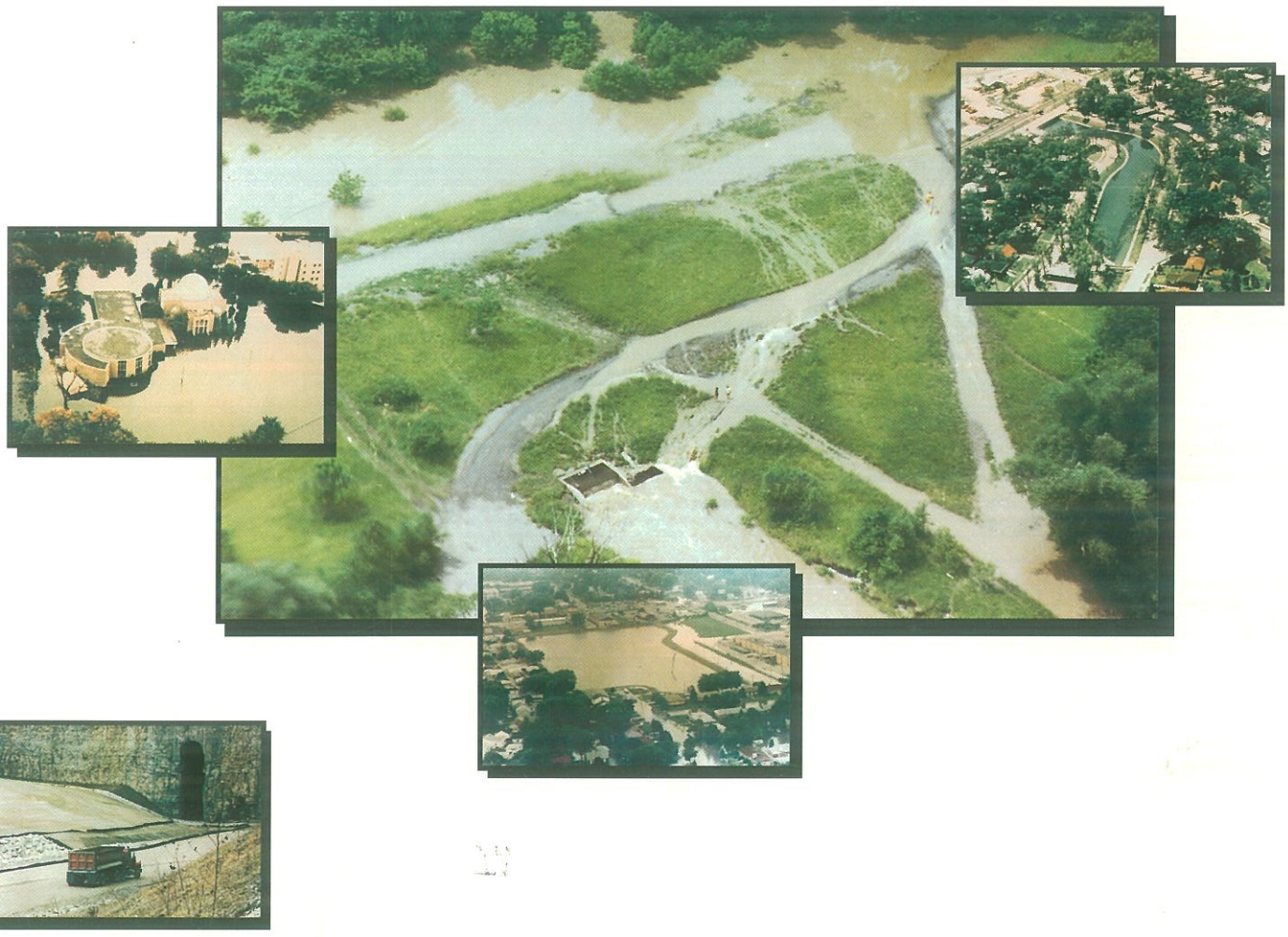
Our Community and Flooding

A Report on the Status of Floodwater Management in the Chicago Metropolitan Area

October, 1998



Prepared by the Resource Coordination Policy Committee

Preface

Flood problems continue to plague the Northeastern Illinois six-county area. Major storm and flood events have occurred several times since 1986, as presented in the following table:

DATE OF EVENT	REGION AFFECTED	POINT RAINFALL AMOUNTS	DAMAGES
Sept.-Oct. 1986	Cook, DuPage, Lake, Kane, McHenry	4" to 10.3"	$34.6 million
August 1987	Cook, DuPage	3" to 9.35"	$77.6 million
June 1993	Cook, Lake, McHenry	unavailable	unavailable
July 1996	Cook, DuPage, Kane, Will	8" to 16"	$564 million
August 1997	Cook	6.1"	$40 million

These flooding events and related damages have placed new emphasis on county stormwater management efforts and regional flood control initiatives. They also provide further evidence that previous predictions of 24-hour rainfall amounts have been too low. Significant flood control benefits are being delivered by the floodwater management plans implemented to date, but damages from rainfall events larger than these plans were designed to handle continue to occur and deserve the attention of local, state and federal officials. Regional flood control planning must continue if these damage levels are to be reduced.

For years, development has been covering the ground with pavement and buildings. Precipitation which once was held in depressional areas or absorbed by the soil is now converted to stormwater runoff and is directed to streams which cannot handle this additional flow. This stormwater runoff becomes floodwater when it overtops the streambanks and floods streets, businesses and homes.

In recent years, under the Federal Watershed Protection and Flood Prevention Act (U.S. P. L. 566), many regional flood control reservoirs and channel modifications have been completed. Two large facilities, Thornton and McCook reservoirs, remain to be completed in order for the Little Calumet River, Chicagoland Underflow, and Tunnel and Reservoir Plans to function as intended. Community leaders and organizations have been working together with governmental agencies to complete this program, which will reduce existing flood damage potential and help to prevent future flood damage.

The original "Our Community and Flooding" was prepared in 1975 to summarize the watershed plans developed as part of this collective effort and updated in 1986 and 1991. This 1998 report measures progress on those plans, identifies additional plans and progress made toward their completion, and summarizes what remains to be done. Since precipitation will continue to fall and communities will continue to grow, steady progress in developing and implementing floodwater management plans is essential to keep our communities as safe and secure as possible from flooding. This objective can only be achieved if the rate and volume of stormwater runoff are controlled through detention and preservation of the natural storage and infiltration character of the landscape as it is further developed.

Flood Fact ...

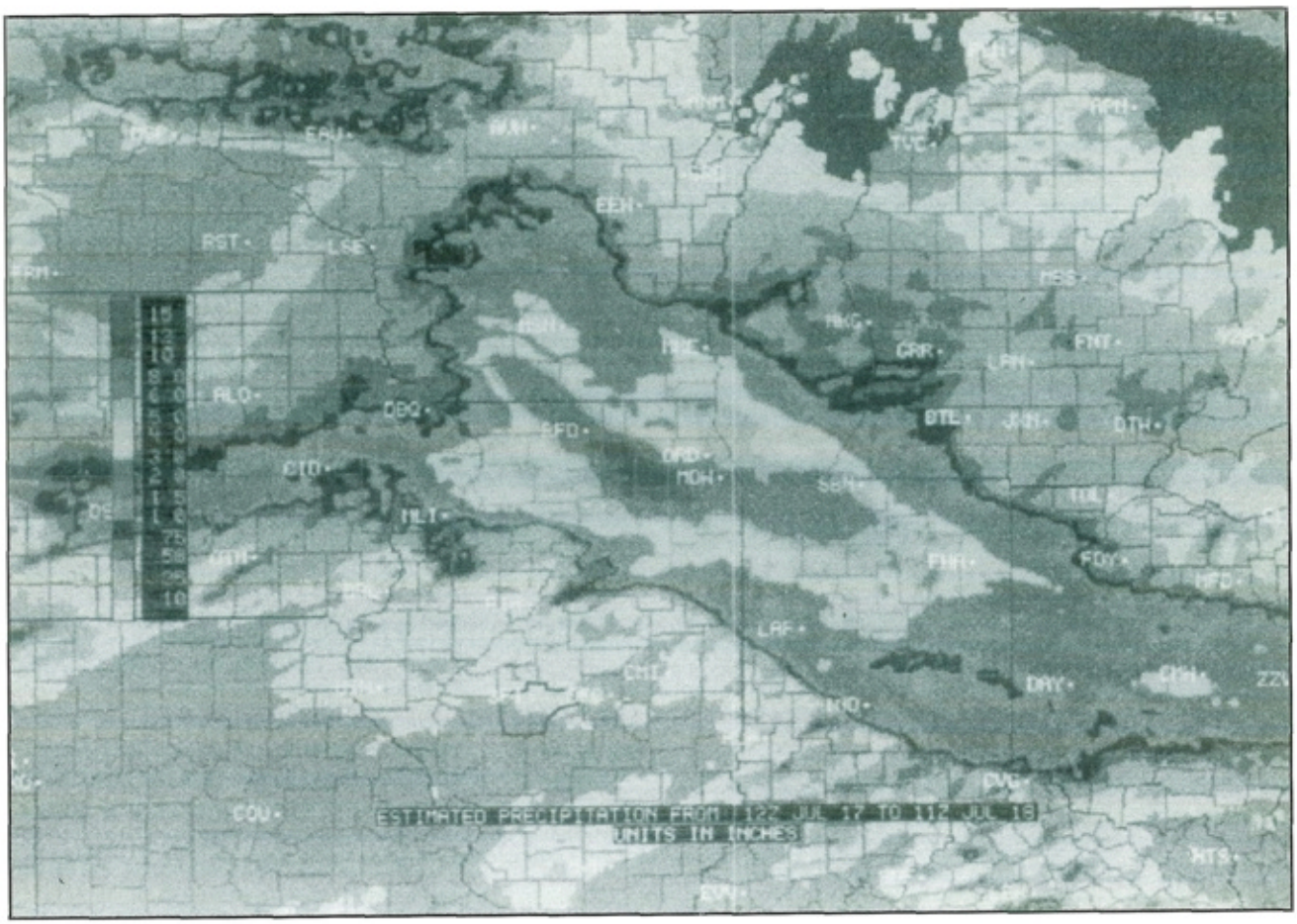
During an August 1987 storm, more than 100 cars, trucks and busses were stranded on the Eden's Expressway.

More than 30 intersections and stretches of road throughout the Chicago area remained closed because of flooding.

300 vehicles were stranded in waters as high as six feet, trapping many motorists for hours.

3000 homes were damaged in Cook and DuPage Counties.

Four deaths occurred.



The Resource Coordination Policy Committee

The Resource Coordination Policy committee (RCPC) receives direction and guidance from the Chicago Metropolitan Area council of Watershed Steering Committees which represents communities and local leaders of each watershed.

The RCPC is composed of floodwater management committees and related agencies working together to solve Chicagoland flooding problems. These agencies include:

- Soil and Water Conservation Districts of North Cook, Lake, DuPage, Kane, McHenry, and Will/South Cook Counties
- Illinois Department of Natural Resources, Office of Water Resources
- Metropolitan Water Reclamation District of Greater Chicago
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Army Corps of Engineers, Chicago District
- Stormwater Management Committees of Cook, DuPage, Kane, Lake, McHenry, and Will Counties.
- Cook County Flood Control Coordinating Committee

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PART I - FLOODWATER MANAGEMENT PERSPECTIVE

How Our Flood Problems Developed

Flooding and related problems have been a part of the history of the Chicago area since its earliest days. History records that Father Marquette and Louis Joliet, who first explored this area in 1673, were forced to move their camp because of flooding.

The Chicago Metropolitan Area's location on the southwest shore of Lake Michigan has helped to make it a major national transportation and business center. The effect of geological features on this location makes this urban area susceptible to major flood problems.

Glaciation left the region relatively flat, particularly the area nearest Lake Michigan which was covered by Glacial Lake Chicago. As a result, the drainage systems were poorly developed and wetlands were common. Floodplains vary greatly in width and floodwaters may cover broad expanses. There are nine watersheds within the region: the North Branch of the Chicago River; Des Plaines River; Little Calumet River; Calumet-Sag Channel; Poplar Creek; Hickory Creek; Salt Creek; DuPage River; and the Fox River (page 19).

The rapid population growth of the 1950's and 1960's resulted in uncontrolled urban development within the natural floodplains, displacing wetlands and depressional areas to meet the unprecedented demand for housing. At that time, urbanization was considered sound economic and political policy. It was orderly growth within areas containing public services and utilities. What was not realized at the time was that this great volume of growth was beyond anything experienced before in the Midwest and was taking place in a relatively short time frame.

The result of this development in floodplains has been estimated to cost $28.7 million in average annual floodwater damages affecting 200 communities in the Metropolitan area (see table on page 18). This does not include damages within the Central Basin Watershed, which is estimated to be $151 million annually. It is estimated that a major flood will damage over 18,000 residential buildings and approximately 550 commercial buildings. Also affected are 10 major transportation arteries and 43 secondary traffic routes. Direct damage to highways and bridges is not usually large, but major economic losses do occur in the form of associated damages when traffic is disrupted and homes and businesses become inaccessible due to floodwaters.

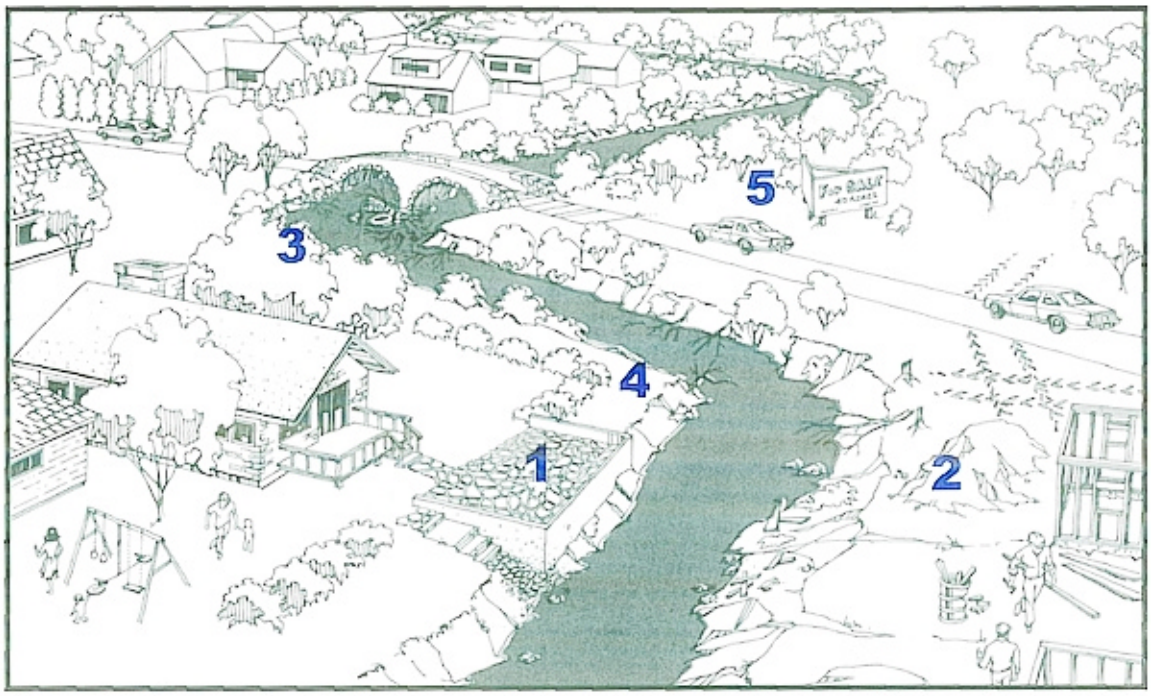
Many important factors serve to increase the frequency and impact of flooding problems and the impairment of water quality, habitat, and recreational use:

- Lack of multi-purpose watershed planning.
- Erosion from areas under development produces sediment which obstructs drainage facilities, reduces the capacity of streams to convey water, and impairs environmental features.
- Development of wetland and depressional areas reduces natural floodwater storage. The developed wetland often drains into storm sewers, which speed the runoff to downstream floodplains.
- The practice of filling floodplains to elevate improvements above past record flood depths causes other areas to flood, often to the distress of neighbors, and may cause other impacts to stream channels.
- Uncontrolled stream modification, while it may provide flood protection to adjacent areas, can produce detrimental downstream effects.
- Inadequately-sized bridge openings restrict the flow of water and raise water levels.
- Poor stream maintenance enables heavy vegetative growth and debris accumulation which reduce the ability of streams to convey water. Environmentally beneficial growth should be maintained while preserving a stream's conveyance capacity.
- Poorly-planned development in the floodway and flood-fringe areas of a floodplain contributes to increased flooding.
- Runoff volume increase due to additional impervious area (roofs, strets, parking lots) throughout the watersheds.

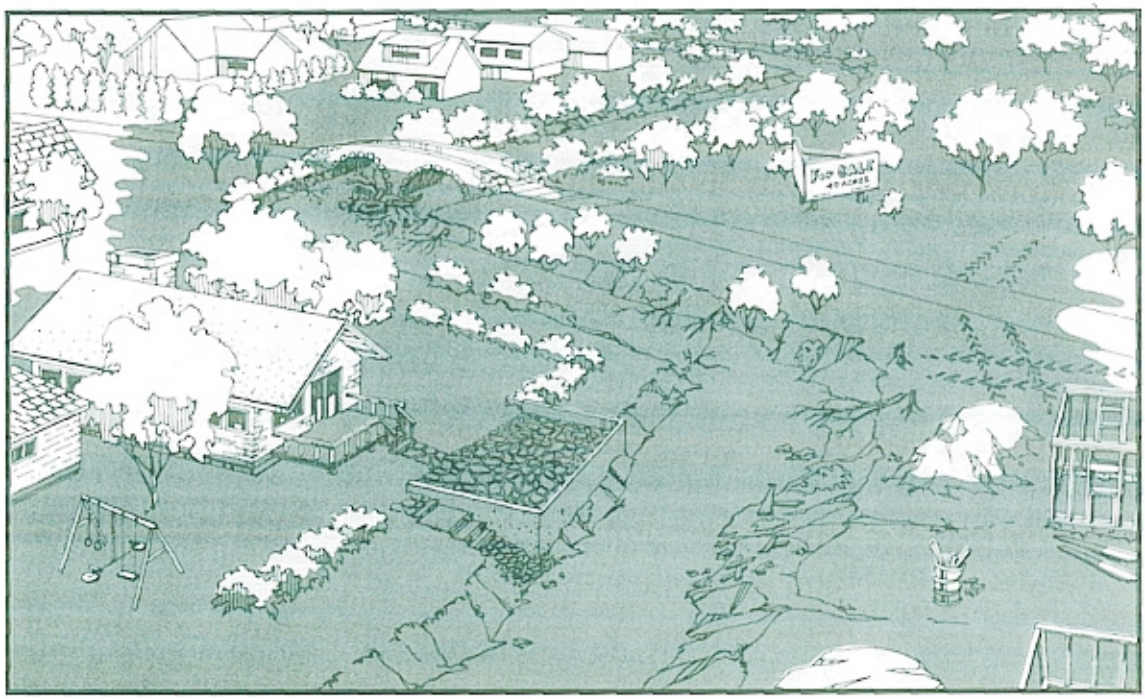
Sometimes, the solution to flooding may not be structural. Non-structural remedial solutions include buy-outs of buildings in floodplains, floodproofing, and preventive measures such as floodplain development restrictions and integrating natural drainage systems into new development site plans.

The complex area-wide flooding problem cannot be solved by any single governmental agency. The solution continues to lie in a coordinated effort of all agencies throughout the Chicago Metropolitan Area and within the six county area of Northeastern Illinois.

What Floodwater Management is About

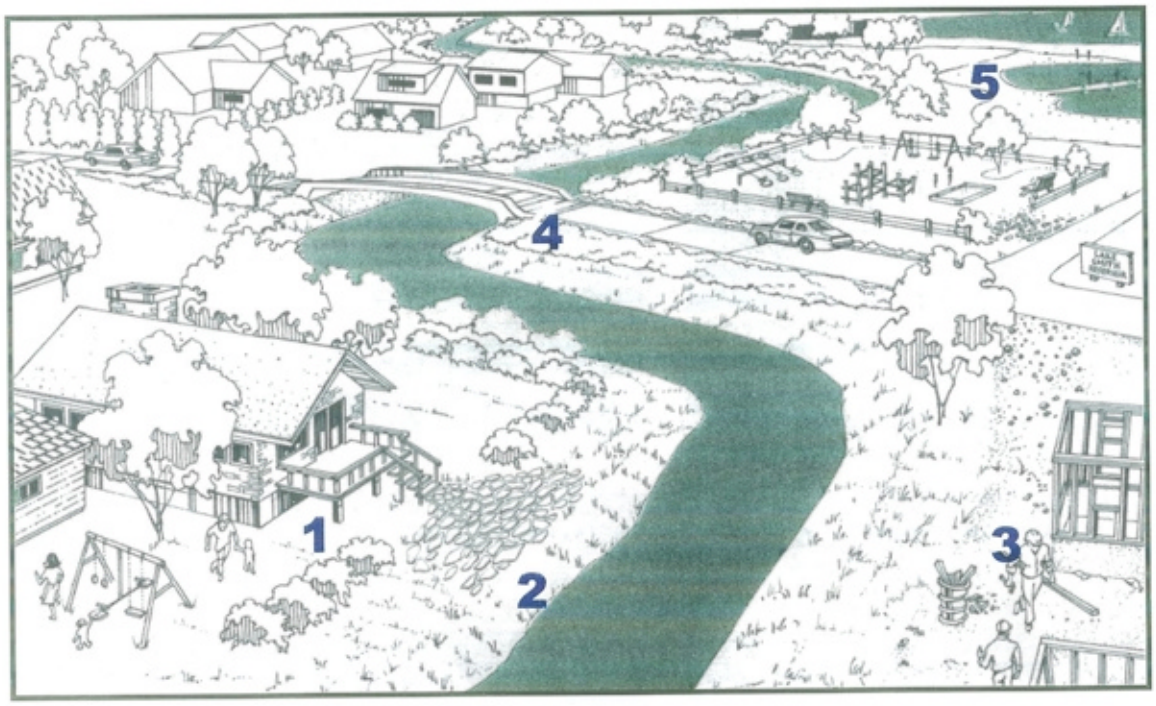


Floodwater management is achieved by learning what impacts a flood will have, what causes those impacts, and how they can be minimized, if not eliminated. The scene above typifies the kinds of things that worsen a flood's damaging effects: 1) projection into the stream; 2) erosion and sedimentation from developing areas; 3) poor stream maintenance; 4) debris; 5) improper use of land in the floodplain.

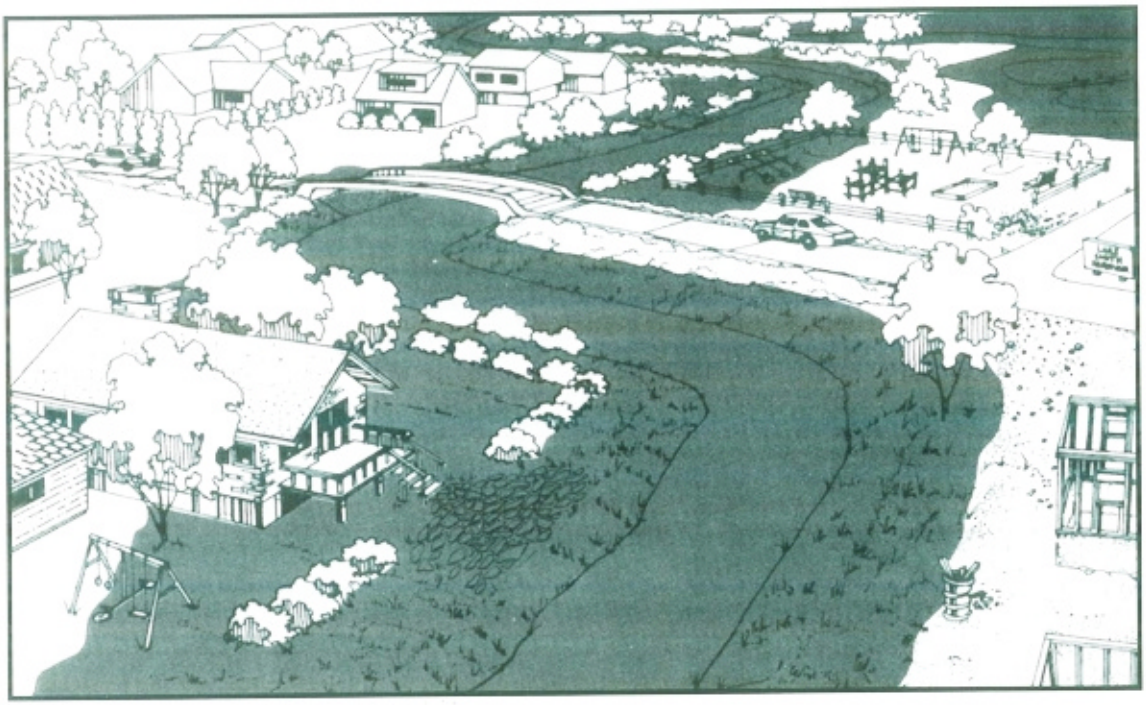


When a flood does occur, poor stream maintenance, construction, and planning and development can result in considerable property damage and other negative impacts.

