open space. Both the 1994 framework plan and the 2001 draft framework plan recommend land use planning as the most cost-effective tool for mitigating the unintended consequences of urbanization.

- Implement the National Pollutant Discharge Elimination System (NPDES)-II nonpoint source pollution prevention program. The municipalities of Antioch and Lake Villa have filed notices of intent with the Illinois Environmental Protection Agency to implement measures that will reduce nonpoint source pollutants entering the water bodies in the watershed. At a minimum, the municipalities will implement pollution control measures that include public education, public outreach, and public participation; illicit discharge elimination; good housekeeping; and construction and post construction runoff control. The public education and outreach components of the program will directly address one of the main goals of the watershed management plan.

- Enforce the countywide WDO. The WDO includes effective provisions for addressing nonpoint sources of pollutants such as soil erosion and storm water runoff by implementing BMPs. In addition, the WDO contains comprehensive floodplain management regulations that are intended to reduce future flood damages. Because the WDO contains only minimum countywide standards, the action includes watershed-specific recommendations for amending the WDO to better protect existing and future property from floods. These recommendations include increasing the one-foot flood freeboard for structures adjacent to floodplains; using drainage easements that are based on full-build out conditions; adopting lower release rates from detention basins.

Additional action plan items include

- Identifying priority open space for creation and preservation of greenways

- Implementing measures for wetland, stream, and shoreline restoration to improve water quality and habitat

- Conducting detention basin retrofitting that will reduce flood peaks and improve water quality

- Identifying specific opportunities for floodplain buyouts and flood proofing

- Implementing monitoring program improvements that will provide data for use in assessing plan performance and identifying additional protection measures needed

Based on its successful experience in implementing the North Branch watershed management plan, SMC created a "toolbox" of watershed restoration and management techniques that are applicable to the Sequoit Creek watershed. The resources in the toolbox will support selection of the specific techniques for implementing the BMPs recommended in the action plan.

SMC; SCPC; and federal, state, and local agencies can assume specific roles and responsibilities during watershed management plan implementation, such as serving regulatory functions, providing funding, and providing technical assistance. Coordination and cooperation among agencies are crucial for successful and timely implementation of the watershed management plan, as is adequate funding. The plan identifies potential sources of funding and provides planning-level cost estimates for a variety of proposed activities.

The watershed management plan is a living document that needs to be periodically updated in order to reflect the many changes occurring in the watershed, include new information, and support implementation of new approaches that have been developed based on prior experience. Plan updating is especially important for an area that is developing as fast as quickly as the Sequoit Creek watershed. The ultimate goal, however, must always be to manage the watershed in a safe, environmentally healthy way that benefits all stakeholders.