What Floodwater Management is About



C This shows proper flood management practices: 1) a house floodproofed by raising the floor level above flood elevation; 2) the absence of projections into the stream; 3) a well-maintained construction site, stream and stream bank; 4) an elevated roadway and new bridge; 5) a multi-purpose flood control reservoir.



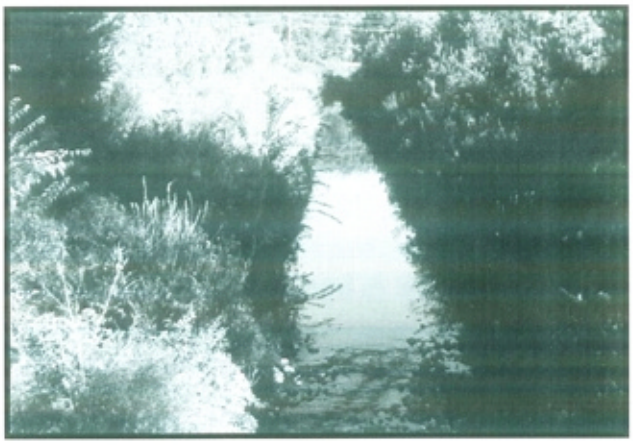
D Again, flooding occurs. It is important to understand that floodwater management does not stop flooding. However, by comparison to scene B, it does reduce damages significantly.

Solutions to the Problem

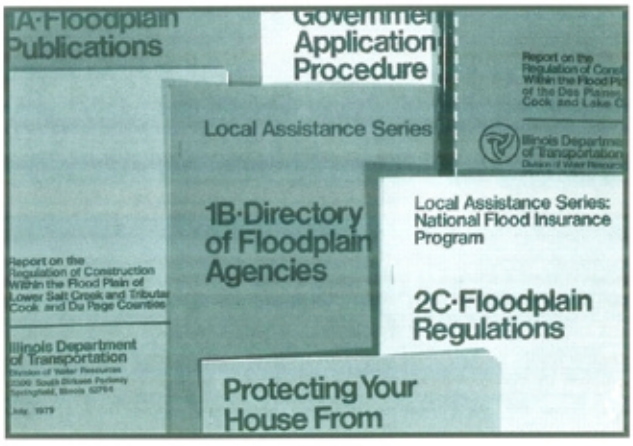
Problem

Solution

Widespread residential flood damages (left) can be reduced or eliminated by structural measures such as floodwater storage reservoirs (right).



Flood damages to business and industry (left) affect the economic well-being of an entire community. Channel modifications (right) can significantly reduce those damages.



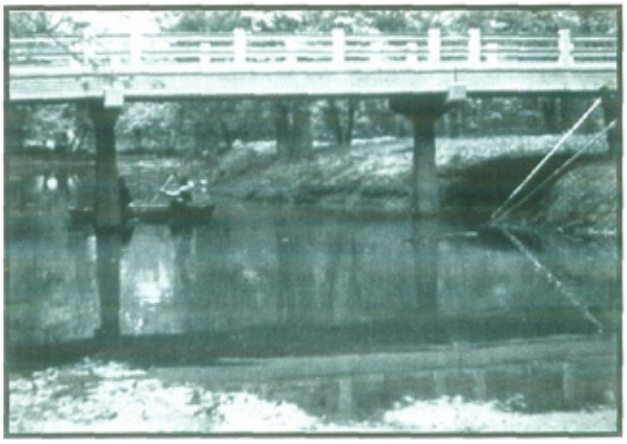
Uncontrolled development in flood-prone areas (left) often causes extensive economic losses affecting an entire community. Non-structural, regulatory actions (right) can greatly reduce these effects.

Solutions to the Problem

Problem

Solution

Besides the loss of valuable top-soil, lack of proper erosion protection measures during and after any construction work will produce sediment (left), a major factor in increased flood levels. Techniques like the sediment trap shown (right) will reduce or eliminate this unnecessary condition.



Man-made and natural debris (left) decreases the capacity of a stream to carry water, especially during a flood. Proper maintenance (right) insures efficient floodwater conveyance.

Moving from a flood-prone area is not economically feasible for many who experience periodic flood damage (left). Floodproofing techniques, such as the berm shown (right) can provide protection from floodwaters.

Existing Services and Programs

Recognizing that the area's hydrologic system requires regional planning to solve flooding problems, a coordinated area-wide study is required. Many local, state, and federal agencies are working together to solve flooding problems in the Chicago Metropolitan Area.

Efforts have been made to coordinate activities where appropriate in recognition of the fact that the area's hydrologic system requires regional planning and to take advantage of the economies of regional planning. The Chicago Metropolitan Area River Basin Study is an example of such a planning effort.

The study was begun in 1971 when the Metropolitan Water Reclamation District entered into a cooperative agreement with the Natural Resources Conservation Service to prepare River Basin Plans under the authority of Section 6, Public Law 566, 83rd Congress, as amended — the Watershed Protection and Flood Prevention Act.

Concerned citizens joined local, state, and federal agencies to investigate flooding problems in the Des Plaines, North Branch of the Chicago River, Little Calumet, Poplar Creek, Calumet-Sag, and Salt Creek Watersheds. Working under federal guidelines, the flooding problem was investigated.

The primary goal of the study was to develop comprehensive plans to reduce existing floodwater damages. The problems and needs in each of the watersheds were considered. As a result, programs and projects were developed, the majority of which have been implemented.

Similar studies have been conducted by the Corps of Engineers in the Fox River and DuPage River Watersheds. A watershed plan for Hickory Creek was developed by the Illinois Department of Natural Resources. A new Des Plaines River Watershed Study by the COE is currently underway. The County Stormwater Management Commissions are developing watershed plans at the tributary level.

Fox River residential flooding. April 23, 1993.

Federal Programs

USDA NRCS Natural Resources Conservation Service

NRCS Programs

The Watershed Protection and Flood Prevention Act (P.L. 566) authorizes the Natural Resources Conservation Service (NRCS) to cooperate with local organizations to carry out, maintain, and operate works of improvement for flood prevention, multiple purpose water resource development, and protection of soil resources. Under this authority, floodwater management plans for six watersheds in the Chicago Metro Area were developed in cooperation with agencies and steering committees in each watershed. Steering committees are groups of concerned citizens who serve on a voluntary basis. They represent the social, economic, and environmental setting prevalent in their area and have joined together to seek solutions to the flooding problems that confront their communities.

These committees during preparation of the floodwater management plans universally adopted the following goals and assumptions:

- **Protect** against the flood that has a one-percent chance of occurring in any given year.
- **Project** flooding conditions with urbanization at the year 2,000.
- **Emphasize** floodplain and stormwater management.
- **Limit** analyses to flood damages associated with overbank flooding.
- **Assume that** the Metropolitan Water Reclamation District's Tunnel and Reservoir Plan for the combined sewer areas is in place.
- **Assume that** flood control measures, which have been authorized and funded, are in place.

The final plans developed included a combination of structural and non-structural measures to correct existing flood problems and prevent future problems from occurring. They include reservoirs, channel modifications, dikes, land protection, floodplain regulations, channel maintenance programs, floodproofing and wetland and open space acquisition.

NRCS Addresses the Many Needs of Illinois Communities

In communities across Illinois—from Chicago and its growing suburbs to downstate rural towns and villages—the needs of residents and those of the environment are intensifying. There is a growing realization that land must be managed in a manner that meets the immediate needs of the community without compromising the long-term health of the environment. Based on these community concerns, the Natural Resources Conservation Service, or NRCS (formerly the Soil Conservation Service or SCS), provides assistance to land managers, local units of government, and organized groups and communities throughout Illinois. Rural and urban communities of all sizes face many issues involving appropriate land use and sustainable development. These often include water quality, stormwater runoff, and erosion control. With more than 60 years of experience and expertise in the wise use of natural resources, the NRCS works with local community groups and leaders to address environmental concerns and develop innovative solutions that benefit communities while maintaining a quality environment.

Community Success Through Local Partnerships

NRCS community assistance serves to improve upon and enhance the role of other organizations and agencies. Working in partnership with local planning commissions, county stormwater programs, health departments, park districts, Soil and Water Conservation Districts (SWCD), and others, NRCS helps community officials examine and evaluate local land development issues. Together they devise sustainable solutions that benefit people and their environment.

NRCS Programs, Products, and Services for Community Assistance

- **Service and support** through NRCS' network of technical specialists including engineers, biologists, soil scientists, water quality specialists, community planners, and soil conservationists.
- **Detailed on-site soil investigations.** NRCS identifies soil suitabilities and limitations and prepares interpretive reports to ensure wise use of land and other natural resources. Custom-made reports can reduce future construction problems and minimize development costs. The McHenry County Soil Survey report is complete. DuPage, Will, Lake, and Kane County Soil Surveys are in progress.
- **Geographic Information Systems (GIS).** NRCS can assist in the development of natural resource data, such as soils and wetlands, for use in a local GIS. When combined with other data, a comprehensive profile of a community's natural resources can be created and evaluated.
- **Water quality planning**. NRCS can help plan and install resource management systems that protect and improve water quality.
- **Community planning.** NRCS helps develop comprehensive land use plans as well as natural resource protection and zoning ordinances. Recognizing land use suitabilities and limitations and zoning efforts ensures lower public infrastructure and private development costs and a higher quality of life for community residents and businesses.
- **Natural resource information and data.** NRCS provides information on potential impacts planned development activities may have on soil, water, air, plant, animal, and human resources.
- **NRCS' "Urban Manual"** provides guidance for the protection and enhancement of urban natural resources and environment. Sections include planning principles and procedures, construction practice standards, construction specifications, materials specifications, and standard computer aided design and drafting (CADD) drawings.
- **Urban soil erosion and sediment control** planning and implementation. Procedures and Standards for Urban Soil Erosion and Sedimentation Control for Illinois was revised in 1988 by the Association of Illinois Soil and Water Conservation Districts. In 1990 they also developed the Illinois Urban Soil Erosion and Sedimentation Control Field Manual for use by inspectors and other field personnel.
- **Wetland** determinations, mitigation, site restoration and delineation assistance.
- **Greenway**, stream corridor, and open space planning and management.
- **Stormwater management** planning.
- **Rural and economic development**. Working through Resource Conservation and Development (RC&D) Councils, NRCS helps rural communities develop economic stability by managing available natural resources.
- **Soil bioengineering.** NRCS can help select plant materials and vegetative cover designed to improve slope stability and provide increased streambank and shoreline protection.

By helping to build modern communities in harmony with the natural environment, NRCS helps ensure social, cultural, and economic stability for the future.

U.S. Army Corps of Engineers (COE)

The U.S. Congress generally authorizes survey investigations and other feasibility studies by the Corps of Engineers. Recognizing that many smaller projects may be expedited by not having to go through the authorization process, Congress also has delegated authority to the Corps of Engineers for study, adoption, and construction of small projects for navigation, flood control, beach erosion control, and shore protection as summarized in Table 1. Criteria for design, evaluation, and local cooperation (with the added requirement that local interests bear all project costs in excess of the Federal limit), are the same for these projects as for projects specifically authorized by Congress.

Both the specifically authorized and the Continuing Authority Program studies are conducted in two phases: reconnaissance and feasibility. The reconnaissance phase is conducted at full Federal expense while the feasibility phase is cost-shared 50-50 with a non-Federal local sponsor. A Continuing Authority reconnaissance study may be initiated by a letter of request from a local sponsor to the District Engineer, Chicago District.

Other Corps of Engineers Programs

Section 22 of Public Law 93-251 (Planning Assistance to States) authorized cooperation with states in the preparation of comprehensive plans for the development, utilization, and conservation of the water and related resources of drainage basins located within the boundaries of the state and to submit to Congress reports and recommendations with respect to appropriate Federal participation in carrying out the plan. Expenditures in any one state cannot exceed $200,000 in any one year.

Corps input to the state planning program is on an effort - or service - sharing basis in lieu of an outright grant. The program is cost-shared with the respective states.

Table 1

Continuing Authority Projects

Authority	Type of Projects for Which Used	Limit of Federal Costs Per Project*	COE Share % *	Local Share %
Section 205, 1948 Flood Control Act	Small Flood Control Projects	$5,000,000	65	35
Section 107, 1960 R & H Act	Small Navigation Projects	$4,000,000	90	10
Section 103, 1962 R & H Act	Small Beach Erosion Control Projects	$2,000,000	65	35
Section 14, 1946 Flood Control Act	Streambank and Shore Protection for Facilities	$1,000,000	65	35
Section 208, 1954 FC Act For Flood Control	Snagging and Clearing	$500,000	65	35
Section 111, 1968	Mitigation for Shore Damage Attributable to Federal Navigation Projects	$2,000,000	Cost sharing percentage correlates to existing Federal navigation project	
Section 1135, 1986	Project Modification For Improvement of Environment	$5,000,000	75	25
Section 206, 1996 WRDA	Acquatic Ecosystem Restoration	$5,000,000	65	35

* *Updated as of June, 1998.*

The Corps is authorized by Section 206 of the Flood Control Act of 1960 as amended, to provide information, technical planning assistance, and guidance upon request to both Federal and non-Federal entities in identifying the magnitude and extent of the flood hazard and in planning wise use of the floodplains. Direct response and assistance of this kind are provided through the Floodplain Management Services Program at District offices. Fees are charged for requests by non-governmental entities (i.e., individual homeowners, etc.). Non-Federal governmental requests are not charged. The Corps also administers studies which provide basic hydrologic and hydraulic information to the Federal Emergency Management Agency (FEMA) on a reimbursable basis under interagency agreement.

Federal Emergency Management Agency (FEMA)

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 created a flood insurance program administered by the Flood Insurance Administration of the Federal Emergency Management Agency.

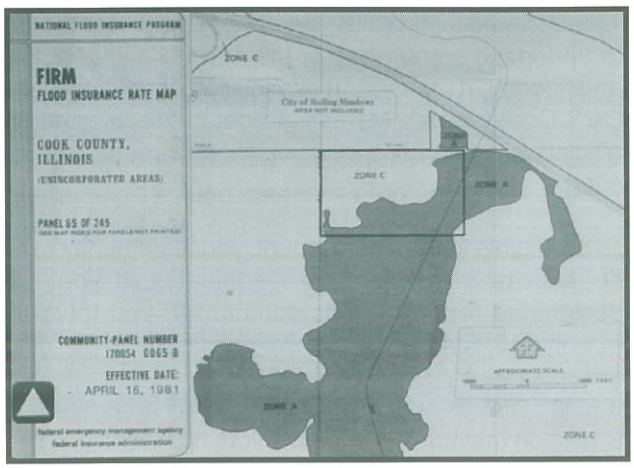
The 1968 Act makes federally-subsidized insurance available to citizens in communities that adopt regulations controlling floodplain development.

The 1973 Act makes flood insurance mandatory as a condition for federally related financial assistance to communities or individuals acquiring or refinancing property or building within the flood hazard area as defined by the program established in 1968.

Federal agencies provide assistance following flood disasters in the form of grants, direct assistance, or low interest loans. Participation in the flood insurance program by communities with identified flood hazards assures continued flood relief assistance.

The National Flood Insurance Program

Your community likely participates in the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency. If it is in the NFIP, it has agreed to enforce floodplain management regulations. In exchange, residents are eligible to purchase flood insurance, which is normally not available through private insurance companies. Disaster assistance and many types of grants and loans are also made available. If your community is in the NFIP, it has one or more maps that show local flood hazard areas (usually the land that would be covered with water during a 1% annual chance ("100-year") flood).



Flood Insurance Rate Map

There are four major floodplain regulatory requirements, and others can be set by state or local law.

- All development in the floodplain must have a local permit. "Development" includes new buildings, improvements to buildings, filling, grading, or any other human-caused change to the land.
- New buildings in the floodplain must be built or located to resist flood damage.
- Additions, improvements, or repairs to a damaged building that exceed 50% of the original building's value also must be made flood resistant.
- Only certain types of development are allowed in the floodway part of the floodplain. It is the most hazardous area and includes the stream channel and the adjacent land that is needed to safely pass flood flows.

To provide an inventory of the flood hazard maps in need of updating, FEMA has implemented a Five-Year Map Update Needs Assessment process. This process requires that the flood hazard map for each community be evaluated for update needs at least once every five years.

The Community Rating System

The NFIP offers reasonably priced flood insurance in communities that comply with minimum standards for floodplain management.

The NFIP's Community Rating System (CRS) recognizes community efforts beyond those minimum standards by reducing flood insurance premiums for the community's property owners. Discounts range from 5% up to 45%.

To participate in the CRS, your community can choose to undertake some or all of the 18 public information and floodplain management activities described in the *CRS Coordinator's Manual*. To get credit, community officials must prepare an application documenting the efforts.

To be eligible for a CRS discount, your community must do Activity 310, Elevation Certificates. If you're a designated repetitive loss community, you must do Activity 510, Repetitive Loss Projects. All other activities are optional.

Based on the number of points your community earns, the CRS assigns you to one of 10 classes. Your discount on flood insurance premiums is based on your class.

Salt Creek, North of Ogden, East of York, August 14, 1987

State Programs

Illinois Department of Natural Resources, Office of Water Resources

Flood Control Planning

The Flood Control Act of 1945, 615 ILCS 15, gives the Office of Water Resources (OWR) legal authority to participate in the improvement of the rivers of the State for the purpose of regulating and controlling flood and low-water flows. Criteria followed by the Office relating to flood control planning include:

- Assurance that the most severely damaged areas receive priority consideration and assistance from State and Federal sources.
- State water resource projects be designed to maximize economic efficiency at minimal environmental impact.
- State expenditures result in the maximum benefits for the least possible cost.
- Local interest and investment of funds be required as evidence of involvement in any project.

OWR, through its regular flood control program and in cooperation with local governmental sponsors, has provided over 5350 acre-feet of floodwater storage in eleven reservoirs, as well as improved channels at numerous locations throughout the Chicago Metropolitan Area.

OWR provides funding through its Small Projects Program to alleviate smaller, more easily solvable flood problems. Maximum OWR funding is currently $75,000 per Small Project. Additionally, OWR provides study/project support through field activities including the operation of a modernized water resources data collection network and the acquisition of field survey data.

OWR participates in Federal programs within the legal authority of State Statutes. OWR is an active sponsor, along with other regional and local agencies, of floodwater management plans developed with NRCS, MWRD, and Corps of Engineers assistance. Sponsor responsibilities include land acquisition needed for the structural measures and implementation of various non-structural programs and project operations and maintenance.

Stream Preservation Program

OWR assumed responsibility for the development of a stream preservation program as a part of the non-structural program of the Chicago Metropolitan River Basin Plans.

Stream Preservation refers to the management of a stream's conveyance capacity and can include natural channels and environmental enhancements.

It includes the following goals and objectives:

- Keep debris, sediment, and restrictive vegetation out of rivers and streams.
- Convey floodwater safely through each community.
- Assure that flood control structural measures will perform as planned by maintaining unobstructed inflows and outflows.
- Provide for annual inspection and maintenance of the key rivers and streams in each watershed.

- Encourage each community to assume responsibility for maintenance of the stream portion within its jurisdiction.
- Provide assistance and advice to communities and other regional agencies when needed.
- Encourage environmental awareness of the general public.

The program has been implemented and coordinated through each respective watershed steering committee. Greater community compliance with this program would provide even greater results.

State Floodplain Regulations

The Rivers, Lakes, and Streams Act, 615 ILCS 5, gives the Office of Water Resources the authority to regulate construction activities within the floodway. The floodway is that portion of the floodplain required to store and convey floodwater. A permit is required to construct within the floodway. Construction that significantly raises the stage or velocity of the 100-year projected flood in the floodway is prohibited . Only appropriate uses are allowed.

The Office has compiled an official list of designated regulatory floodway maps. Information is available from the Office or from the local municipality.

Floodproofing and Flood Insurance Programs

The Office's Floodplain Management Section is the State Coordinating Agency for the National Flood Insurance Program. This section provides advice and information concerning the flood insurance program as well as technical assistance.

Flood Mitigation Program

Illinois Revised Statutes, Chapter 19, para. 126d. gives the Office of Water Resources the authority to acquire floodplain property to convert to public use. This authority is used to acquire properties that cannot be protected by flood control structures, or where structural flood control measures are not practical or economically feasible. Only those communities participating in the National Flood Insurance Program may be considered for funding through this program. Currently, four communities in DuPage County (Addison, Elmhurst, Oak Brook, and Wood Dale) are receiving flood mitigation project funding. In Will County a mitigation project was funded by OWR as the result of the 1990 Plainfield tornado.

The Office of Water Resources also provides technical mitigation and floodproofing assistance to property owners through publications available free of charge.

Aerial view of flooding in Kane County, Ill. Looking west at Orchard Road. July 18, 1996. (Photo by Chris Dagiantis, Courtesy of Paul Schuch. Kane County Development Department.)

State legislation is currently being considered that would name the MWRD as the Regional Stormwater Management Agency for Cook County. The MWRD would be involved in the planning and design of flood control facilities and provide low interest loans for approved projects.

MWRD Sewer Permit Ordinance

Since 1972, detention of stormwater runoff has been a requirement of the sewer permits within the service area of the MWRD. This area includes most of Cook County.

The intent of the ordinance is to require local governments and developers to jointly provide detention storage. This eliminates excessive runoff during heavy storm periods and promotes comprehensive community-wide programs for flood control. The MWRD ordinance requires that the release rate of stormwater runoff from a development not exceed stormwater runoff from the area in its undeveloped state.

Infiltration/Inflow Corrective Action Program (ICAP)

The Clean Water Act enacted by Congress mandated that all sanitary sewer systems in the USA be rehabilitated to eliminate excessive stormwater.

In the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) area, regional sewer conferences were convened. As a result of these conferences, a Sewer Summit Agreement was created which was acceptable to all municipalities. The Sewer Summit Agreement enabled the local municipalities to meet the requirements of the Clean Water Act without creating a financial burden on the local taxpayers.

The purpose of ICAP, as developed by the local communities, is to remove excessive Infiltration and Inflow (I/I) from sanitary sewers in order to meet the following goals:

- Eliminate basement sewer backups and other conditions that cause health hazards or financial losses.
- Prevent pollution of the waterways.

On November 21, 1985, the MWRDGC's Board of Commissioners approved adoption of the Sewer Summit Agreement and authorized an amendment to article 6-5 of the Manual of Procedures for the Administration of the Sewer Permit Ordinance, creating ICAP.

Sanitary sewers are designed and intended to convey only sanitary wastewater. The major sources of stormwater entering a sanitary sewer system are excessive I/I. Infiltration is the stormwater entering a sanitary sewer system through defective pipes, pipe joints, pipe

connections, and manhole walls. Inflow is the stormwater discharged into a sanitary sewer system through roof leaders, cellar drains, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, manhole covers, and cross connections from storm sewers and combined sewers.

Excessive I/I overloads sewers. Overloaded sewers cause basement flooding, health hazards, financial losses, and inconvenience to residents and businesses. Excessive I/I also results in additional sewage treatment costs to the public.

Tunnel and Reservoir Plan (TARP)

The Chicago Metropolitan Area has two different methods for collecting sewage. Flood problems in areas serviced by these two systems must be resolved differently. In most areas, except the central basin, sewage and stormwater are collected in different sewers. One system of sewers collects stormwater, and the other system of sewers collects sewage. These areas are commonly called "separate sewer" areas. Surface flood retention reservoirs, mentioned previously, are provided only in separate sewered areas. In the central basin, sewage and stormwater are collected in the same sewer and the areas served are called "combined sewer" areas. Combined sewer areas comprise 375 square miles of the total 872 square mile area under the jurisdiction of the Water Reclamation District. Flood and pollution problems in these areas are handled with combined sewers by the Tunnel and Reservoir Plan (TARP). The TARP service area includes the City of Chicago and 51 suburban municipalities.

TARP consists of two phases. Phase I of the Plan is primarily a water pollution control project. Phase II is associated primarily with urban flood control. Virtually all excess combined sewage will be captured by the ultimate tunnel-reservoir system. In addition, waterway stages will be controlled, reducing overbank flooding, basement flooding, and bypassing of raw sewage to Lake Michigan.

County-wide Stormwater Management Committees

After historic floods in both 1986 and 1987 in the Metropolitan Area, the Illinois General Assembly and Governor Thompson enacted Public Act 85-905 which authorized DuPage, Kane, Lake, McHenry, and Will Counties to prepare and fund stormwater management plans, programs, and projects. Public Act 86-1463 extended this authority to Cook County without a funding mechanism. Under this legislation, stormwater management planning committees, under the county board but made up of equal municipal and county representatives, can be formed. The purpose of the cooperative municipal/county effort is to consolidate existing stormwater management into a unified county-wide plan, to set minimum county-wide standards for floodplain and stormwater management, and to prepare and implement a county-wide stormwater management plan. The participating counties (excluding Cook County) have the authority to tax up to 0.20% equalized assessed value for plan implementation. However, subsequent property tax cap legislation has, in effect, greatly lowered this 0.20% cap [down to about 0.03%]

Cook County Stormwater Management Committee

Public Act 86-1463, was enacted in November 1990, and authorized the creation of eight Stormwater Management Planning Councils—one for each of the seven established watersheds of the Chicago Metropolitan Area, and one for the combined sewer areas of Cook County. It also authorized the creation, by intergovernmental agreement, of a county-wide Stormwater Management Planning Committee, and placed the responsibility for the coordination of these activities on the Northwest Municipal Conference, the South Suburban Mayors and Managers Association, and the West-Central Municipal Conference. No funding for this program was provided in the legislation.

The purpose of the legislation is to improve stormwater and floodplain management in Cook County by setting minimum standards for floodplain and stormwater management, by preparing plans.

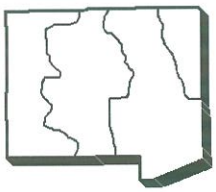
The principal duties of the Councils are to develop stormwater management plans for the watersheds. The principal duty of the county-wide Committee is to coordinate the watershed plans and to coordinate the planning process with adjoining counties to "ensure that recommended stormwater projects will have no significant adverse impact on the levels of flows of stormwater in the inter-county watersheds or on the capacity of existing and planned stormwater retention facilities."

The county-wide Committee must submit the coordinated watershed plans to the Illinois Office of Water Resources, the Department of Natural Resources, and the Northeastern Illinois Planning Commission for review and recommendations. Such review "shall consider those factors that impact the level of flows in the rivers and streams, and the cumulative effects of stormwater discharges on flood levels."

Membership on the Watershed Councils consists of one elected official from each municipality within the watershed and one elected official from Cook County, if any unincorporated area is included in the watershed.

Municipal representatives are appointed by the respective mayors, and County representatives are appointed by the Cook County Board President. In January 1991, the three regional municipal organizations named in the Act launched their effort to constitute the Watershed Councils.

DuPage County Stormwater Management Committee



In 1987 the DuPage County Stormwater Management Committee (DSMC) was formed. The Committee directed the completion of the DuPage County Stormwater Management Plan, which was enacted in September 1989 by the DuPage County Board.

The Stormwater Management Plan recognizes the critical need to limit the reoccurrence of extensive flood damages. The Plan recognizes the integrated nature of the watershed system and the need to consider stormwater management planning on a watershed basis. Plan objectives include: reduce potential for stormwater damage; control future increases in stormwater damage; protect and enhance the quality of water resources; preserve and enhance aquatic and riparian environments; control sediment and erosion; and promote equitable, acceptable, and legal stormwater measures.

The DuPage Countywide Stormwater and Flood Plain Ordinance went into effect in 1992 and will reduce the potential for flood and stormwater damage. The

Ordinance addresses floodplain management, site runoff, water quality, sediment control, riparian environments, and wetland protection. With the Ordinance in place DSMC's goal is to establish one-stop permitting. In 1995, the USACOE issued a general permit to the County delegating the authority to review and permit wetland impacts for the USACOE using the countywide ordinance standards. In 1997 the Illinois Department of Natural Resources delegated floodway permitting authority to the County. The County is actively pursuing an accelerated mapping program delegation from the Federal Emergency Management Agency to process Letter of Map Revisions and to update floodplain maps at the County level.

Watershed plans are being developed for all watersheds in the County. Watershed plans define and map areas to be protected such as floodplains, wetlands, and riparian environments. Watershed plans also provide plans for remedial projects to alleviate damages and specific guidance to prevent development which would be subject to future damages. The remedial projects focus on storage and non-structural projects rather than conveyance projects. Approximately 50% of the County has a portion of the watershed plan completed and approximately 80% of the watershed modeling is complete. To date 15 regional storage projects have been built or are under construction at a cost of $91.7 million, and 80 structures subject to flooding have been purchased at a cost of $7.1 million. An additional 17 projects, including floodplain purchases, have been identified at a cost of $53.3 million. Approximately 9,600 acre-feet of the proposed 11,300 acre-feet storage are in place.

The DSMC has also initiated other programs to meet the goals of the Plan. These include the implementation of a Stream Maintenance Program and a Wetland Banking Program.

The Stream Maintenance Program was implemented in 1991. To date, more than 115 miles out of the 360 miles of streams have been cleaned, Under this program, debris and nuisance vegetation is removed from the stream corridor in order to return the natural flood conveyance to the stream. The committee initiated an Adopt-A-Stream Program in 1994 to gain citizen involvement in the cleaning and annual maintaining of the streams. The Stormwater Management Division helps to coordinate these efforts with municipalities and volunteer organizations.

The DSMC has a progressive wetland protection plan to ensure no-net-loss of wetland functions and value. The plan is unique in several aspects. First, the plan protects all wetlands, not just COE jurisdictional wetlands. Secondly, efforts are not only focused on the environmental aspects such as plants, habitat, and endangered species, but also focuses on the stormwater management aspects such as stormwater storage, and water quality aspects of wetlands. The primary mechanism to implement the wetland plan is the Ordinance. The more significant criteria in the Ordinance includes:

- No size limit on where wetland shall be avoided or be mitigated.
- Procedures to determine if a wetland is classified as critical or regulatory for environmental or stormwater functions.
- Mitigation requirements, at the ratio of a minimum 3:1 for critical and 1.5:1 for regulatory wetlands impacts, for wetlands which cannot be avoided.
- The purchase of wetland mitigation credits in County-certified wetland banks where wetland avoidance criteria have been met or when wetland viability is in question.

The Wetland Banking Program was established in 1993. To date there are five wetland banks that have been certified by the DSMC and one scheduled for certification in 1998. These banks will create 62.0 acres and enhance 30.5 acres of wetland. The program is paid for entirely by developer payments for credits.

The current FEMA maps for DuPage County are outdated and inaccurate due to the rapid urbanization that has occurred since the late 1970's and inadequate source of data used in the models. The DSMC mapping program will create new updated maps over the next 5-7 years for the entire county based on the watershed models. The new maps will reflect the changes in land use, changes to the stream system, topography, and modeling technology. The Ginger Creek watershed (5.33 sq. mi.) was the first floodplain map created using the new procedures.

Kane County Stormwater Management Committee

The Kane County Board reactivated the Kane County Stormwater Planning Committee (KCSMPC) in January 1997 after a false start in 1990. The Committee will prepare a Stormwater Management Plan similar to other surrounding counties, because the enabling legislation is similar. The Plan will differ in some areas as Kane

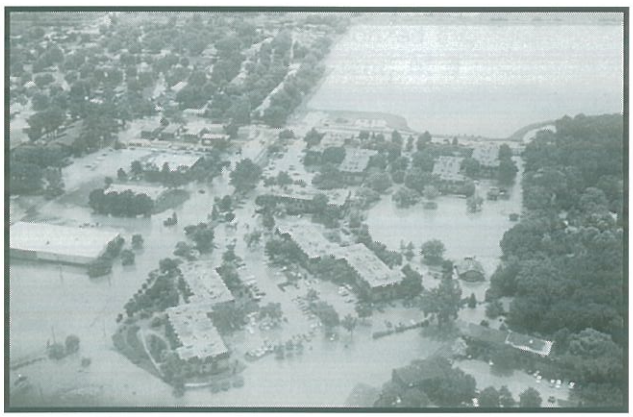
County seeks to set in motion the recommendations of the County's 2020 Land Resource Management Plan and its' commitment to open space, improvement of water quality and preservation. The comprehensive countywide Stormwater Management Plan further expands these commitments and carries the County to its current task of developing and enforcing a countywide stormwater management ordinance.

The Kane County Stormwater Management Plan stresses a preventative rather than a reactive approach to the stormwater issues facing Kane County. The central and western townships of the County are mostly rural with low-density rural subdivisions being developed in the eastern portions of these townships. Most of the floodplains in these areas have not been encroached upon by urbanization. One goal of the Committee will be to accurately model and map the floodways and floodplains on the streams throughout the County based on future land use conditions, prevent the encroachment of buildings in the floodway, and limit building in the floodplain.

The Kane County plan also stresses preservation of the environment through the preservation of existing wetlands and creation of new wetlands. These will have multi-use functions for improving water quality, providing natural habitats for native plants and wildlife, providing for recreation, and serving as regional flood control facilities.

Areas in Kane County that have recurring flooding problems will be addressed through regional stormwater management programs. The programs will include cooperative planning between the County and the Municipalities, regional regulations of floodplains, regional construction of flood-control projects, and mitigation.

Watershed plans are being developed throughout the County. These plans stress the cooperative effort between the Municipalities and the County in the creation and promotion of the plans.



Flooding in Kane County. Molitor Road at Indian Creek looking South-Southeast. July 18, 1996. (Photo by Chris Dagiantis, Courtesy of Paul Schuch, Kane County Development Department)

Lake County Stormwater Management Commission

The Lake County Stormwater Management Commission (SMC) has made great strides since it was formed in 1991. SMC's regulatory program was put in place in 1992 with the adoption of the countywide Watershed Development Ordinance (WDO). SMC and the County of Lake administer the ordinance in unincorporated areas and in communities not certified. Forty of 52 municipalities are certified to administer the ordinance within their own jurisdictions. The county has been experiencing steady growth that reflects the yearly upsurge of WDO permits and the need for a field inspection program that went into effect in 1996. Over the next year, SMC is focusing on obtaining local wetland permitting authority.

Currently, SMC is conducting several long-term watershed planning projects including the North Branch of the Chicago River, and the Slocum and Squaw Creek sub-watersheds. SMC targeted these watersheds based on rapid urbanization, particularly in the western half of the County. Funding includes grants, local government cost-sharing, and Community Development Block Grant monies being used to obtain updated topographic mapping and to develop models and management plans. Final plans will incorporate multi-objective recommendations including water quality improvement, and structural and non-structural flood-prevention and remediation projects.

Localized drainage and flooding problems are slowly being tackled through SMC's four Watershed Management Boards (WMB). Established for the purpose of allocating funds for watershed-specific projects, the Boards since 1992 have leveraged several million dollars in projects using an average expenditure of only $135,000 yearly, staff expertise, and in-kind services.

Tackling flood hazards on a county-wide basis is the goal of the first Flood Hazard Mitigation Plan. A series of stakeholder workshops were held in 1996 and public comment is expected in 1998 on the draft plan. To date, over 350 flood hazard areas have been identified and mapped according to hazard type. This information is the starting point for the development of appropriate mitigation measures and long-term capital improvement planning purposes.

While SMC's budget is slowly increasing to just over $1 million, the agency relies on a mix of other funding sources to complement the property tax-supported program. As a result of low budgets, large scale

maintenance and capital improvement programs were scaled back from what the 1990 adopted Comprehensive Plan initially laid out. Also, watershed management plan development for Lake County's 26 sub-watersheds has been slow. Nonetheless, SMC has been successful in leveraging local, State, and Federal funds to mitigate local flooding and drainage problems. Staff capacity reached 12 in 1997.

McHenry County Stormwater Management Committee

The McHenry County Stormwater Management Committee was formed in October of 1991. The Committee was created to consolidate existing stormwater management, to set minimum standards for floodplain and stormwater management, and to prepare a county-wide stormwater management plan. The McHenry County Stormwater Committee, formerly named the McHenry County Stormwater Planning Committee, approved the McHenry County Stormwater Management Plan on May 14,1996. The Plan was adopted by the McHenry County Board on July 16, 1996.

The goals of the McHenry County Stormwater Management Plan include:

- The protection, preservation, and restoration of water resources by means of controlling stormwater runoff.
- Creation of a county-wide plan using watershed design principles.
- Control development to reduce stormwater runoff.
- Eliminate stormwater discharges which affect the public health, safety, and welfare.

Presently the Stormwater Management Committee is finalizing a county-wide Watershed Development Ordinance for the management of stormwater and floodplains in both the incorporated and unincorporated areas of the County. Upon adoption, municipalities will have the option of retaining local control through a certification process.

McHenry County is also looking at a preventative approach to stormwater issues rather than a reactive approach due to the extent of non-urbanized areas remaining in the County. Concentration is on adoption of county-wide soil erosion and sedimentation control regulations; county-wide detention/retention release rates and countywide floodplain regulations.

Flood Facts ...

Stream flow in Illinois averages 25 billion gallons per day.

The Stormwater Management Committee is reviewing alternative approaches for enactment as they finalize the ordinance for adoption.

Will County Stormwater Management Committee

In 1993, the Will County Board authorized creation of a county Stormwater Management Planning Committee. In 1996, a full complement of 18 municipal and county representatives began meeting regularly, and working with the Northeastern Illinois Planning Commission (NIPC) to develop a stormwater management plan similar to those in place for Lake, McHenry, and DuPage counties. The committee expects to hold public hearings and adopt its plan in 1998.

Forecasts for Will County project a high rate of population and employment growth and a rapid trend toward urbanization over the next twenty years. Significant projects such as the redevelopment of the Joliet Army Ammunition Plant to the Midewin National Tallgrass Prairie, the Will County Landfill, the Lincoln Veterans' Cemetery, and industrial parks will have major impacts on the area. The County intends to use its stormwater plan as a tool for responsible land use planning, minimizing damage from flooding, while simultaneously protecting and preserving water quality, habitat, and open space resources.

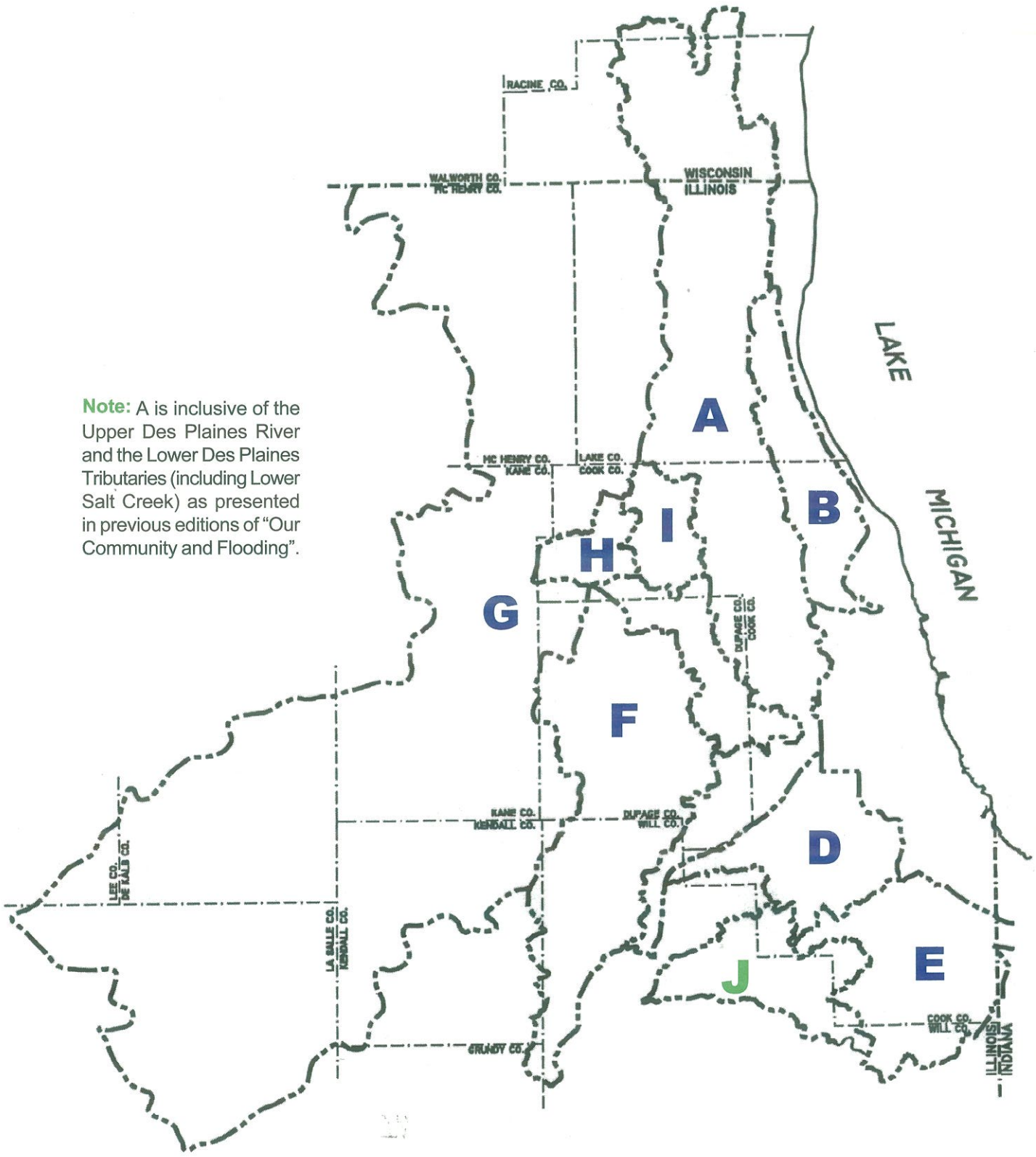
Table 2

Watersheds of the Chicago Metropolitan Area								
	Watershed	Area (Sq. Mi.)	Area Subject To Flooding (acres)	Length of Rivers and Tributaries (miles)	Residences Damaged Annually	Businesses Damaged Annually	Average Annual Damages (1,000s)	Page
A	Des Plaines River	681	33,900	250	2,700	211	$21,400	20
B	North Branch Chicago River	102	5,500	57	1,030	20	$2,995	30
D	Cal-Sag Channel	117	1,050	25	578	0	$2,646	34
E	Little Calumet River	213	10,800	109	6,866	142	$5,835	38
F	DuPage River	353	8,623	129	1,030	25	$2,890	42
G	Fox River	1,720	N/A	117 (mainstem)	3,880	N/A	2,700	46
H	Poplar Creek	40	1,523	26	184	28	$125	52
I	Upper Salt Creek	52	1,940	17	20	0	$46	54
J	Hickory Creek	107	N/A	35 (mainstem)	2,000	N/A	$475	58
	TOTALS	3,874	64,438	765	18,288	426	$39,112	60

* Damage on other Tributary storms not included.

Part II
The Status of Floodwater Management

Note: A is inclusive of the Upper Des Plaines River and the Lower Des Plaines Tributaries (including Lower Salt Creek) as presented in previous editions of "Our Community and Flooding".



Watersheds of the Chicago Metropolitan Area

Des Plaines River Watershed-Project Locations

Natural ResourcesConservation Service

1 SPRING BROOK RESERVOIR (BLOOMINGDALE)
2 NORTHLAKE RESERVOIR (NORTHLAKE)
3 SILVER CREEK RESERVOIR (CHICAGO)
4 JACK B. WILLIAMS RESERVOIR (FRANKLIN PARK)
5 WILLOW HIGGINS RESERVOIR (CHICAGO)
6 WILLOW HIGGINS CHANNEL IMPROVEMENT (ROSEMONT)
7 BUFFALO WHEELING CHANNEL IMPROVEMENT (WHEELING)
8 RIVERSIDE LAWN DIKE (RIVERSIDE)

U.S. Army Corps of Engineers

9 CUP-O'HARE RESERVOIR (ELK GROVE)
10 CUP-McCOOK RESERVOIR (HOGKINS)
11 NORTH LIBERTYVILLE ESTATES

Office of Water Resources

12 WILLIAM REDMOND RESERVOIR (BENSENVILLE)
13 GENE DOYLE RESERVOIR (NORTHLAKE)
14 LAKE STREET CULVERT
15 RAILROAD AVENUE RESERVOIR (NORTHLAKE)
16 ARLINGTON CEMETERY RESERVOIR (NORTHLAKE)
17 LOWER ELMHURST RESERVOIR (ELMHURST)
18 YORK ROAD, I-90 RESERVOIR (ELMHURST)
19 SALT CREEK CHANNEL IMPROVEMENT
20 BENSENVILLE DITCH IMPROVEMENT
21 CECH TERRACE LEVEE
22 KINGERY WEST LEVEE MODIFICATION

Metropolitan Water Reclamation District

23 WHITE PINE DITCH RESERVOIR
24 HERITAGE PARK RESERVOIR (WHEELING)
25 WILKE-KIRCHOFF RESERVOIR (ARLINGTON HEIGHTS)
26 HILLSIDE RESERVOIR (HILLSIDE)
27 MAYFAIR RESERVOIR (WESTCHESTER)
28 MT. PROSPECT RESERVOIR (MT. PROSPECT)
29 BUFFALO CREEK RESERVOIR (UNINCORPORATED LAKE COUNTY)
30 CUP O'HARE RESERVOIR (UNINCORPORATED COOK)
31 LAKE ARLINGTON RESERVOIR (ARLINGTON HEIGHTS)

DuPage County Stormwater Management Committee

32 WOODDALE—ITASCA RESERVOIR
33 ELMHURST QUARRY
34 MEACHAM GROVE RESERVOIR
35 ADDISON DAM AND PUMP
36 LOUIS RESERVOIR

DuPage County Forest Preserve District

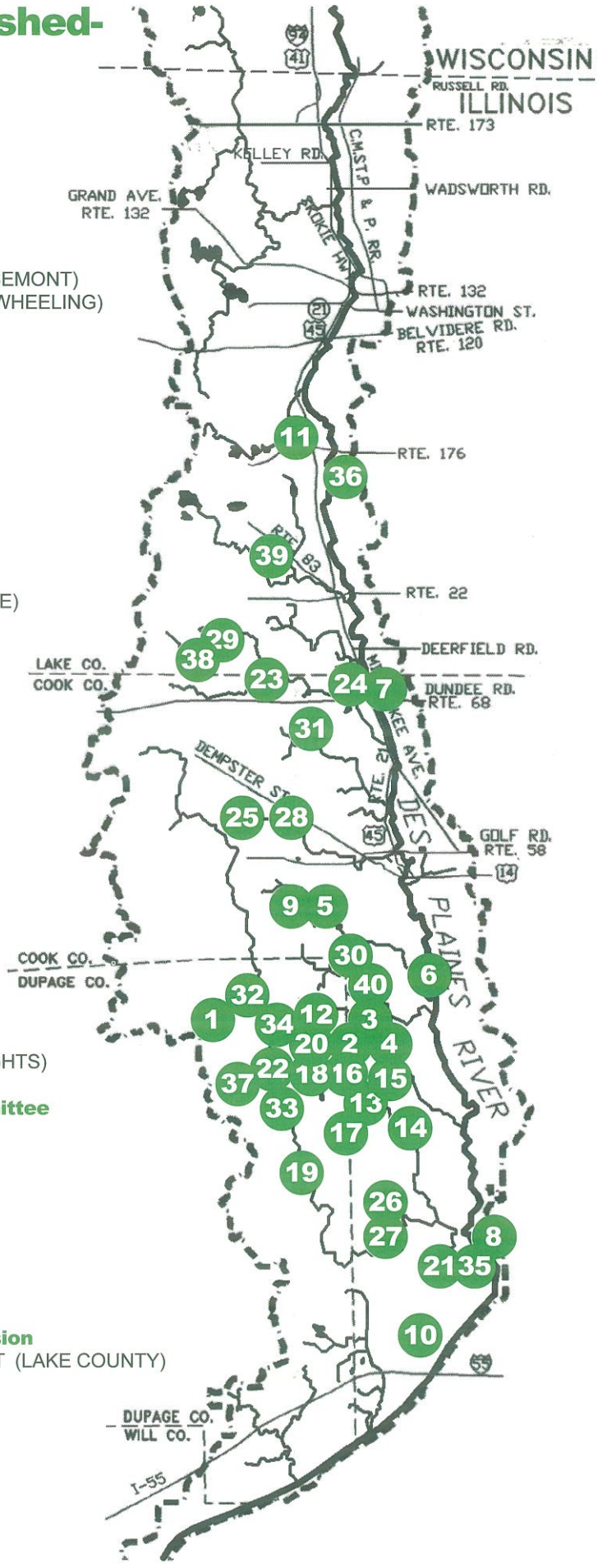
37 KINGERY WEST LEVEE (ADDISON)

Lake County Stormwater Management Commission

38 STURM SUBDIVISION FLOOD CONTROL PROJECT (LAKE COUNTY)
49 FOREST LAKE FLOOD CONTROL PROJECT

City of Chicago

40 LAKE-O'HARE RESERVOIR (CHICAGO)



Des Plaines River Watershed - Project Status

Projects of the Natural Resources Conservation Service

1 SPRING BROOK RESERVOIR (STR. 5)

FLOOD STORAGE: 870 acre-feet
FLOOD PROTECTION TO: Itasca, Wood Dale, Addison, Unincorporated DuPage County
COST: Construction - Flood Control - $6,313,000 (OWR) Recreation - $447,400 (DCFPD & NRCS)
LAND - $3,120,000 (Estimate, DuPage County Forest Preserve District)
MAINTENANCE: DuPage County Forest Preserve District
STATUS: Completed in 1990

2 NORTHLAKE RESERVOIR (STR. 86)

FLOOD STORAGE: 415 acre-feet
COST: Construction - $3,849,700 (NRCS-not including pre-excavation by the State Modification $353,400 (NRCS), $48,200 (MWRD)
LAND - 19 acres, $437,000 (MWRDGC)
MAINTENANCE: Leyden High School and MWRDGC
STATUS: Completed in 1992, modified in 1996

3 SILVER CREEK RESERVOIR (STR. 102)

FLOOD STORAGE: 501 acre-feet
FLOOD PROTECTION TO: Franklin Park, Unincorporated Cook County
COST: Construction - $6,258,900 (NRCS-not including pre-excavation by Chicago), $40,200 [MWRD]
LAND - 31 acres, $1,484,700 (MWRDGC) plus 10 acres donated by Chicago, $884,000 (Estimated Value)
MAINTENANCE: MWRDGC
STATUS: Completed in 1992

4 JACK B. WILLIAMS RESERVOIR (STR.106)

FLOOD STORAGE: 245 acre-feet
FLOOD PROTECTION TO: Franklin Park, Melrose Park
COST: Construction - $4,707,000 (OWR)
LAND - $462,000 (Franklin Park) plus $370,000 (OWR)
MAINTENANCE: Franklin Park
STATUS: Completed in 1990

William Redmond Reservoir. George Street. Bensenville.

Railroad Avenue Reservoir.

5 WILLOW-HIGGINS RESERVOIR (STR. 140)

FLOOD STORAGE: 1,200 acre-feet
FLOOD PROTECTION TO: Des Plaines, Rosemont, Chicago
COST: Construction - $9,512,600 (1986 estimate, NRCS)
LAND - 45 acres, $100,000 (Chicago)
MAINTENANCE: MWRDGC
STATUS: Land rights negotiations are underway

6 WILLOW-HIGGINS CHANNEL IMPROVEMENT

DESCRIPTION: 2,200-foot long open channel upstream of Higgins, new box culverts under Higgins, and 3000 foot long floodwall downstream of Higgins.
FLOOD PROTECTION TO: Des Plaines, Rosemont and Chicago
COST: Construction U.S. of Higgins - $1,565,200 (Estimate, NRCS), construction D.S. of Higgins - $4,900,000
LAND U.S. of Higgins - $923,000 (Estimate, Rosemont, Des Plaines)
MAINTENANCE: Des Plaines, Rosemont
STATUS: Partially Completed

7 BUFFALO-WHEELING DIVERSION CHANNEL

PHASE I
DESCRIPTION: 800 feet of channel diversion from Milwaukee Avenue to the Des Plaines River, and Milwaukee Avenue culvert.
COST: $404,700 NRCS, $24,000 OWR, Land IDOT (Milwaukee Avenue)
STATUS: Completed in 1998 or 1996 (NRCS comment)

PHASE II
DESCRIPTION: 8000 feet of channel diversion from railroad to Milwaukee Avenue
FLOOD PROTECTION TO: Wheeling, Pilwaukee Airport
COST: Construction - $1,094,000 (estimate by NRCS)
LAND - $1,008,000 Wheeling, $703,000 OWR, $39,000 Cook County Forest Preserve District
MAINTENANCE: Wheeling
STATUS: Right of Way to be acquired in 1998, construction to begin in 1999.

8 RIVERSIDE LAWN DIKE

DESCRIPTION: 2,500 foot earthen dike
FLOOD PROTECTION TO: Riverside Lawn (Unincorporated Cook County)
COST: Construction - $261,300 (Estimate, NRCS)
LAND - $88,000 (Estimate, Cook County Forest Preserve District)
MAINTENANCE: Cook County FPD and MWRD
STATUS: Inactive

Projects of the U.S. Army Corps of Engineers

9 CUP O'HARE RESERVOIR (TARP-PHASE II)

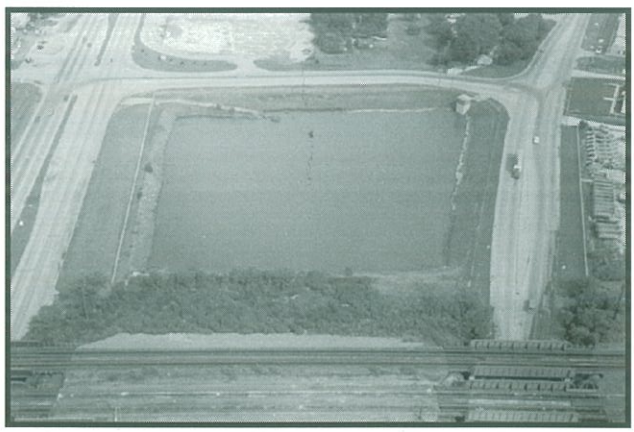
See. No. 13, Page 62

10 CUP McCOOK RESERVOIR

(TARP-PHASE II), See. No. 14, Page 62

11 NORTH LIBERTYVILLE ESTATES

PURPOSE: Construct a 5,500-foot earthen levee, 150-foot floodwall, drainage ditch, and interior storm drain to alleviate flooding to protect homes.
FLOOD PROTECTION TO: North Libertyville Estates Subdivision
COST: Construction - $2,277,000 (COE)
STATUS: Under construction



Eugene A. Doyle Reservoir, Lake Street Reservoir

Projects of the Office of Water Resources

12 WILLIAM REDMOND RESERVOIR

FLOOD STORAGE: 685 acre-feet
FLOOD PROTECTION TO: Bensenville, Broadview, Northlake, Stone Park, Bellwood
COST: Construction - $4,588,000 (OWR)
LAND - $132,000 (Bensenville) $83,000 (OWR)
MAINTENANCE: Bensenville
STATUS: Completed in 1977

13 GENE DOYLE RESERVOIR

FLOOD STORAGE: 70 acre-feet
FLOOD PROTECTION TO: Northlake
COST: Construction - $1,373,000 (OWR)
LAND - $165,000 (OWR)
MAINTENANCE: Northlake
STATUS: Completed in 1979

14 LAKE STREET CULVERT

PURPOSE: Improve drainage in the residential area from Addison Creek to Lake Street and Mannheim Road.
FLOOD PROTECTION TO: Northlake, Melrose Park, Stone Park
COST: Construction - $1,025,000 (OWR)
$2,644,000 (Division of Highways)
LAND - $58,000 (OWR)
MAINTENANCE: Northlake
STATUS: Completed in 1973

SECOND STAGE

PURPOSE: Improve the drainage in the residential area along Lake Street from Railroad Avenue to Mannheim Rd.
FLOOD PROTECTION TO: Northlake
COST: Construction - $1,625,000 (OWR)
$2,644,000 (Illinois Division of Highways)
STATUS: Completed in 1979

15 RAILROAD AVENUE RESERVOIR

FLOOD STORAGE: 47 acre-feet
FLOOD PROTECTION TO: Northlake, Addison Creek Communities
COST: Construction - $645,000 (OWR)
LAND - $215,000 (OWR)
MAINTENANCE: Northlake
STATUS: Completed in1981

Structure 86. Northlake Reservoir.

16 ARLINGTON CEMETERY RESERVOIR

FLOOD STORAGE: 71 acre-feet
FLOOD PROTECTION TO: Addison Creek Communities, Northlake
COST: Construction - $779,000 (OWR)
LAND - $362,000 (OWR)
MAINTENANCE: Elmhurst
STATUS: Completed in 1981

17 LOWER ELMHURST RESERVOIR

FLOOD STORAGE: 93 acre-feet
FLOOD PROTECTION TO: Elmhurst, Berkeley
COST: Construction - $2,700,000 (Estimate, 1990)
LAND - Elmhurst, Estimated value $10,000
*Combined Land cost-local participation: Northlake, $65,000; Melrose Park, $44,000; Stone Park, $50,000; Bellwood, $30,000; Elmhurst, $190,000; Broadview, $7,000; Westchester, $14,000; Addison Creek Conservancy District, $68,000; Leyden Township, $70,000; Addison Township, $25,000.
STATUS: Completed in 1998

18 YORK ROAD, I-90 RESERVOIR

FLOOD STORAGE: 20 acre-feet
FLOOD PROTECTION TO: Elmhurst
COST: Construction - $119,000 (Elmhurst) and $202,000 (OWR)
LAND - Elmhurst, Estimated Value $10,000
MAINTENANCE: Elmhurst
STATUS: Completed in 1979

19 SALT CREEK CHANNEL IMPROVEMENT

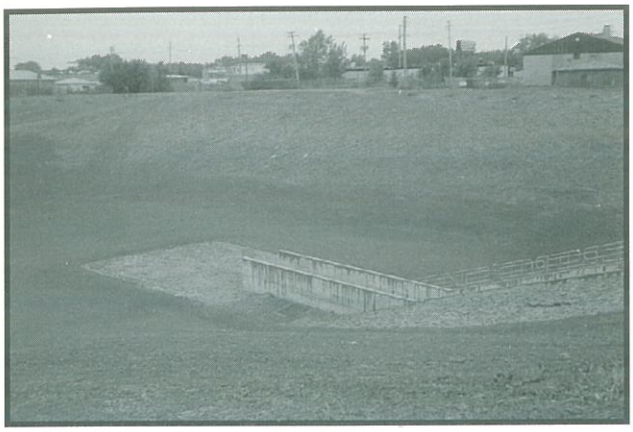
PURPOSE: 16,100-foot channel improvement of Salt Creek in Elmhurst and Oak Brook
FLOOD PROTECTION TO: Oak Brook, Oak Brook Terrace, Elmhurst
COST: Construction - $3,306,000 (OWR)
LAND - $500,000 (Estimate)
MAINTENANCE: Oak Brook, Elmhurst
STATUS: Completed in 1992

20 BENSENVILLE DITCH CHANNEL IMPROVEMENT

FLOOD PROTECTION TO: Bensenville
COST: Construction 1 $1,600,00 (Estimated 1990)
LAND - $1,204,000 (Bensenville)
MAINTENANCE—Bensenville
STATUS: Completed in 1998

21 CECH TERRACE LEVEE

DESCRIPTION: 130-foot levee with 23-foot flood gate
PURPOSE: Flood protection for 15 residents in the Village of Lyons



Structure 106. Jack B. Williams Reservoir. Silver Creek. Franklin Park. August 5, 1989.

COST: Construction—$50,000 (OWR)
LAND - $3,500 (Lyons)
MAINTENANCE: Village of Lyons
STATUS: Completed in 1995

22 KINGERY WEST LEVEE MODIFICATION

PROPOSED WORK: Raise levee to meet FEMA requirements (1990-1991)
COST: Construction—$1,450,000 (OWR)
MAINTENANCE: DuPage County Forest Preserve District
STATUS: Completed in 1997

Projects of the Metropolitan Water Reclamation District

23 WHITE PINE DITCH RESERVOIR

FLOOD STORAGE: 50 acre-feet
FLOOD PROTECTION TO: Buffalo Grove
COST: Construction - $120,000 (MWRDGC) $130,000 (IDNR) $ 7,400 (Buffalo Grove)
LAND - 12 acres provided by Buffalo Grove, $240,000 (Estimated Value)
MAINTENANCE: Buffalo Grove
STATUS: Completed in 1975, modified in 1986

24 HERITAGE PARK RESERVOIR

FLOOD STORAGE: 114 acre-feet
FLOOD PROTECTION TO: Wheeling
COST: Construction - $215,300 (MWRDGC) $215,000 (Wheeling) $ 93,000 (Wheeling Park District)
LAND - 25 acres donated by Wheeling Park District, $545,000 (Estimated Value)
MAINTENANCE: Wheeling Park District and Wheeling
STATUS: Completed in 1970, improved in 1982

25 WILKE-KIRCHOFF RESERVOIR

FLOOD STORAGE: 100 acre-feet
FLOOD PROTECTION TO: Arlington Heights
COST: Construction - $733,200 (MWRDGC); $135,000 (Arlington Heights)
LAND - 16 acres acquired by Arlington Heights, $232,000
MAINTENANCE: Arlington Heights
STATUS: Completed in 1973

26 HILLSIDE RESERVOIR

VOLUME: 100 acre-feet
FLOOD PROTECTION TO: Hillside, Westchester
COST: Construction - $901,500 (MWRDGC)
LAND - 5 acres, $371,000 (MWRDGC); 2 acres donated by Hillside (1976 Estimated Value $148,000)
MAINTENANCE: Hillside
STATUS: Completed in 1976

27 MAYFAIR RESERVOIR

FLOOD STORAGE: 74 acre-feet
FLOOD PROTECTION TO: Westchester
COST: Construction - $523,000 (MWRDGC)
LAND - 14 acres, $280,000 (MWRDGC)
MAINTENANCE: Westchester
STATUS: Completed in 1977

28 MT. PROSPECT RESERVOIR

FLOOD STORAGE: 130 acre-feet
FLOOD PROTECTION TO: Mt. Prospect
COST: Construction - $1,224,300 (MWRDGC)
LAND - 36 acres, $3,175,000 (MWRDGC)
MAINTENANCE: Arlington Heights and Mt. Prospect
STATUS: Completed in 1978

29 BUFFALO CREEK RESERVOIR

FLOOD STORAGE:
PHASE I - 220 acre-feet
PHASE II - 500 acre-feet
TOTAL - 720 acre-feet
FLOOD PROTECTION TO: Unincorporated Cook County
COST: Construction -
PHASE I - $671,800 (MWRDGC)
PHASE II - $2,753,100 (MWRDGC)
TOTAL - $3,424,900
LAND - 190 acres, $2,035,500 (MWRDGC)
MAINTENANCE: Lake County Forest Preserve District, Buffalo Grove, and MWRDGC
STATUS: Phase I completed in 1983
STATUS: Phase II completed in 1990

30 CUP O'HARE RESERVOIR

FLOOD STORAGE: 510 acre-feet
FLOOD PROTECTION TO: Des Plaines, Rosemont, Unincorporated Cook County
COST: Construction - $8,661,000 (MWRDGC)
LAND - 20 acres, $904,000 (MWRDGC)
MAINTENANCE: MWRDGC
STATUS: Completed in 1982

31 LAKE ARLINGTON RESERVOIR

FLOOD STORAGE: 540 acre-feet
FLOOD PROTECTION: Arlington Heights, Prospect Heights
COST: Construction - $450,000 (MWRDGC),

$354,000 (IDNR), $8,965,000 (Arlington Heights, Prospect Heights)
LAND: 95 acres. $727,000 (Arlington Heights)
MAINTENANCE: Arlington Heights
STATUS: Completed in 1990

Projects of DuPage County Stormwater Management Committee

32 WOODDALE—ITASCA RESERVOIR

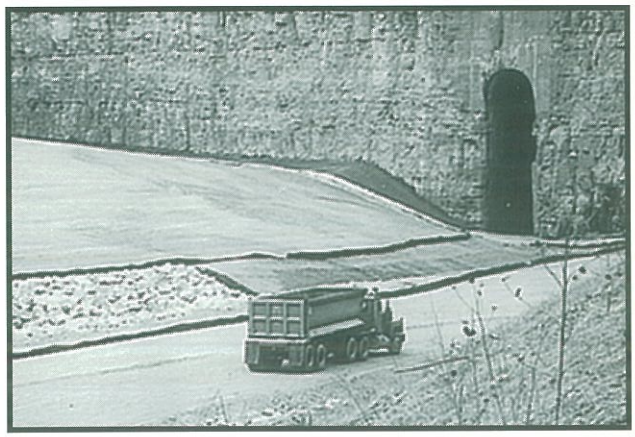
LOCATION: Along Salt Creek just downstream of Thorndale Ave.
FLOOD STORAGE: 1775 acre-feet
FLOOD PROTECTION TO: Elk Grove Village, Wood Dale, Itasca, Addison, Villa Park, Elmhurst, Oak Brook, Oakbrook Terrace, Unincorporated DuPage County
COST: CONSTRUCTION $21,300,000 (Pre-excavation by IDOT, Not estimated)
LAND-65 acres DuPage County Forest Preserve District, 40 acres City of Wood Dale, 27 acres DuPage County Stormwater Committee
MAINTENANCE: DuPage County Stormwater Management Committee
STATUS: Under construction

33 ELMHURST QUARRY

FLOOD STORAGE: 8,300 acre-feet
FLOOD PROTECTION TO: Elmhurst, Addison, Villa Park, Oak Brook, OakBrook Terrace, Hinsdale, Unincorporated DuPage County
COST: Construction - $26,000,000 (DCSMC)
LAND: Elmhurst Quarry purchased by DCSMC, $36,000,000
MAINTENANCE: DCSMC
STATUS: Completed in 1995

34 MEACHAM GROVE RESERVOIR

Arlington Cemetary Reservoir



Elmhurst Quarry Reservoir. Flow channel to East Lake. March 23, 1995

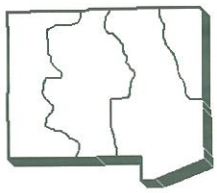
FLOOD STORAGE: 575 acre-feet
FLOOD PROTECTION TO: Bloomingdale, Itasca, Unincorporated DuPage County
COST: Construction - $2,800,000 (DCSMC)
LAND: Land donated by DCFPD
MAINTENANCE: DCSMC and DCFPD
STATUS: Completed in 1997

35 ADDISON DAM AND PUMP

DESCRIPTION: Gated structure across Westwood Creek to prevent flow backup from Salt Creek. Pump discharge of Westwood Creek flows to Salt Creek when Salt Creek flooding occurs.
FLOOD PROTECTION TO: Addison
COST: Construction - $2,000,000 (Addison)
$2,000,000 (DCSMC)
LAND: Land donated by Addison
MAINTENANCE: Addison
STATUS: Completed in 1995

36 LOUIS RESERVOIR

FLOOD STORAGE: 210 acre-feet
FLOOD PROTECTION TO: Addison
COST: Construction - $1,550,000 (DCSMC)
$1,550,000 (Addison)
LAND: 11 acres acquired by:
Addison, $590,000
DCSMC, $400,000
FEMA, $337,000
MAINTENANCE: Addison
STATUS: Completed in 1995



Projects of the DuPage County Forest Preserve District

37 KINGERY WEST LEVEE

LOCATION: East side of Salt Creek between North Avenue and Fullerton Avenue
FLOOD PROTECTION TO: Kingery West Subdivision of Addison

COST: Construction - $850,000 (Estimate DuPage Co. Forest Preserve Dist.) $1,015,000 (OWR)
LAND - $3,750,000 (DuPage County Forest Preserve District)
MAINTENANCE: DuPage County Forest Preserve District
STATUS: Completed in 1982

Projects of the Lake County Stormwater Management Commission (SMC)

38 STURM SUBDIVISION FLOOD CONTROL PROJECT

PURPOSE: A buyout, improved drainage, and more storage are planned to mitigate repetitive flooding for 20 residential homes in this older subdivision located in a depressional storage area
PHASE I: Design project
PHASE II: Construction
FLOOD PROTECTION TO: Sturm Subdivision, Unincorporated Ela Township
COST: Construction Phase I $100,000, design $25,000; Construction Phase II $350,000, design $50,000, buyout $400,000 (75% FEMA). CDBG, Ela Township, SMC, FEMA funding. Total project cost $1 million.
MAINTENANCE: Ela Township
STATUS: Phase I design completed 1996, Phase II under construction, buyout scheduled for 1998. Final Phase 1999.

39 FOREST LAKE FLOOD CONTROL PROJECT

PURPOSE: Reroute runoff from a ditch around 20 homes to a creek.
FLOOD PROTECTION TO: Residential homes in 20-year old subdivision
COST: $500,000 ($190,000 Ela Township Highway Department, $30,000 SMC in-kind. $350,000 Community Development Block Grant)
MAINTENANCE: Ela Township Highway Department
STATUS: Completed in 1996

Flood Facts ...

Lake Michigan is the sixth largest lake in the world.

Projects of the City of Chicago

40 LAKE O'HARE RESERVOIR

LOCATION: O'Hare Airport on Crystal Creek
FLOOD STORAGE: 1,120 acre-feet
FLOOD PROTECTION TO: Neighboring O'Hare Airport communities
COST: CONSTRUCTION: $4,000,000 (Estimate)
LAND—102 acres owned by Chicago (Estimated value - $122,000, 1955)
MAINTENANCE: City of Chicago
STATUS: Completed pre-1965

Des Plaines River Watershed Program Status

The Des Plaines River has been analyzed by many agencies, some focusing on specific reaches and not the entire watershed. The watershed has been divided into two unique segments, the Upper Des Plaines (Wisconsin headwaters to Libertyville), and the Lower Des Plaines (Libertyville to Riverside).

The Des Plaines River watershed is unique in the Chicago Metropolitan Area as it retains a rural character in Wisconsin and portions of Lake County. It is experiencing rapid urbanization in other portions of Lake County, and nearly fully urbanized throughout Cook County. The watershed is long and narrow, measuring 86.1 miles from its headwaters in Wisconsin to Hoffman Dam in Riverside, and 11.3 miles wide at the Lake-Cook County boundary. Numerous tributaries empty into the des plaines river making it a difficult task to reduce mainsteam flooding. Floodwater damages in Wisconsin and sections of Lake County are predominantly agricultural while significant residential and commercial damages occur in Lake County and throughout Cook County.

The floodwater management plan developed for the Des Plaines River as part of the Chicago Metropolitan Area Floodwater Management Study (1987) focused on structural solutions in the tributaries and non-structural programs including land acquisition, land retention and floodplain regulation.

A feasibility study is underway by the Corps of Engineers to investigate the flood control problems along the Des Plaines River from Hoffman Dam in Riverside to the Wisconsin State Line. The report is scheduled to be completed in 1998.

Des Plaines River, Illinois (C-SELM)

The Des Plaines River has a long history of flooding that has caused an estimated $35 million in damage to 10,000

Park Ridge. Looking north on tollway at Dempster. Des Plaines River Watershed. (Photo by Scheerer)

dwellings and 263 business and industrial sites. More than 15,000 residents have been evacuated from the flooded area. In addition, severe impacts to the area transportation networks have been identified. Thirty-six municipalities along 66 miles of the river in two counties will potentially benefit from the study. The preliminary study recommendations include reservoirs, levees, and lateral storage areas. The anticipated study completion date is 1998. Local sponsors are the Illinois Department of Natural Resources, MWRD, and the Lake County Stormwater Management Commission.
STATUS: Study underway. Local sponsors are considering a Phase II study effort.

Funding

The final Watershed Plan EIS for the NRCS Lower Des Plaines Tributaries Watershed was authorized for construction by the U.S. Congress in 1986. Funding for the Corps of Engineers 1998 report recommendations is being sought.

Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the Des Plaines Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts.

The DuPage County Stormwater Management Division has implemented a program to study, define, remap, and protect the floodplains and natural depressional storage areas within the County. Most of the state regulation review and permit issuance has been delegated to the DuPage County SMC. Off-site increases in runoff are not allowed. In Lake County, most of these state regulations and plan review enforcement reponsibilities have been delegated to the Lake County SMC.

Stream Preservation Program

The Illinois Office of Water Resources has implemented a watershed-wide stream preservation program for the areas served by the projects planned by NRCS. The program outlines annual inspection and maintenance procedures.

DuPage County Stormwater Management Committee has implemented a stream maintenance program on Des Plaines tributaries in DuPage County. The program goals protect the hydraulic capacity of the streams in such a manner as to also protect other stream corridor uses such as habitat protection, water quality, aesthetics, and recreation. Streams are inspected and videotaped. Cleaning consists of debris removal from the entire stream corridor, selective cutting, and pruning. Woody debris is used by the County's solid waste composting program.

Floodproofing Program

Approximately 2700 existing structures will remain subject to flooding by the l00-year frequency flood event after installation of the structural measures recommended by the NRCS Studies. All of these structural measures have been completed except for the Buffalo-Wheeling Diversion and Structure 140. Floodproofing technical assistance to these owners is available through the Office of Water Resources.

Structure Acquisition Program

In the Des Plaines Watershed the State of Illinois and the DuPage County Forest Preserve District have actively acquired residential buildings subject to frequent and severe flooding. To date, 62 structures have been acquired and removed.

Twenty-nine structures have been purchased and removed by the DuPage County SMC in the Lower Salt Creek Watershed.

Land Purchase Program

In the Des Plaines Watershed the Forest Preserve Districts of Cook, DuPage, and Lake Counties have actively pursued a program of wetland and floodplain purchases within their jurisdiction. The Lake County Forest Preserve District has acquired 2800 acres of land adjacent to the River and its tributaries, which is about 85% of the mainstem shoreline within Lake County.

The Cook County Forest Preserve District has actively pursued a program of open land, wetland and floodplain purchase. To date, 8400 acres of land adjacent to the river and its tributaries have been acquired by the District. Only a few parcels remain for acquisition to achieve the Lake County Forest Preserve District and Cook County Forest Preserve District goals of providing continuous open space along the entire length of the Des Plaines River.

Land Protection Program

Based upon an inventory of identified needs, a land protection program was developed by a subcommittee of the Lower Des Plaines Tributaries Steering Committee. Under this program the local Soil and Water Conservation District (SWCD), assisted by the Natural Resources Conservation Service (NRCS), will provide technical assistance to landowners, operators, and units of government to install the agricultural and urban land protection measures outlined in the plan.

When the plan was prepared, agriculture represented only 9 percent of total land use, with the majority being adequately protected from excess erosion. It is believed that increasing development within the watershed has led to a decline in this figure.

The land protection program will consist of accelerated technical assistance to individuals and local units of government for implementation of urban soil erosion and sedimentation control ordinances for land under their jurisdiction. The following municipalities have ordinances in various stages of implementation: Arlington Heights, Bensenville, Bloomingdale, Buffalo Grove, Burr Ridge, Deer Park, Des Plaines, Elk Grove Village, Elmhurst, Glenview, Green Oaks, Hawthorn Woods, Hinsdale, Itasca, Kildeer, Lake Zurich, Libertyville, Lombard, Long Grove, Mt. Prospect, Mundelein, Northlake, Oak Brook, Palatine, Prospect Heights, Riverwoods, Rolling Meadows, Roselle, Schaumburg, Vernon Hills, Villa Park, Westchester, Westmont, Wheeling, Willowbrook, and Wood Dale. In addition, ordinances are in effect within unincorporated areas of Cook, DuPage, and Lake Counties.

Flood Fact ...

Today there are over 250,000 buildings in Illinois floodplains and there are pressures to build more.

Only 6-7% have flood insurance.

An average policy cost equals $300 a year.

An average claim paid equals $7,900.

Flood Facts ...

Illinois has approximately 13,200 miles of streams and is bordered by 880 miles of the Mississippi, Wabash and Ohio Rivers. Illinois' 900 interior rivers have a combined length of 13,200 miles.

The DuPage County Stormwater Commission and the Lake County Stormwater Commission have implemented a sedimentation and erosion control regulatory program. The regulations are embodied in the Stormwater Ordinance and regulates construction activities to reduce erosion and sedimentation. The Lake County Watershed Development Ordinance (WDO) is being enforced throughout the Lake County portion of the watershed.

In the Des Plaines Watershed, the North Cook County Soil and Water Conservation District, the Lake County Stormwater Management Commission, and the Lake County Soil and Water Conservation District, assisted by the Natural Resources Conservation Service, provide technical assistance to landowners, and operators in planning and applying resource management systems on land they own or control. In addition, assistance is given to units of government with development and implementation of natural resource protection ordinances.

Wisconsin-Illinois Upper Des Plaines River Ecosystem Partnership

The upper Des Plaines River originiates in Racine and Kenosha Counties in southeastern Wisconsin and enters Lake County, Illinois, flowing south through Cook County to Riverside. At Riverside it is joined by Salt Creek, which flows southeasterly from its headwaters in DuPage and western Cook Counties. The drainage area of the watershed at Riverside, including Salt Creek, is 630 square miles.

While the banks of the upper Des Plaines are protected by a narrow system of forest preserve holdings along its course in Illinois, suburban development within the watershed has created a river system that is in danger of losing its ecological and hydrological integrity. An estimated 10,000 acres of wetlands have been drained along the Upper Des Plaines and its tributaries in Wisconsin, and an additional several thousand acres of drained tributary area are present in Illinois. Remaining wetlands and other natural areas are often too small and isolated to remain ecologically viable to many species that would

normally inhabit them. Indicator species such as amphibians are declining dramatically. Spring peeper frogs, Massasagua rattlesnakes and Kennicott water snakes used to be common throughout the midwest but have now virtually disappeared in the area, with the upper Des Plaines now representing a last refuge for these and other species.

Commercial and residential development throughout the watershed have greatly reduced the water holding capacity of the system and increased the impermeable land cover. This has dramatically changed the intensity and impact of flood events, which will increase with continued development within the watershed.

The Wisconsin-Illinois Upper Des Plaines River Ecosystem Partnership was organized in September, 1996, to promote collaboration among the diverse organizations and private landowners who share an interest in improving the quality of life within the watershed, and to address multiple objectives throughout the watershed in both states. Our goals are:

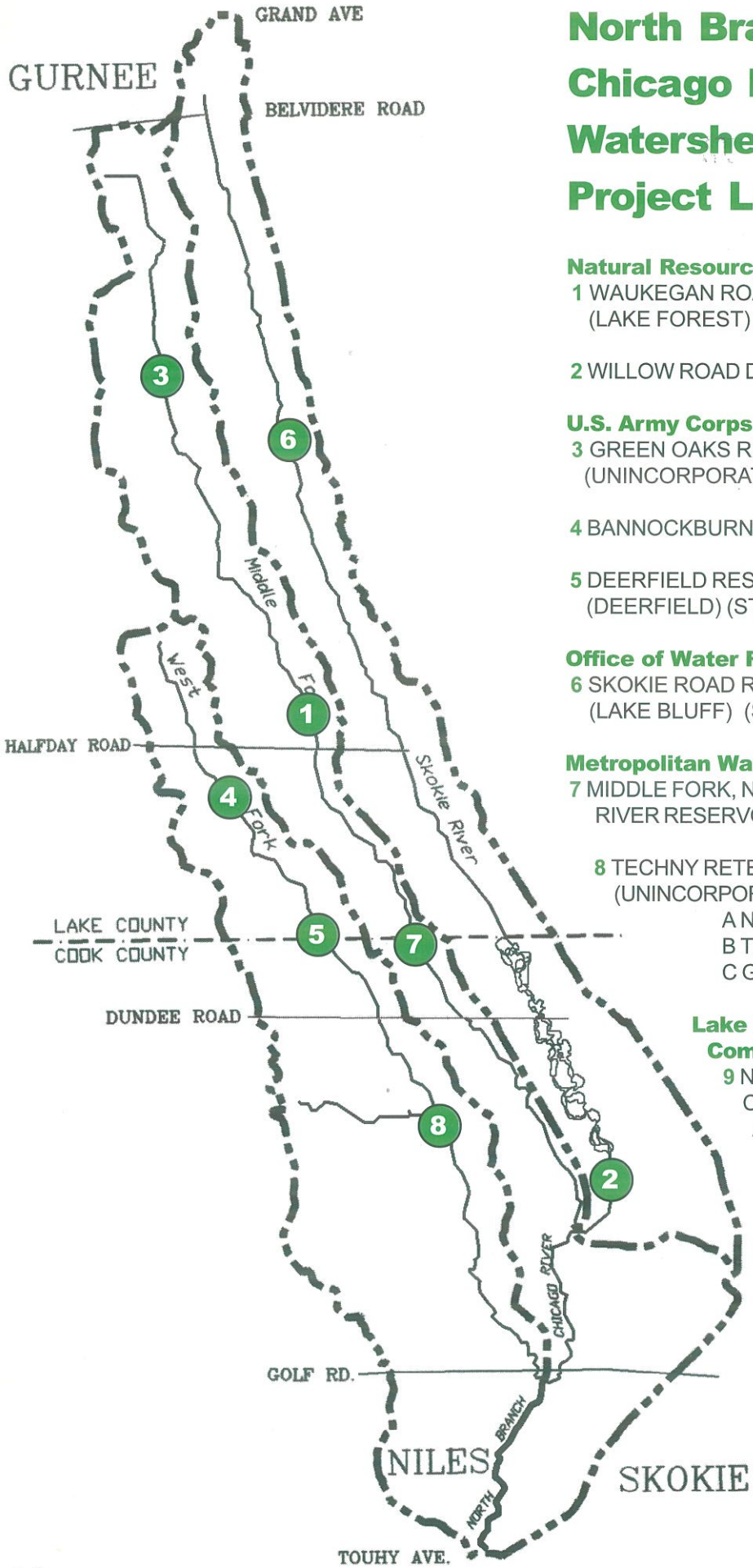
- Wildlife habitat and open space protection and restoration
- Floodplain and stormwater management
- Water quality improvement and reduction of soil erosion
- Enhancement of recreational opportunities
- Demonstration of the feasibility of interstate and public/private partnerships

Members of the Local Partnership Council represent diverse interests, including regional planning, protection of natural resources, flood control, outdoor education and recreation, volunteer stewardship, and residential development.

The Partnership's initial project, funded by the C2000 program, was to create a prioritized plan for the rehabilitation and restoration of wetlands and their upland buffers in the Upper Des Plaines watershed. Participants in this project include the Liberty Prairie Foundation, the Lake County Stormwater Management Commission, the Southeastern Wisconsin Regional Planning Commission and the U.S. Army Corps of Engineers, Chicago District.

The partnership continues to seek the involvement of stakeholders in projects that will improve the quality of life within the watershed. There is a need to increase participation among municipalities, corporations and homeowners' associations in implementing a more ecologically based approach to the storage of stormwater runoff. We are developing a geographic information system that will allow us to use computer mapping inneducation campaigns as well as in the identification of potential projects in the watershed.

After heavy rains, scattered floodplain debris can quickly congest stream channels and block downstream culverts or bridges.



North Branch Chicago River Watershed - Project Locations

Natural Resources Conservation Service

1 WAUKEGAN ROAD RESERVOIR
(LAKE FOREST) (STR. 18)

2 WILLOW ROAD DAM MODIFICATION

U.S. Army Corps of Engineers

3 GREEN OAKS RESERVOIR
(UNINCORPORATED LAKE COUNTY) (STR. 15)

4 BANNOCKBURN RESERVOIR (STR. 27)

5 DEERFIELD RESERVOIR
(DEERFIELD) (STR. 29A)

Office of Water Resources

6 SKOKIE ROAD RESERVOIR
(LAKE BLUFF) (STR. 4)

Metropolitan Water Reclamation District

7 MIDDLE FORK, NORTH BRANCH, CHICAGO RIVER RESERVOIR (NORTHBROOK)

8 TECHNY RETENTION RESERVOIR SYSTEM
(UNINCORPORATED COOK COUNTY) (STR. 32)
A NORTHBROOK RESERVOIR
B TECHNY RESERVOIR
C GLENVIEW RESERVOIR

Lake County Stormwater Commission

9 NORTH BRANCH OF THE CHICAGO RIVER ASSESSMENT AND WATERSHED PLAN

North Branch Chicago River Watershed Project Status

Projects Planned by the Natural Resources Conservation Service but Not Recommended for Construction by the U.S. Army Corps of Engineers

1 WAUKEGAN ROAD RESERVOIR (STR. 18)*

FLOOD STORAGE: 2,068 acre-feet
FLOOD PROTECTION TO: Bannockburn, Highland Park, Deerfield
COST: Construction - $10,156,000 (Estimate)
LAND - $2,033,300 (OWR and Lake County Forest Preserve District)
STATUS: Waiting for watershed re-evaluation

2 WILLOW ROAD DAM MODIFICATION*

PURPOSE: Two automatic control gates to improve the flood control features of the lagoon.
FLOOD PROTECTION TO: Northfield, Wilmette, Glenview, Niles, Morton Grove
COST: Construction - $130,000 (Estimate)
STATUS: Awaiting watershed re-evaluation

Projects Constructed by the U.S. Army Corps of Engineers

3 GREEN OAKS RESERVOIR (STR. 15)*

FLOOD STORAGE: 500 acre-feet
FLOOD PROTECTION TO: Lake Forest, Unincorporated Lake and Cook Counties
COST: Construction - $4,168,000 (COE)
LAND: $1,389,000 (non-Federal)
STATUS: Completed in 1992

4 BANNOCKBURN RESERVOIR (STR. 27)*

FLOOD STORAGE: 525 acre-feet
FLOOD PROTECTION TO: Lincolnshire, Bannockburn, Deerfield
COST: Construction - $5,590,000 (COE)
LAND $2,390,000 (non-Federal)
STATUS: Completed in 1990

Structure 27, Bannockburn Reservoir. Deerfield.

5 DEERFIELD RESERVOIR (STR. 29A)

FLOOD STORAGE: 575 acre-feet
FLOOD PROTECTION TO: Deerfield, Northbrook, Glenview
COST: Construction - $5,075,000 (COE), $2,451,000 (OWR), Cleanup of soils: $4,680,410 (OWR)
LAND $1,692,000
MAINTENANCE: Deerfield, MWRDGC
STATUS: Completed in 1992

Projects of the Office of Water Resources Awaiting Watershed Evaluation for Program Suitability

6 SKOKIE ROAD RESERVOIR (STR. 4)*

FLOOD STORAGE: 1,800 acre-feet
FLOOD PROTECTION TO: Lake Forest, Unincorporated Cook
COST: Construction - $10,500,000 (Estimate OWR)
LAND - $958,300 OWR and Lake County Forest Preserve District
STATUS: Waiting for watershed re-evaluation

Projects of the Metropolitan Water Reclamation District

7 MIDDLE FORK, NORTH BRANCH CHICAGO RIVER RESERVOIR

FLOOD STORAGE: 600 acre-feet

* These projects were included in the "North Branch Chicago River Watershed Floodwater Management Plan" prepared by the USDA Natural Resources Conservation Service.

Northbrook Reservoir, Structure 32-A. July 1981

FLOOD PROTECTION TO: Northbrook, Northfield, Glenview, Morton Grove, Niles
COST: Construction - $1,479,900 (MWRDGC)
$1,171,500 (COE)
LAND - 22 acres donated by the Homart Corp. (Sears Roebuck, Inc.), $776,000 Estimated Value
MAINTENANCE: Homart Corp. and MWRDGC
STATUS: Completed in 1973

8 TECHNY RETENTION RESERVOIR SYSTEM (STR. 32)

STORAGE: 1400 acre-feet (A, B, and C)
FLOOD PROTECTION TO: Glenview, Morton Grove, Niles
COST: Construction - $792,200 (MWRDGC)
$3,070,800 (COE)
LAND-180 acres at three separate locations donated by Techny Orders, $5,280,000 (Estimated Value)
MAINTENANCE: MWRDGC
STATUS: Completed in 1979

8A NORTHBROOK RESERVOIR (STR. 32A)

FLOOD STORAGE: 300 acre-feet
STATUS: Completed in 1979

8B TECHNY RESERVOIR (STR. 32B)*

FLOOD STORAGE: 250 acre-feet
STATUS: Completed in 1979

8C GLENVIEW RESERVOIR (STR. 32C)*

FLOOD STORAGE: 850-acre-feet
STATUS: Completed in 1979

* These projects were included in the "North Branch Chicago River Watershed Floodwater Management Plan" prepared by the USDA Natural Resources Conservation Service.

North Branch, Chicago River Reservoirs

(WRDA 1986 and WRDA 1996)
The authorized project consists of two excavated storage reservoirs on the West Fork of the North Branch (Reservoirs 27 & 29A), and one excavated reservoir on the Middle Fork (Reservoir 15). The 1986 WRDA also authorized reimbursement of local interests for 50 percent of the cost of planning, engineering, and construction of the Techny and Middle Fork reservoirs constructed earlier by local interests. Construction of Reservoir 27 (Bannockburn) was completed in June 1990; construction of Reservoir 15 (Green Oaks) was completed in May 1992. Reservoir 29A (Deerfield) was completed in September 1994, after 50,000 cubic yards of soil contaminated by lead shot pellets was disposed of in the perimeter of the reservoir. Section 301 of the 1996 WRDA reauthorized this project. Local sponsors include the Lake County Forest Preserve District and the Village of Deerfield.

Programs of the Lake County Stormwater Commission

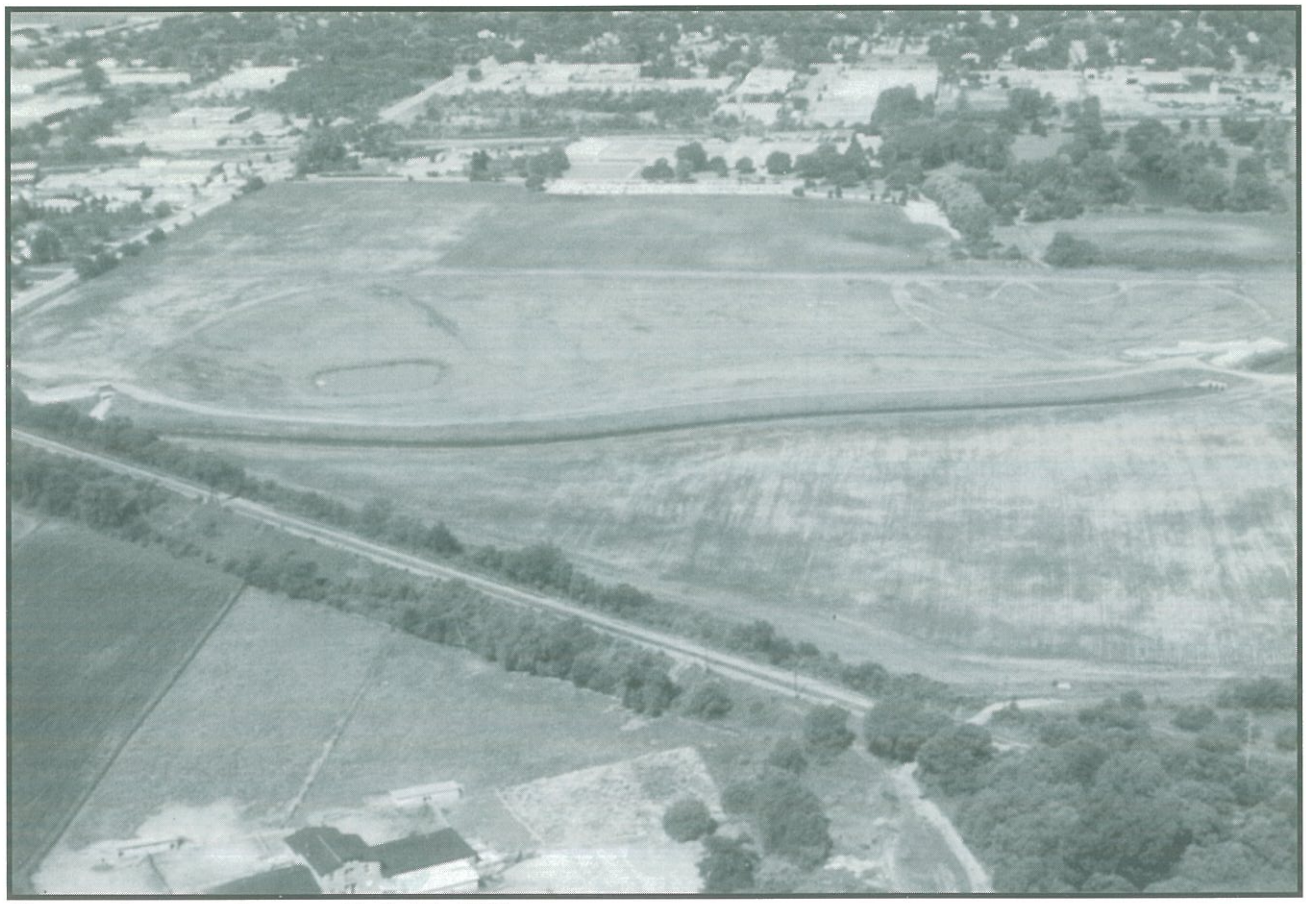
9 NORTH BRANCH OF THE CHICAGO RIVER ASSESSMENT AND WATERSHED PLAN

(New study 1997)
OVERVIEW: A grant awarded to the Friends of the Chicago River will fund this 2-year joint effort to develop a comprehensive plan in the Lake County portion of the watershed. SMC is coordinating an assessment and strategic work group, and the work of a temporary watershed specialist. The plan will address flood reduction, water quality improvement and natural resource protection measures.
COST: $612,000 Illinois Environmental Protection Agency grant to FOCR; SMC providing in kind services.
STATUS: Completion scheduled for 1999.

North Branch Chicago River Watershed Program Status

Federal Funding Status

The 1996 Water Resources Development Act reauthorized the Reservoir Projects at 15, 27, and 29A to evaluate project improvements.



Glenview Reservoir, Structure 32-C. July 1981

Land Protection Program

The Lake County Watershed Development Ordinance (WDO) is being enforced throughout the Lake County portions of the watershed. Communities within the watershed are certified by SMC to administer/enforce the WDO are: Bannockburn, Deerfield, Green Oaks, Gurnee, Highland Park, Highwood, Lake Bluff, Lake Forest, Lincolnshire, Mettawa, North Chicago, Park City, Riverwoods, and Waukegan.

The Lake County and North Cook County Soil and Water Conservation Districts and the Lake County Stormwater Commission are providing technical assistance. The land protection programs are presently being evaluated by the Districts and Lake County Stormwater Commission to determine their effectiveness and to make recommendations for improving them if necessary.

Land Acquisition Program

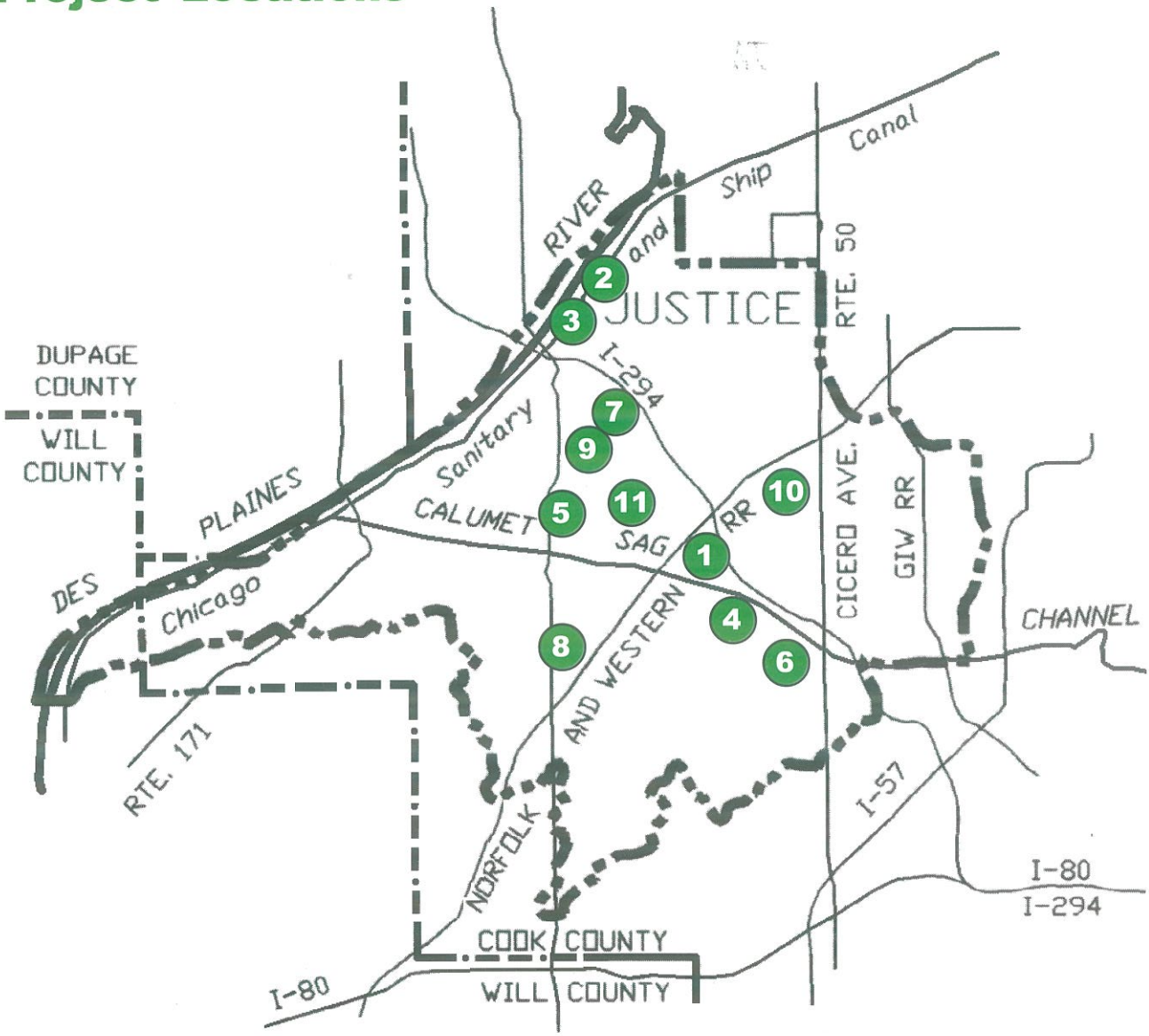
The Lake County Forest Preserve District has actively pursued a program of open land, wetland and floodplain purchase in the North Branch, Chicago River Watershed. To date 1175 acres of land adjacent to the River and its tributaries have been acquired by the District.

Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the North Branch Chicago River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts. Lake County Stormwater Commission has been delegated for most of the floodplain permitting authority in Lake County.

Techny channel improvement. July 1981

Cal-Sag Watershed - Project Locations



Office of Water Resources

1 STONY CREEK EAST CHANNEL IMPROVEMENT AND OUTLET CHANNEL (ALSIP, BLUE ISLAND)

2 JUSTICE CREEK OUTLET (JUSTICE)

3 JUSTICE FLOOD CONTROL PROJECT (JUSTICE)

4 NAVAHO CREEK OUTLET (PALOS HEIGHTS)

5 LUCAS DITCH FLOOD CONTROL PROJECT (PALOS HILLS, HICKORY HILLS)

6 CRESTWOOD DRAINAGE PROJECT (CRESTWOOD)

7 HICKORY HILLS RESERVOIR (HICKORY HILLS)

8 MILL CREEK LEVEE

Metropolitan Water Reclamation District

9 MELVINA DITCH RESERVOIR AND CHANNEL IMPROVEMENT (OAK LAWN)

10 OAK LAWN RETENTION RESERVOIR (OAK LAWN)

11 STONY CREEK, WEST CHANNEL IMPROVEMENT (PALOS HILLS, HICKORY HILLS, WORTH, CHICAGO RIDGE)

Cal-Sag Watershed Project Status

Projects of the Office of Water Resources

1 STONY CREEK EAST CHANNEL IMPROVEMENT AND OUTLET CHANNEL

PURPOSE: Improve flow in creek and discharge into Cal-Sag Channel; Approximate length 3.2 miles (from 115 St. & Cicero Ave. south to Cal-Sag)
FLOOD PROTECTION TO: Alsip, Blue Island, Merrionette Park
COST: Construction - $1,262,000 (OWR)
LAND - MWRDGC
(1960 Estimated Value $10,000)
MAINTENANCE: MWRDGC
STATUS: Completed in 1977

STONY CREEK
(Continuing Authorities-Sec. 205)
A Reconnaissance report was completed in 1996 recommending further study on this creek in the Village of Oak Lawn. A feasibility study is scheduled to start in Summer 1997.

2 JUSTICE CREEK OUTLET

PURPOSE: Improve discharge into Sanitary and Ship Canal; length 450 feet (Connecting Sanitary and Ship Canal with the I&M Canal in Justice)
FLOOD PROTECTION TO: Justice
COST: Construction - $96,000 (OWR)
LAND - furnished by MWRDGC
(Estimated Value $10,000)
MAINTENANCE: Justice
STATUS: Completed in 1974

3 JUSTICE FLOOD CONTROL PROJECT

PURPOSE: Alleviate flooding along Justice Creek and 71st Street Ditch
FLOOD PROTECTION TO: Justice
COST: Construction $803,000 (OWR).
LAND - Justice
MAINTENANCE: Justice
STATUS: Completed in 1988

4 NAVAHO CREEK OUTLET

PURPOSE: Improve discharge into Cal-Sag Channel

Hickory Hills. Looking west along the south side of 87th Street at 83rd Avenue. June 8, 1993.

FLOOD PROTECTION TO: Palos Heights
COST: Construction - $14,000 (OWR)
STATUS: Completed in 1975

5 LUCAS DITCH FLOOD CONTROL PROJECT

PURPOSE: 12,760-foot channel improvement and 4,200-foot diversion channel to improve drainage
FLOOD PROTECTION TO: Palos Hills, Hickory Hills
COST: Construction - $185,000 (Estimate, 1961)
LAND - 16 acres (Estimated Value $32,000; MWRDGC, 1962)
STATUS: Completed in 1965

6 CRESTWOOD DRAINAGE PROJECT

PURPOSE: Improve drainage in Crestwood and divert floodwaters from Tinley Creek
FLOOD PROTECTION TO: Crestwood
COST: Construction - $179,000 (OWR)
MAINTENANCE: Crestwood
STATUS: Completed in 1974

7 HICKORY HILLS RESERVOIR

FLOOD STORAGE: 203 acre-feet
FLOOD PROTECTION TO: Approximately 44 structures in Hickory Hills
COST: $3,660,000 (OWR, not including pre-excavation by Hickory Hills)
LAND - 16 acres, 1992, $673,000 (MWRDGC)
MAINTENANCE: Hickory Hills
STATUS: Under construction

8 MILL CREEK LEVEE

PURPOSE: Flood protection to eight structures in Unincorporated Cook County
COST: Construction - $800,500 (OWR)
LAND - $72,000 (Orland Township)
MAINTENANCE: Orland Township
STATUS: Completed in 1990

Projects of the Metropolitan Water Reclamation District

9 MELVINA DITCH RESERVOIR AND CHANNEL IMPROVEMENT

FLOOD STORAGE: 165 acre-feet
CHANNEL IMPROVEMENT: approximately 1 mile
FLOOD PROTECTION TO: Bedford Park, Oak Lawn
COST: Construction - $1,312,300 (Including

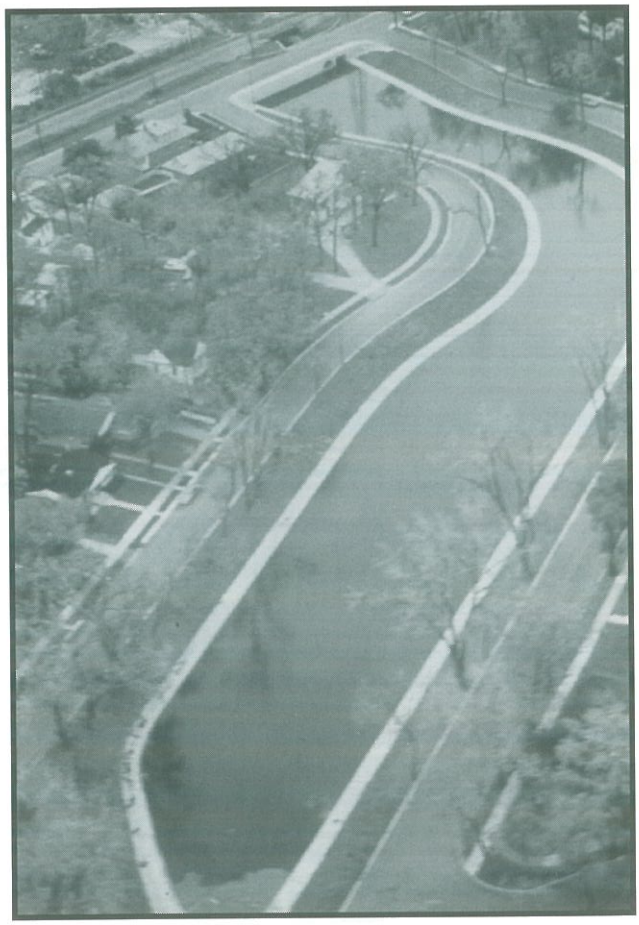
ditch improvement - MWRDGC); $ 500,000 (Oak Lawn)
LAND - 12 acres, $119,000 (MWRDGC)
MAINTENANCE: Oak Lawn, Oak Lawn Park District, and MWRDGC
STATUS: Completed in 1971

10 OAK LAWN RETENTION RESERVOIR

FLOOD STORAGE: 24 acre-feet
FLOOD PROTECTION TO: Oak Lawn
COST: Construction - $120,000 (MWRDGC)
LAND - donated by Oak Lawn (1970 Estimated Value, $83,000)
MAINTENANCE: Oak Lawn
STATUS: Completed in 1970

11 STONY CREEK WEST CHANNEL IMPROVEMENT

PURPOSE: Improve flow in Creek and discharge into Cal-Sag Channel. Approximate length - 5.7 miles
FLOOD PROTECTION TO: Palos Hills, Hickory Hills, Worth, Chicago Ridge
COST: Construction - $344,000 (MWRDGC)
LAND - MWRDGC (1960 Estimated Value $17,000)
MAINTENANCE: MWRDGC
STATUS: Completed in 1972



Oak Lawn Retention Reservoir. November 1971

Cal-Sag Watershed Program Status

Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the Cal-Sag Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts

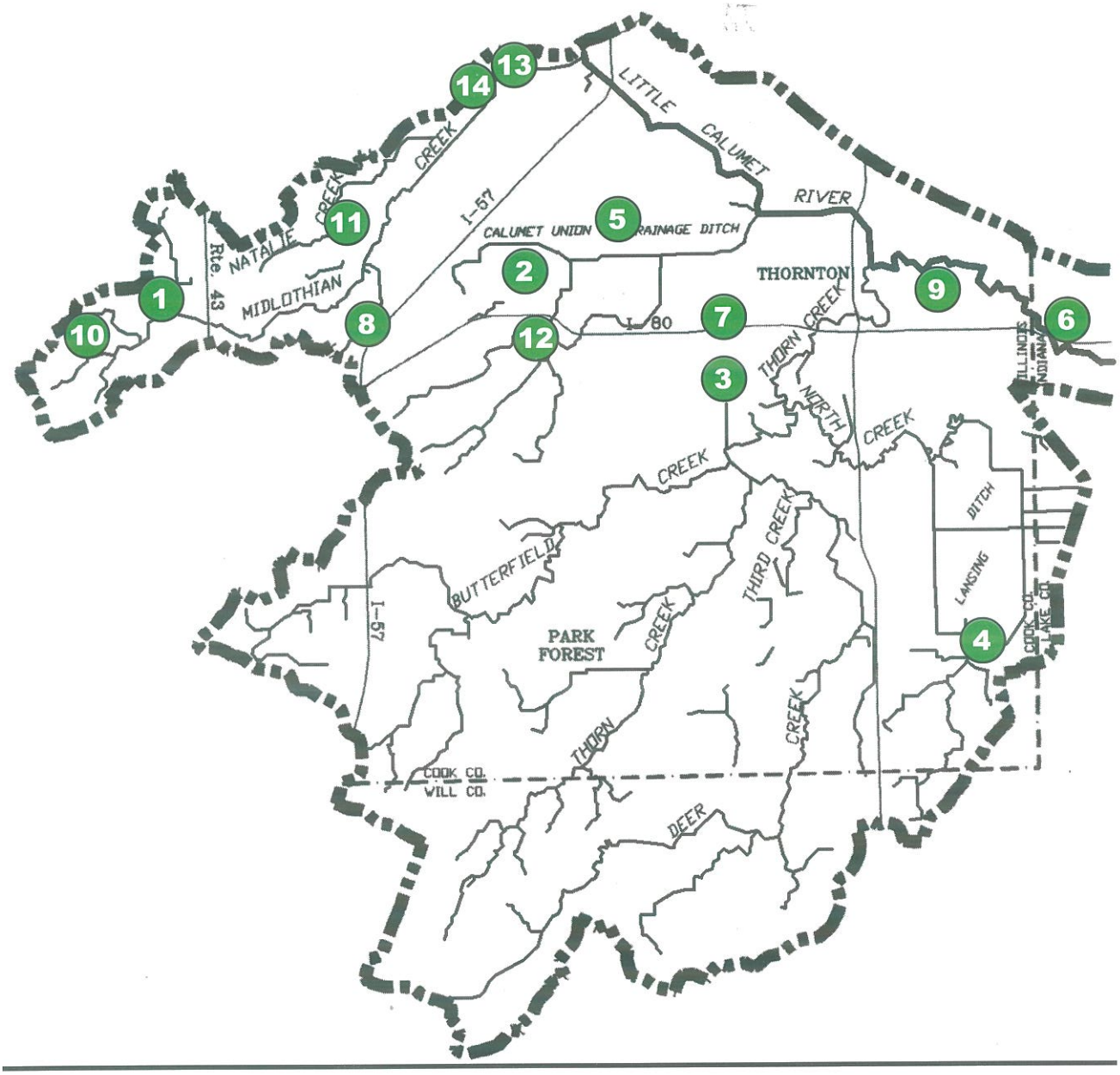
Federal Program

Stony Creek (Continuing Authorities-Sec. 205) A Reconnaissance Report for Southeast Chicago was completed in 1996 recommending further study on this creek in the Village of Oak Lawn. A Feasibility Study by the U.S. Army Corps of Engineers was started in Summer 1997.

State Program

OWR is working with the Village of Justice to investigate a flood control reservoir on a tributary to the 71st Street Ditch. A determination of project feasibility is scheduled for 1998.

Little Calumet River Watershed - Project Locations



Natural Resources Conservation Service

1 TINLEY PARK RESERVOIR (TINLEY PARK)
2 EDWARD C. HOWELL RESERVOIR (MARKHAM)
3 THORNTON COMPOSITE RESERVOIR (THORNTON)
4 DR. MARY WOODLAND RESERVOIR (LYNWOOD)
5 CALUMET UNION CHANNEL IMPROVEMENT (HARVEY)

U.S. Army Corps of Engineers

6 LITTLE CALUMET RIVER INDIANA LEVEES (HAMMOND & MUNSTER)
7 CUP THORNTON COMPOSITE RESERVOIR (CUP)

Office of Water Resources

8 TWIN LAKES RESERVOIR (MIDLOTHIAN)
9 LITTLE CALUMET RIVER DREDGING
10 FERNWAY FLOOD CONTROL PROJECT
11 MIDLOTHIAN RETENTION BASIN

Metropolitan Water Reclamation District

12 CALUMET UNION RESERVOIR (HAZELCREST)
13 MIDLOTHIAN CREEK DIVERSION CHANNEL (ROBBINS)
14 NATALIE CREEK DIVERSION CHANNEL (MIDLOTHIAN)

Little Calumet River Watershed Project Status

Projects of the Natural Resources Conservation Service

1 TINLEY PARK RESERVOIR (STRUCTURE 32)

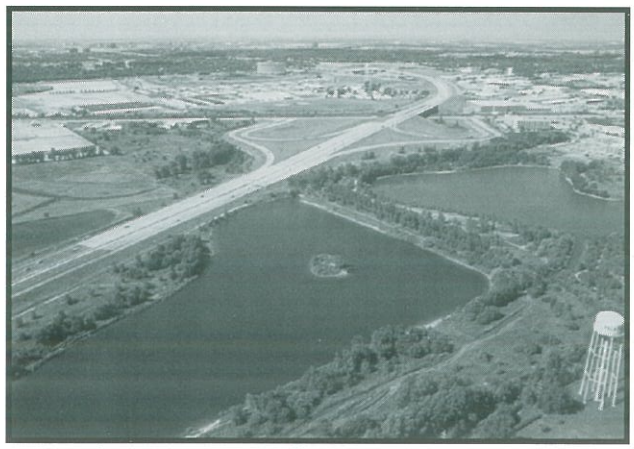
FLOOD STORAGE: 616 acre-feet
FLOOD PROTECTION TO: Tinley Park, Midlothian
COST: Construction - Flood Control - $614,200 (MWRDGC); $7,305,700 (NRCS); Recreation - $1,068,000 (NRCS) plus $768,000 (Tinley Park Park District)
LAND - 98 acres, $2,845,000 (MWRDGC) plus 32 acres, $1,450,000 (Estimated value, Tinley Park) plus 8 acres, $313,000 (Estimated Value, Tinley Park Park District)
MAINTENANCE: MWRDGC, Tinley Park Park District
STATUS: Completed in 1988

2 EDWARD C. HOWELL (STRUCTURE 53)

FLOOD STORAGE: 589 acre-feet
FLOOD PROTECTION TO: Markham, Harvey, South Holland
COST: Construction - $4,196,400 (NRCS) $462,200 (MWRDGC) plus $250,000 (Cook County), (Approach channel completed 1984 - $215,800; MWRDGC)
LAND - 84 acres, $990,000 (MWRDGC); landscaping $55,700 (NRCS)
MAINTENANCE: MWRDGC
STATUS: Approach channel completed in 1984. Reservoir completed in 1988

3 THORNTON COMPOSITE RESERVOIR (STRUCTURE 84)

(Composite with COE Thornton CUP Reservoir)
FLOOD STORAGE: 9,600 acre-feet
FLOOD PROTECTION TO: Dolton, South Holland, Hammond, Calumet City, East Chicago
COST: Construction - $18,441,900 (1976 Estimate NRCS)
LAND - 100 acres for Composite Reservoir, $4,814,000 (MWRDGC) including $774,000 (OWR)
MAINTENANCE: MWRDGC
STATUS: Land rights negotiations completed



Twin Lakes Reservoir. Midlothian.

4 DR. MARY WOODLAND RESERVOIR (STRUCTURE 143)

FLOOD STORAGE: 1,089 acre-feet
FLOOD PROTECTION TO: Lynwood, Lansing
COST: Construction - $5,594,200 (NRCS) $44,000 (MWRDGC)
LAND - 137 acres, $1,417,500 (MWRDGC); landscaping $15,700 (NRCS)
MAINTENANCE: MWRDGC
STATUS: Completed in 1988

5 CALUMET UNION DRAINAGE DITCH IMPROVEMENT

DESCRIPTION: 1.74 miles improved channel; 0.25 miles of concrete-lined channel; from Halsted St. to Western Ave.
FLOOD PROTECTION TO: Markham, Harvey, South Holland
COST: Construction - $3,861,000 (NRCS)
LAND - $290,600 (MWRDGC, Cal-Union Drainage Ditch); Landscaping $75,000 (NRCS)
MAINTENANCE: Calumet Union Drainage District
STATUS: Completed in 1988

Projects of the U.S. Army Corps of Engineers

6 LITTLE CALUMET RIVER, INDIANA FLOOD CONTROL AND RECREATION PROJECT

DESCRIPTION: 22 miles of levees and floodwalls on both banks. Recreation trail and support facilities. (East of Indiana-Illinois state line)
FLOOD PROTECTION TO: Gary, Griffith, Hammond, Munster
COST: Construction - $157,00,000 (Estimate, Corps of Engineers)
STATUS: Under construction

7 CUP THORNTON COMPOSITE RESERVOIR

(Composite with NRCS Str. 84)
See No. 15, Page 63

Projects of the Office of Water Resources

8 TWIN LAKES RESERVOIR

FLOOD STORAGE: 950 acre-feet
FLOOD PROTECTION TO: Midlothian, Tinley Park
COST: Construction - $939,400 (OWR)
LAND - Cook County Forest Preserve District, OWR, Village of Midlothian (1974 Estimated Value $273,000)
MAINTENANCE: Cook County Forest Preserve District
STATUS: Completed in 1974

9 LITTLE CALUMET RIVER DREDGING

DESCRIPTION: Removal of low quality polluted sediment and snagging of debris, to aesthetically enhance 4.5 river miles.
COST: Construction—$2,000,000 (OWR)
MAINTENANCE: Calumet City, Lansing
STATUS: Inactive

10 FERNWAY FLOOD CONTROL PROJECT

PURPOSE: 100-year flood protection to Fernway Park Subdivision, Village of Orland Park
DESCRIPTION: 2000 lineal feet of channel improvements and channel clearing on Midlothian Creek and North Tributary, new box culvert under 171st Street, and 110 AF reservoir.
COST: Construction—$1,500,000 (Orland Park), $1,700,000 (OWR)
LAND—$662,000 (Estimate, Orland Park)
MAINTENANCE: Orland Park, Cook County Highway Department, Tinley Park, Tinley Park Park District
STATUS: Partially completed

11 MIDLOTHIAN RETENTION BASIN

(Natalie Creek)
PURPOSE: Decrease discharges downstream of 149th Street in Village of Midlothian on Natalie Creek
DESCRIPTION: 85 AF of pump excavated storage with a low flow by-pass
COST: Construction—$3,000,000 (Estimate, Village of Midlothian)
LAND—7 acres
MAINTENANCE: Village of Midlothian
STATUS: Study to be conducted

Projects of the Metropolitan Water Reclamation District

12 CALUMET UNION RESERVOIR

FLOOD STORAGE: 500 acre-feet

Tinley Park Reservoir, Centennial Park.

FLOOD PROTECTION TO: Hazel Crest, Markham, Harvey
COST: Construction - $2,833,700 (MWRDGC)
LAND - 44 acres, $414,500 (MWRDGC)
MAINTENANCE: Hazel Crest Park District, MWRDGC
STATUS: Completed in 1975

Projects of the Cook County Highway Department

13 MIDLOTHIAN CREEK DIVERSION CHANNEL

DESCRIPTION: 1,200 feet channel improvement between 137th and 139th Streets; 2,500 feet, 7.5'X12' twin box conduit along Kedzie Avenue to Cal-Sag Channel
FLOOD PROTECTION TO: Robbins, Midlothian
COST: Construction - $1,482,000 (Cook County)
LAND - Cook County, Robbins
MAINTENANCE: Cook County Highway Department
STATUS: Completed in 1980

14 NATALIE CREEK DIVERSION CHANNEL

DESCRIPTION: 9,200 feet, 96" and 48" pipe (147th to 135th Streets); 700 feet 102" pipe 135th to Cal-Sag Channel)
FLOOD PROTECTION TO: Midlothian
COST: Construction - $1,382,600 (Estimate)
MAINTENANCE: Cook County Highway Department
STATUS: Completed in 1986

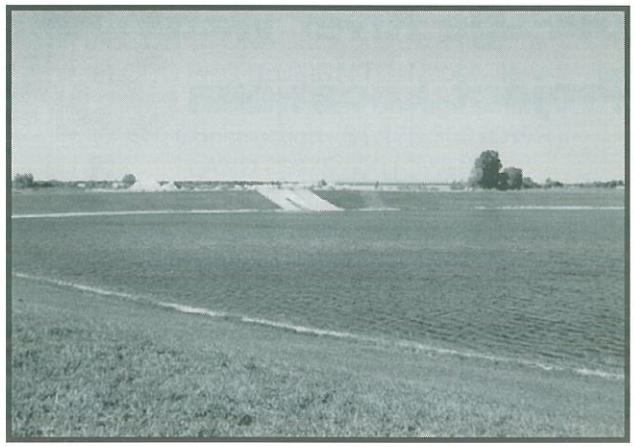
Little Calumet River Watershed Program Status

Federal Funding for the Natural Resources Conservation Service Proposed Program

In September 1982, the Little Calumet River Watershed Plan and Environmental Impact Statement were approved and funded. All projects have been completed except for the Thornton Composite Reservoir. Land acquisition is proceeding for Thornton Composite Reservoir.

Land Protection Program

Twenty-three communities as well as unincorporated Cook and Will Counties have passed ordinances to control soil erosion losses on developing land.



Dr. Mary Woodland Reservoir. Structure 143.

Three areas of high sediment production are included in this protected area. They are Plum Creek (16,700 acres) which is 85 percent adequately treated; Butterfield Creek (1,200 acres) which is 60 percent treated; and Midlothian Creek (2,400 acres) which is 65 percent treated. The protected area of Midlothian Creek is especially critical because it is upstream from the Tinley Park Reservoir. Likewise, the area upstream from the Lynwood Reservoir is 91 percent adequately treated. These measures will assure that sediment will not fill the reservoirs and rivers.

Federal Funding for the Corps of Engineers Proposed Program in Indiana

In October 1986, the Little Calumet River, Indiana Project was authorized. Construction was initiated in 1990 and is scheduled for completion in 2004.

15 DEER CREEK

(Continuing Authorities-Sec. 205)
Reconnaissance report for Southeast Chicago was completed in 1996, recommending further study on this creek in the Village of Ford Heights.
STATUS: A Feasibility Study started in Summer 1997.

Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the Little Calumet River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts.

Stream Preservation Program

The Illinois Office of Water Resources has implemented a watershed-wide stream preservation program. The program outlines annual inspection and maintenance procedures.

DuPage River Watershed - Project Locations

Office of Water Resources

1 WEST BRANCH DUPAGE RIVER CHANNEL IMPROVEMENT (HANOVER PARK)

2 ST. JOSEPH CREEK CHANNEL IMPROVEMENT (LISLE, DOWNERS GROVE)

3 NAPERVILLE RESERVOIR (DUPAGE COUNTY FOREST PRESERVE)

3A FAWELL DAM MODIFICATIONS (NAPERVILLE)

Metropolitan Water Reclamation District

4 UPPER DUPAGE RESERVOIR (HANOVER PARK)

DuPage County

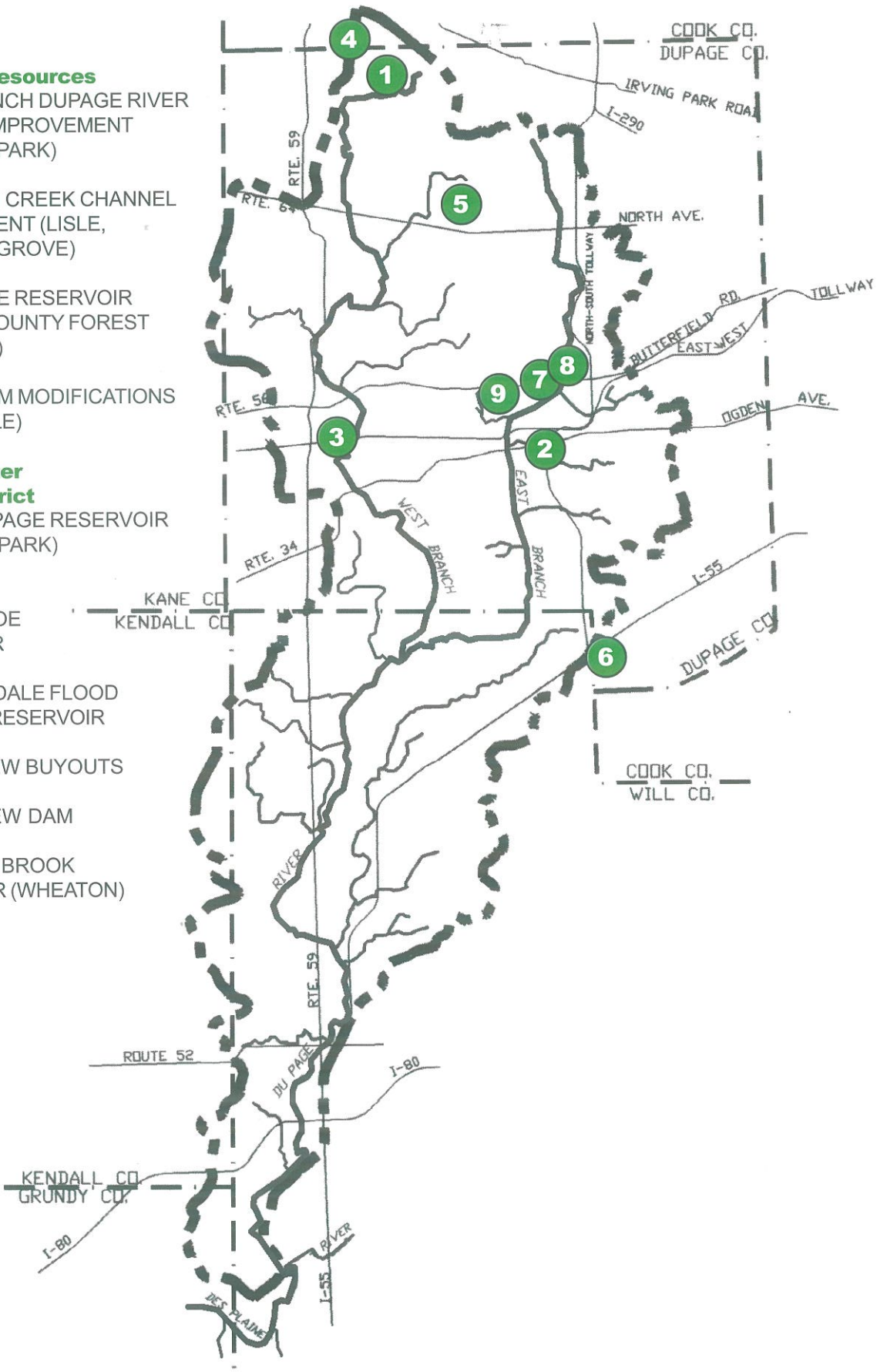
5 GARY/KEHOE RESERVOIR

6 PLEASANTDALE FLOOD CONTROL RESERVOIR

7 VALLEY VIEW BUYOUTS

8 VALLEY VIEW DAM

9 WILLOWAY BROOK RESERVOIR (WHEATON)



DuPage River Watershed Project Status

Projects of the Office of Water Resources

1 WEST BRANCH DUPAGE RIVER CHANNEL IMPROVEMENT

PURPOSE: Channel modification to improve drainage in the Hanover Park residential area adjacent to the river
FLOOD PROTECTION TO: Hanover Park
STATUS: Completed in 1992

1A LONG MEADOW ROAD TO CMSP & P RAILROAD TRACKS 4,700 FEET

COST: Construction - $280,000 (OWR); land rights furnished by MWRDGC as part of Upper DuPage Reservoir Project
MAINTENANCE: Hanover Park
STATUS: Completed in 1977

1B IRVING PARK ROAD TO LONG MEADOW ROAD 1,300 FEET

COST: Construction - $88,000 (OWR);
land rights furnished by Hanover Park Estimated Value - $10,000
MAINTENANCE: Hanover Park
STATUS: Completed in 1981

1C IMPROVEMENT 1,700 FEET (NORTH OF IRVING PARK ROAD)

COST: Construction - $1,300,000 (OWR);
land rights furnished by Hanover Park Estimated Value $20,000
MAINTENANCE: Hanover Park
STATUS: Completed in 1990

2 ST. JOSEPH CREEK CHANNEL IMPROVEMENT

PURPOSE: 14,200 feet of channel modification to improve drainage in Lisle and Downers Grove
FLOOD PROTECTION TO: Lisle, Downers Grove
COST: Construction $1,320,000 (OWR)
LAND - $128,000 (OWR)
STATUS: Completed in 1980

3 NAPERVILLE RESERVOIR

FLOOD STORAGE: 2,500 acre-feet
FLOOD PROTECTION TO: Naperville, Unincorporated DuPage County
COST: Construction - $1,176,300 (OWR)
LAND - $975,000 (OWR)
MAINTENANCE: DuPage County Forest Preserve District—Storage Pool
DWR—Embankment and Gates
STATUS: Completed in 1971

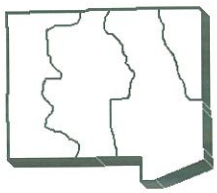
3A FAWELL DAM MODIFICATIONS

DESCRIPTION: Provide additional discharge capabilities to pass the PMF and revised gate operation scheme to better utilize existing flood storage
BENEFITS: Naperville
COST: Construction $5,500,000 [OWR]
STATUS: Under design

Projects of the Metropolitan Water Reclamation District

4 UPPER DUPAGE RESERVOIR

FLOOD STORAGE: 230 acre-feet
FLOOD PROTECTION TO: Hanover Park
COST: Construction - $826,100 (MWRDGC)
LAND - 38 acres - open space, $212,000 (MWRDGC)
MAINTENANCE: Hanover Park Park District and MWRDGC
STATUS: Completed in 1977



Projects of DuPage County

5 GARY/KEHOE RESERVOIR

FLOOD STORAGE: 143 acre-feet
FLOOD PROTECTION TO: Carol Stream
COST: Construction - $2,700,000 estimated (DCSMC)
LAND - 19.5 acres acquired by DCSMC, $3,300,000
MAINTENANCE: Carol Stream
STATUS: Under construction

6 PLEASANTDALE FLOOD CONTROL RESERVOIR

FLOOD STORAGE: 30 acre-feet
FLOOD PROTECTION TO: Uninc. DuPage
COST: Construction - $2,200,000 (DCSMC and DPCPW)

LAND: acquired by DCSMC, $775,000
MAINTENANCE: DuPage County
STATUS: Completed in 1998

7 VALLEY VIEW BUYOUTS

DESCRIPTION: Buyout of 47 residential structures in the floodplain of the East Branch, DuPage River. Joint project with FEMA.
FLOOD PROTECTION TO: Uninc. DuPage
COST: Buyout - $2,225,000 (DCSMC)
$6,775,000 (FEMA)
MAINTENANCE: DCSMC
STATUS: Under construction

8 VALLEY VIEW DAM

FLOOD STORAGE: 100 acre-feet
FLOOD PROTECTION TO: Uninc. DuPage
COST: Construction - $2,100,000 estimated(DCSMC)
LAND - Land donated by DCFPD
MAINTENANCE: DCFPD
STATUS: Under design

9 WILLOWAY BROOK RESERVOIR (Rice Lake)

FLOOD STORAGE: 345 acre-feet
FLOOD PROTECTION TO: Wheaton, Lisle & Unincorporated Du Page County
COST: Construction/Design—$1,750,000 (Du Page County, Wheaton, Build Illinois, Illinois State Tollway Authority (ISTHA))
LAND—Du Page County Forest Preserve District
MAINTENANCE: DuPage County Forest Preserve District
STATUS: Completed in 1990

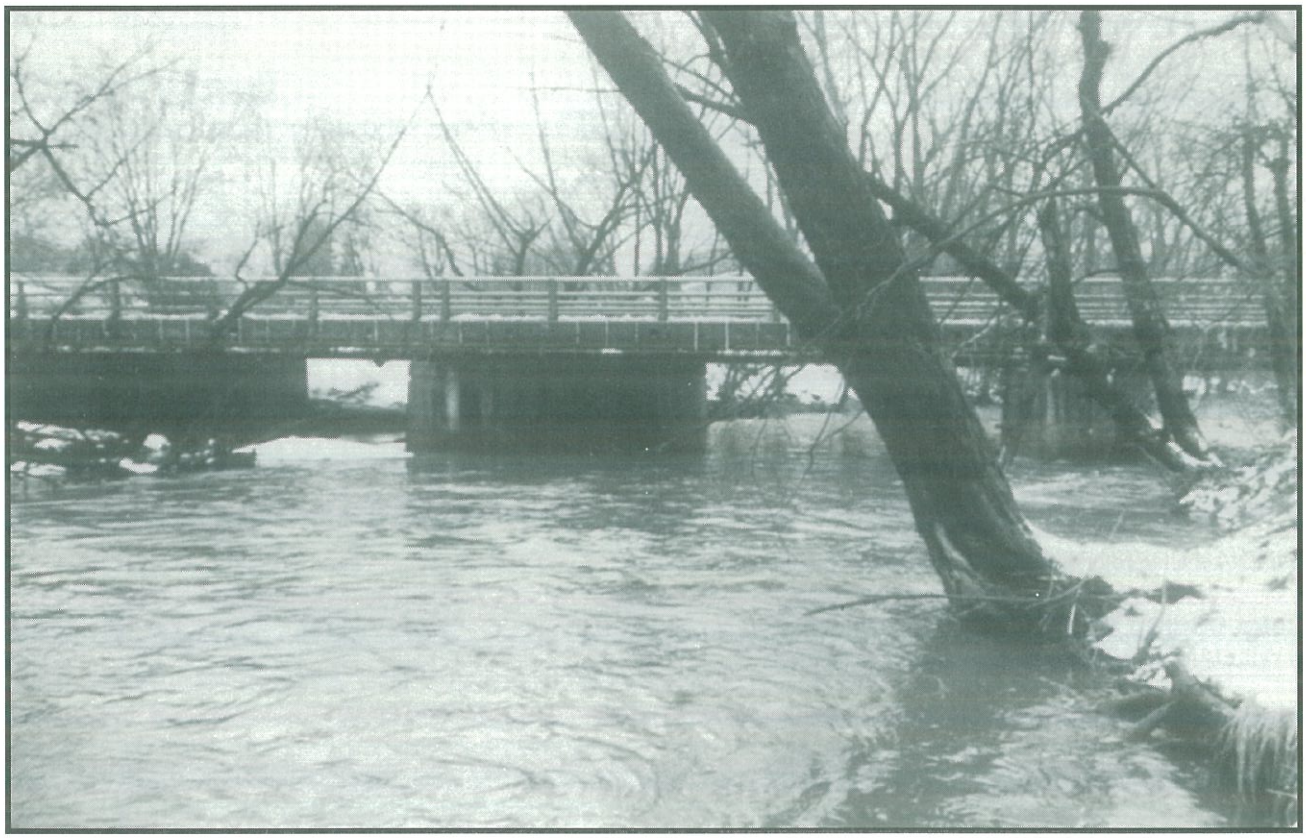
DuPage River Watershed Program Status

COE - Floodwater Management Planning

The Corps of Engineers through the Chicago-South End of Lake Michigan Urban Water Damage Study is investigating solutions to urban water damage caused by overbank flooding and poor drainage. The investigation of drainage problems is limited to flooding that results from the submergence of sewer outlets by high river stages. Because of the large size of the area, the study is being conducted through a series of six interim reports.

Work on Interim Report No. 2 for the DuPage River was completed in August 1982. The report concluded that

Naperville Reservoir, DuPage River. July 1981



DuPage River Watershed. Hillside Road bridge. January 21, 1993

Corps of Engineers participation in implementing flood damage reduction measures in the DuPage River Basin is not justified due to the lack of economic feasibility.

A Watershed Planning Team is currently working to identify and prioritize problems within the DuPage River Watershed. This team is working under the guidance of the Conservation Foundation.

OWR-Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the DuPage River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts.

DuPage County Stormwater Management Commission has implemented a program to study, define, remap and protect floodplains and natural depressional storage area within the County. Off-site increases in runoff are not allowed. Most of the state regulation review and permit issuance has been delegated to the DuPage County SMC.

Stream Maintenance

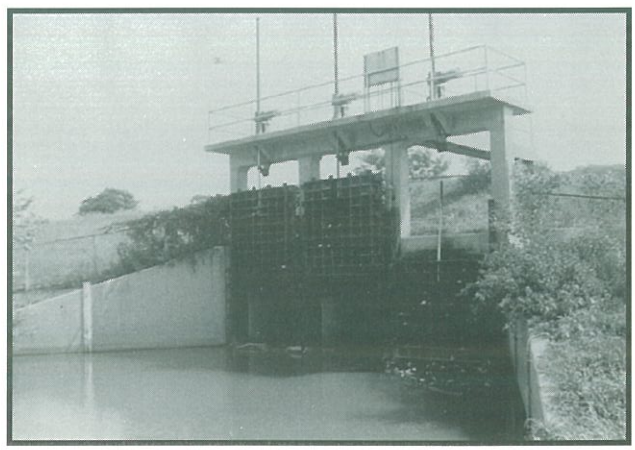
DuPage County Stormwater Management Division has implemented a stream maintenance program on main stem streams and tributaries in DuPage County. The program goals are to protect the hydraulic capacity of the streams in such a manner to also protect other stream corridor uses such as habitat protection, water quality, aesthetics, and recreation. Streams are inspected and videotaped. Cleaning consists of debris removal from the entire stream corridor, selective cutting and pruning. Woody debris is used by the County's solid waste composting program.

Land Protection

DuPage County Stormwater Division has implemented a sedimentation and erosion control regulatory program. The regulations are embodied in the Stormwater Ordinance and regulates construction activities to reduce erosion and sedimentation.

Structure Acquisition Program

The DuPage County SMC has actively acquired buildings subject to frequent and severe flooding, to date 51 buildings have been acquired and removed.



Fox River Watershed - Project Location

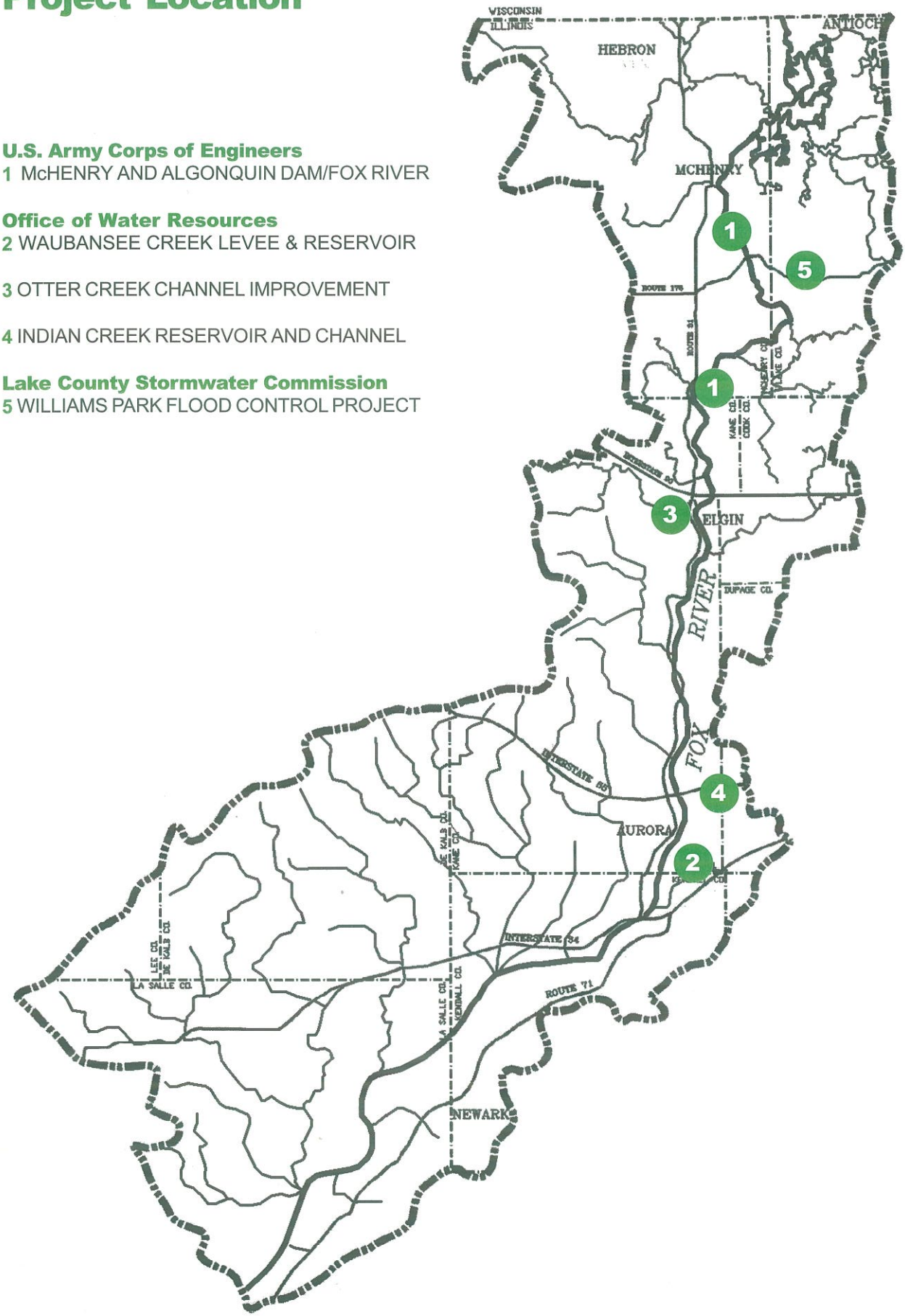
U.S. Army Corps of Engineers
1 McHENRY AND ALGONQUIN DAM/FOX RIVER

Office of Water Resources
2 WAUBANSEE CREEK LEVEE & RESERVOIR

3 OTTER CREEK CHANNEL IMPROVEMENT

4 INDIAN CREEK RESERVOIR AND CHANNEL

Lake County Stormwater Commission
5 WILLIAMS PARK FLOOD CONTROL PROJECT



Fox River Watershed Project Status

Projects of the U.S. Army Corps of Engineers

1 MCHENRY AND ALGONQUIN DAM/FOX RIVER

(Continuing Authority - Sec. 205)
The project calls for increased gating capacity at the McHenry and Algonquin dams to allow greater management of the Chain-of-Lakes for flood control purposes. With the new gates, more water could be moved downstream in anticipation of a flood event. The effect would be to reduce water levels above the dam, creating storage which could be used to reduce the impacts of a large storm. Flood damages would also be reduced downstream by reducing the peak flow. Flood damages would be reduced above Algonquin Dam through the Chain-of-Lakes area. The local sponsor is the State of Illinois, Department of Natural Resources.

COST: Maintenance: Office of Water Resources
STATUS: Construction scheduled for 1998-2000.

Projects of the Office of Water Resources

2 WAUBANSEE CREEK LEVEE & RESERVOIR

FLOOD STORAGE: 50 acre-feet
LEVEE: 3,000 feet
FLOOD PROTECTION TO: 60 homes in Park View Estate Subdivision, Village of Montgomery on Fox River
COST: Construction - $914,000 (OWR)
LAND - $119,000 (Montgomery)
MAINTENANCE: Montgomery
STATUS: Completed in 1979

3 OTTER CREEK CHANNEL IMPROVEMENT

LENGTH: 5,295 feet
FLOOD PROTECTION TO: City of Elgin
COST: Construction - $281,200 (OWR)
LAND - City of Elgin
MAINTENANCE: City of Elgin
STATUS: Completed in 1982

Fox River, Waubansee Creek. Upper watershed reservoir. June 15, 1981.

4 INDIAN CREEK RESERVOIR AND CHANNEL MODIFICATION

PHASE I—Reservoir
PHASE II—Channel Improvement
FLOOD STORAGE: 310 acre-feet
CHANNEL LENGTH: 8,400 feet
FLOOD PROTECTION TO: 130 homes in Aurora and Aurora Township
COST: Construction -
Phase I - $3,697,900 (OWR)
Phase II - $1,100,000 (Estimated)
LAND - 55 acres, $600,000 (Estimate, City of Aurora)
MAINTENANCE: City of Aurora
STATUS: Phase I completed in 1994
STATUS: Phase II scheduled for construction in 1998-99

Projects of the Lake County Stormwater Management

5 WILLIAMS PARK FLOOD CONTROL PROJECT

PURPOSE: Improve drainage, and remove homes from the floodplain
PHASE I: Berm installation on hold
PHASE II: Home buyout scheduled for completion in 1989/99
FLOOD PROTECTION TO: Williams Park Subdivision, Wauconda
PHASE I CONSTRUCTION - $600,000
PHASE II COST: $480,000 (75% FEMA, 25% Local)
MAINTENANCE: Williams Park Improvement Association
STATUS: Phase I on hold; Phase II scheduled for 1999

Fox River Watershed Program Status

Floodwater Management Planning

The Corps of Engineers investigated the water resource problems and needs of the Fox River mainstem to provide a plan for developing, utilizing, and conserving the river's water and related land resources. The Fox River Basin has a drainage area of 2,580 square miles and includes parts of both Illinois and Wisconsin. The character of the basin varies from resort-type developments in the north to predominantly rural areas in the south. The Fox River flows through the Chain-of-Lakes area, which contains several inter-connected lakes in northern Illinois.

Among the study's objectives were flood control, floodplain management, wastewater management, including

storm water runoff, regional water supply, water quality control, recreation, fish and wildlife conservation protection and enhancement of aesthetic qualities, and other measures for enhancement and protection of the environment on the river.

The feasibility report was completed in 1996 with recommendations for two 50'-wide hydraulically operated gates, one at Algonquin Dam and one at McHenry Dam, to allow greater management of the Chain of Lakes for flood control purposes. Flood damages would be reduced above Algonquin Dam through the Chain of Lakes area. Construction is expected to begin in 1998.

Floodplain Regulations

The Illinois Office of Water Resources regulates floodways throughout the Fox River Watershed in Illinois. Construction proposed within floodway areas must be permitted by OWR and not have significant adverse impacts.

DuPage County Stormwater Management Commission) and the Lake County Stormwater Management Commission are implementing a program to study, define, remap and protect the floodplains and natural depressional storage area within the County. Off-site increases in runoff are not allowed. Of the 26 sub-watersheds in Lake County , 7 are in some phase of study. DuPage County has already implemented these regulations. (See DuPage River writeup, page 44)

Stream Maintenance

DuPage County Stormwater Management Division has implemented a stream maintenance program on main stem streams and tributaries in DuPage County. The program goals are to protect the hydraulic capacity of the streams in such a manner to also protect other stream corridor use such as habitat protection, water quality, aesthetics, and recreation. Streams are inspected and videotaped. Cleaning consists of debris removal from the entire stream corridor, selective cutting and pruning. Woody debris is used by the County's solid waste composting program.

Land Protection Program

DuPage County Stormwater Management Committee and Lake County Stormwater Management Commission are implementing a sediment and erosion control regulatory program within the respective counties. The regulations are embodied in the Stormwater Ordinance and will regulate construction activities to reduce erosion and sedimentation. The Lake County Watershed Development Ordinance (WDO) is being enforced throughout the watershed.

Fox River Ecosystem Partnership

The Fox River Ecosystem Partnership (FREP) formed in September 1996. The partnership is part of the Illinois Department of Natural Resources Conservation 2000 program, a six-year State of Illinois initiative to enhance nature protection and outdoor recreation by reversing the decline of the state's ecosystems. The formation of FREP was initiated by the Fox Waterway Agency and Kane and Kendall County Forest Preserve Districts inviting partners to come together for the purposes of watershed planning. FREP brings together a diversity of partners throughout the watershed, from interested citizens to grass roots organizations, and governmental agencies.

In January 1998 a watershed planning committee formed to initiate the creation of a watershed plan for the 1,720 square mile watershed. Six general areas of concern were identified by this committee including: habitat, water quality, stormwater, recreation, land- use and education. Six action teams under these headings have the task of making recommendations to address concerns within their area. The Watershed Planning Committee will utilize the recommendations of the Action Teams to formulate the watershed plan.

Kane County Stormwater Management Planning Committee

Stream Maintenance

Kane County Department of Environmental Management is implementing a stream maintenance program on main stem streams and tributaries in Kane County. The program goals are to protect the hydraulic capacity of the streams in such a manner to also protect other stream corridor uses such as habitat protection, water quality, aesthetics, and recreation. Streams are inspected and videotaped. Cleaning consists of debris removal from the entire stream corridor.

Blackberry Creek Watershed Plan

Overview: Blackberry Creek is a high priority watershed in Kane and Kendall Counties due to its proximity as the next major watershed in those counties to be rapidly urbanized in the next decade. Four existing flood prone residential areas have already been identified in the watershed. A Resource Planning Committee has been formed to develop a long range plan to better manage stormwater, flood damage reduction plans, groundwater quality, aesthetics and environmental concerns in the watershed. Eight Technical Advisory Committees have been established to investigate flow rates, channel modifications, wetlands, natural watershed storage, detention, regulatory standards and jurisdictions, erosion, sedimentation and flooding in existing subdivisions. Preliminary recommendations include seeking stormwater authority for Kendall County, developing new hydrologic and hydraulic models for the watershed, creating historical photo mosaics, preparing new photo based topographic mapping, defining new regulatory re-

lease rates, adopting model ordinances and preserving natural areas. The Resource Planning Committee is to have a draft report prepared by January 1, 1998.

Waubansee Creek Watershed Plan

The Waubonsee Creek Watershed spans over four counties including DuPage, Kane, Kendall, and Will. It is a watershed in transition from an agricultural to urban land use. Flooding concerns resulting from the July 1996 rains peaked local interest and the Waubonsie Creek Watershed Planning Committee was formed. Their mission is to increase awareness in the watershed, reduce flooding, and address multiple environmental concerns by developing a comprehensive conservation plan for the watershed. Over the past year, they have identified the resource concerns, formulated desired future conditions, held a tour of the watershed, distributed a resolution requesting the Federal Emergency Management Agency (FEMA) to study and remap the watershed, formulated a public outreach strategy, sought out sources of funding, and provided the plan of work for the Technical Advisory committee (TAC). The TAC has been reviewing the release rates in order to give a recommendation, facilitated the installation of streamgages by OWR, evaluating the feasibility of retrofitting existing basins, surveying the creek stability and assessment of on-stream storage, looking for possible native plant demonstration areas, developing a Parkview Estates issue paper addressing the potential buyout of flood affected areas in the subdivision, and developing watershed environmental guidelines which will contain strategies and recommendations for developers, municipalities, and others in the watershed. The Waubansee Creek Watershed Committee anticipates completion of the Watershed Plan by fall 1998.

Tyler Creek Watershed Plan

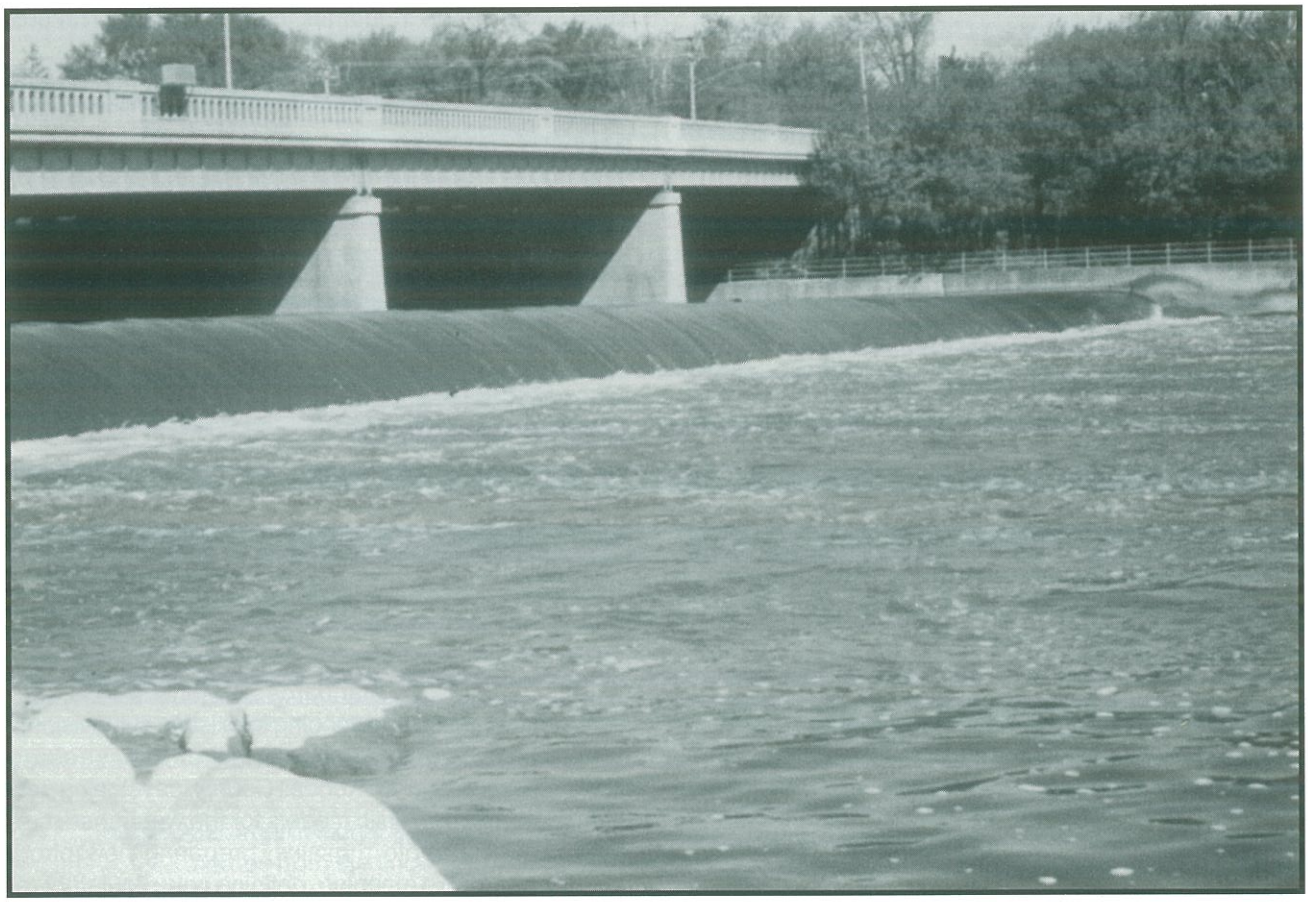
Ten different organizations working throughout the watershed have united to prepare a Vision for Tyler Creek. This document will reflect the current diverse functional values of the watershed and the conceptual action plan to improve the entire watershed.

Mill Creek Watershed Plan

The city of Geneva is spearheading an effort to preserve a large tract of land for open space, improvement of water quality for Mill Creek, wetland banking, and stormwater detention. This effort was approved by over 80% of the voters via referendum.

Ferson-Otter Creek Watershed

Activities on the Ferson-Otter Creek Watershed include a Wetland Bank for otter Creek and a Wetland Bank for Ferson Creek. The St. Charles Park District is also spearheading a geomorphological study on sections of Ferson Creek. It is also anticipated that Vision for Ferson-Otter Creek will be developed similar to that of Tyler Creek.



Algonquin Dam. May 1981.

Fox River flooding.

Lake County Stormwater Management Planning Committee

Squaw Creek Watershed Management Plan

OVERVIEW: This urbanizing watershed in the western half of the county is a priority for SMC and includes the areas of Round Lake, Mundelein, Wauconda, and Grayslake. Updated topography and aerial photography has been obtained. The development of a model is underway. The final management plan will include the Eagle Creek and Round Lake drain areas, and include natural resource protection and enhancement recommendations, flood control capital projects, and possible funding sources. The final management plan will include the Eagle Creek and Round Lake Drain areas, and include natural resource protection, and possible funding source identification.

COMPLETED: Study began in 1996; scheduled for adoption in 1999.

COST: $350,000 ($195,000 Illinois Department of Transportation, field survey from Illinois Department of Natural Resources, SMC in-kind)

Slocum Creek Watershed Management Plan

OVERVIEW: Repetitive flooding problems including the communities of Wauconda, Island Lake, Fox River Valley Gardens, Lake Barrington. Updated topography and aerial photography has been obtained. Model development is underway. Like the Squaw Creek effort, the plan will be developed with stakeholder input, and will include mitigation measures, capital projects and natural resource protection recommendations.

COMPLETED: Study began in 1996; scheduled for adoption in 1999.

COST: $108,000 (Slocum Drainage District, SMC)

Land Acquisition Program

The Lake County Forest Preserve District has actively pursued a program of open land, wetland and floodplain purchase in the Fox River Watershed. To date 4500 areas of land adjacent to the River and its tributaries have been acquired by the District.

Poplar Creek Watershed - Project Location

Office of Water Resources

1 POPLAR CREEK LEVEE (ELGIN)

Metropolitan Water Reclamation District

2 OAK HILL PARK RESERVOIR (STREAMWOOD)

3 DOLPHIN PARK RESERVOIR (STREAMWOOD)

4 HILLSIDE PARK RESERVOIR (STREAMWOOD)

Poplar Creek Watershed Project Status

Projects of the Office of Water Resources

1 POPLAR CREEK LEVEE

LENGTH: 1400 feet
BENEFITED AREA: 102 residential properties; 28 businesses; City of Elgin
COST: Construction - $750,000 (Estimate, OWR)
LAND - $250,000 (Estimate, Elgin)
MAINTENANCE: City of Elgin
STATUS: Inactive

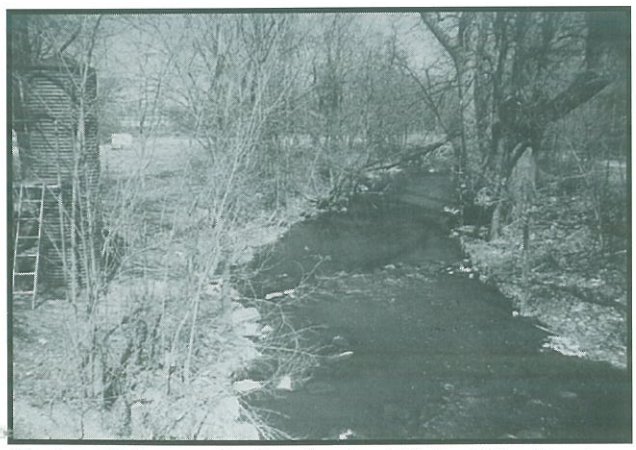
Projects of the Metropolitan Water Reclamation District

2 OAK HILL PARK RESERVOIR

FLOOD STORAGE: 77 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - $353,500 (MWRDGC) 34 acres of land donated by Village. Estimated Value $340,000 (1976)
MAINTENANCE: Streamwood, Streamwood Park District
STATUS: Completed in 1974

3 DOLPHIN PARK RESERVOIR

FLOOD STORAGE: 77 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - $223,100 (MWRDGC) 33 acres of land donated by Village
MAINTENANCE: Streamwood, Streamwood Park District
STATUS: Completed in 1973



Gaging station on Poplar Creek at Elgin. Villa Street. April 1986.

4 HILLSIDE PARK RESERVOIR

FLOOD STORAGE: 35 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - $81,400 (MWRDGC) 18 acres of land donated by Village Estimated Value $180,000 (1976)
MAINTENANCE: Streamwood, Streamwood Park District
STATUS: Completed in 1973

Poplar Creek Watershed Program Status

Land Protection Program

Soil Erosion and Sedimentation Control Ordinances have been enacted throughout the Poplar Creek Watershed which includes Barrington Hills, South Barrington, Hoffman Estates, Schaumburg, Hanover Park, Streamwood, Bartlett, Elgin, Inverness, and Unincorporated Cook County.

These Ordinances will control erosion and sedimentation from developing areas in the watershed to assure that excessive sediment does not find its way into the storm water cponveyance systems. Procedures and Standards For Urban Soil Erosion and Sedimentation for Illinois was revised in 1988 by the Association of Illinois Soil and Water Conservation Districts. In 1990, they also developed the Illinois Urban Soil Erosion and Sedimentation Control Field Manual for use by Inspectors and other Field Personnel.

The Soil and Water Conservation Districts are conducting seminars for counties, municipalities, developers, and consultants.

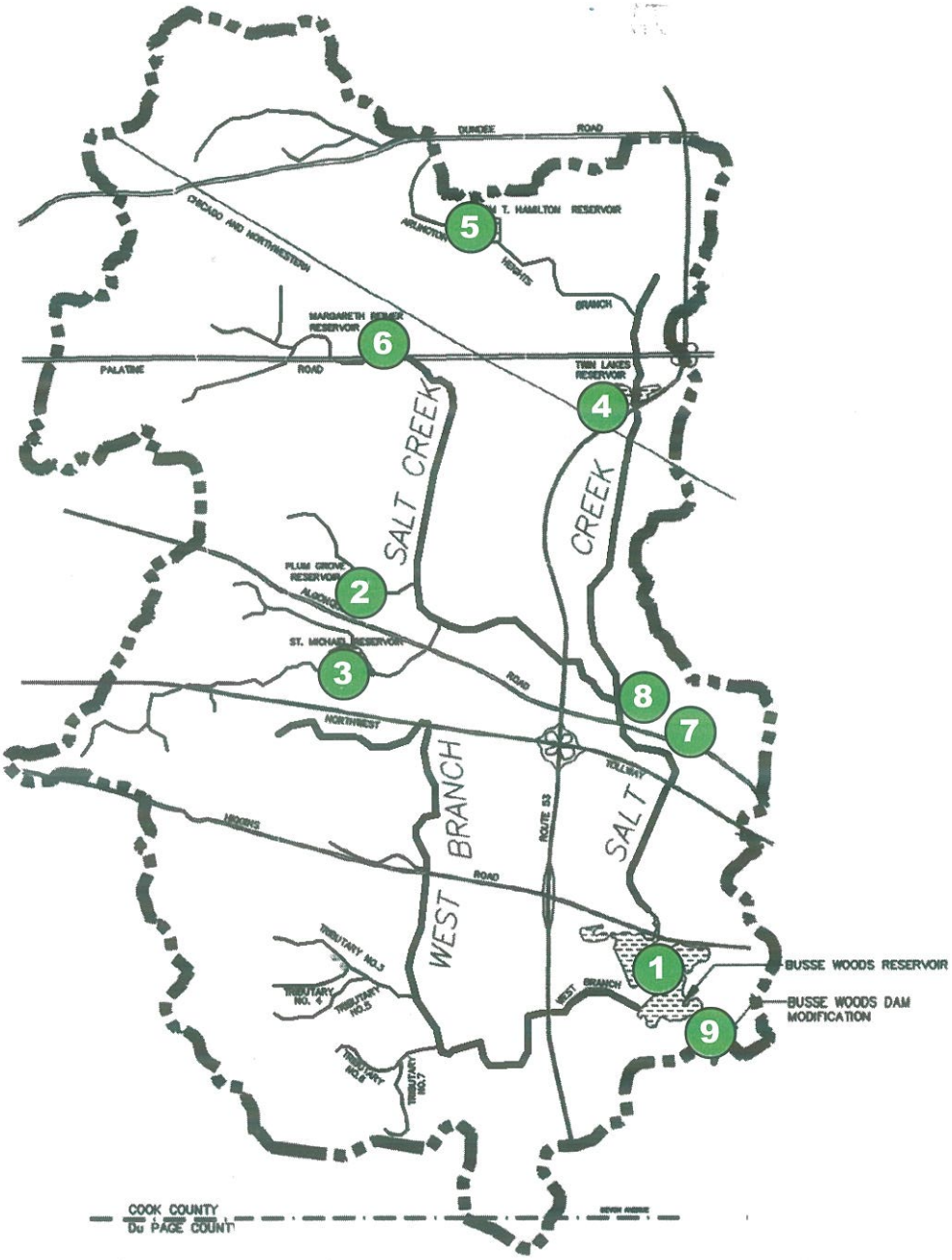
Floodplain Regulations

The Illinois Department of Natural Resources, Office of Water Resources regulates the floodways throughout the Poplar Creek Watershed in Illinois. Any construction prposed within the floodway areas must be permitted by the OWR, and must not have significant adverse impacts.

Wetland and Open Space Acquisition

Communities in the Poplar Creek Watershed are actively acquiring and preserving open space and wetland to meet local needs. A green belt is planned to link municipalities with existing Cook County Forest Preserve District holdings. Approximately 435 acres of stream corridor is required for this need.

Upper Salt Creek Watershed - Project Locations



Natural Resources Conservation Service

1 BUSSE WOODS RESERVOIR (COOK CO. FOREST PRESERVE)

2 PLUM GROVE RESERVOIR (PALATINE)

3 ST. MICHAEL RESERVOIR (SCHAUMBURG)

4 TWIN LAKES RESERVOIR (PALATINE)

5 TOM T. HAMILTON RESERVOIR (PALATINE)

6 MARGRETH RIEMER RESERVOIR (PALATINE)

7 REACH F, PHASE I CHANNEL IMPROVEMENT (ROLLING MEADOWS)

8 REACH F, PHASE 2 CHANNEL IMPROVEMENT (ROLLING MEADOWS)

Office of Water Resources

9 BUSSE WOODS DAM MODIFICATION (COOK CO. FOREST PRESERVE)

Upper Salt Creek Watershed Project Status

USDA NRCS

Projects of the Natural Resources Conservation Service

1 BUSSE WOODS RESERVOIR

FLOOD STORAGE: 3,940 acre-feet
FLOOD PROTECTION TO: Elk Grove Village, Wood Dale, Addison, Villa Park
COST: Construction - Flood Control - $5,964,000 (OWR) plus $2,074,000 (NRCS) Recreation - $7,928,000 $3,963,000 (NRCS) $3,965,000 (CCFPD, OWR)
LAND - $14,000,000 (Estimated Value, Cook County Forest Preserve District)
MAINTENANCE: Cook County Forest Preserve District, Illinois Office of Water Resources
STATUS: Completed in 1978

2 PLUM GROVE RESERVOIR (STR. 2)

FLOOD STORAGE: 218 acre-feet
FLOOD PROTECTION TO: Rolling Meadows, Schaumburg
COST: Construction - Flood Control - $3,626,800 (NRCS) plus $213,200 (MWRDGC) Recreation 1 $81,500 (NRCS) plus $64,000 (Palatine Park District) plus $15,000 (Palatine Township) plus $4,500 (Village of Palatine)
LAND - 146 acres, $2,790,000 (MWRDGC)
MAINTENANCE: Palatine Park District, MWRDGC
STATUS: Completed in 1985

3 ST. MICHAEL RESERVOIR (Str. 3)

FLOOD STORAGE: 407 acre-feet
FLOOD PROTECTION TO: Schaumburg, Rolling Meadows
COST: Construction - $3,504,300 (NRCS) plus $ 559,400 (MWRDGC)
LAND - 167 acres, $2,100,000 (MWRDGC)
MAINTENANCE: Catholic Cemeteries, MWRDGC
STATUS: Completed in 1986

4 TWIN LAKES RESERVOIR (STR. 4)

FLOOD STORAGE: 429 acre-feet
FLOOD PROTECTION TO: Palatine, Arlington Heights, Rolling Meadows

Salt Creek Channel Improvement.

COST: Construction - Flood Control - $3,261,300 (NRCS) plus $164,800 (MWRDGC)
LAND - 32 acres, $1,400,000 (MWRDGC) plus 47 acres from Village of Palatine, $1,175,000 (Estimated Value)
RECREATION: Provided by Salt Creek Rural Park District.
MAINTENANCE: MWRDGC,Salt Creek Rural Park District
STATUS: Completed in 1986

5 TOM T. HAMILTON RESERVOIR (STR. 5)

FLOOD STORAGE: 537 acre-feet
FLOOD PROTECTION TO: Palatine, Arlington Heights, Rolling Meadows
COST: Construction - $ 5,633,000 (NRCS), $51,205 (MWRDGC)
LAND - 90 acres, $1,448,000 (MWRDGC)
RECREATION—Provided by Palatine Park District.
MAINTENANCE: Palatine Park District, MWRDGC
STATUS: Completed in 1981

6 MARGRETH RIEMER RESERVOIR (STR. 6)

FLOOD STORAGE: 572 acre-feet
FLOOD PROTECTION TO: Palatine, Rolling Meadows
COST: Construction - $7,220,700 (NRCS), $92,000 (MWRDGC)
LAND - 90 acres, $2,220,000 (MWRDGC)
MAINTENANCE: Palatine Park District, MWRDGC
STATUS: Completed in 1983

7 REACH F PHASE I CHANNEL IMPROVEMENT

DESCRIPTION: Improve channel to enhance flows for 0.38 miles (South of Phase II)
FLOOD PROTECTION TO: Rolling Meadows
COST: Construction cost included in Busse Woods Reservoir Contract.
LAND RIGHTS: Obtained by Office of Water Resources. $19,000 R.O.W.
MAINTENANCE: MWRDGC
STATUS: Completed in 1981

8 REACH F PHASE 2 CHANNEL IMPROVEMENT

DESCRIPTION: Improve channel to enhance flows for 0.38 miles (from Algonquin Road South)
FLOOD PROTECTION TO: Rolling Meadows
COST: Construction - $780,600 (Estimate, NRCS)
LAND RIGHTS - Rolling Meadows
MAINTENANCE: Rolling Meadows
STATUS: Completed in 1991

Structure 86, view to south. August 15, 1987. Addison Creek.

Projects of the Office of Water Resources

9 BUSSE WOODS DAM MODIFICATION

FLOOD STORAGE: Modification to increase useable volume for the more frequent events.

FLOOD PROTECTION TO: Elk Grove Village, Itasca, Wood Dale, Elmhurst, Addison, Villa Park, Oak Brook

COST: Construction - $610,000 (OWR)

STATUS: Inactive, pending approval

Upper Salt Creek Watershed Program Status

Land Protection Program

Soil erosion and sedimentation control ordinances have been enacted in the Upper Salt Creek Watershed which includes the communities of Inverness, Hoffman Estates, Palatine, Rolling Meadows, Schaumburg, Elk Grove, and unincorporated Cook County. These ordinances will control erosion losses from agricultural and developing areas in the watershed to assure that excessive sediment does not find its way into the stormwater conveyance systems.

"Procedures and Standards for Urban Soil Erosion and Sedimentation for Illinois" was revised in 1988 by the Association of Illinois of Soil & Water Conservation Districts. In 1990 it also developed the "Illinois Urban Soil Erosion and Sedimentation Control Field Manual" for use by inspectors and other field personnel.

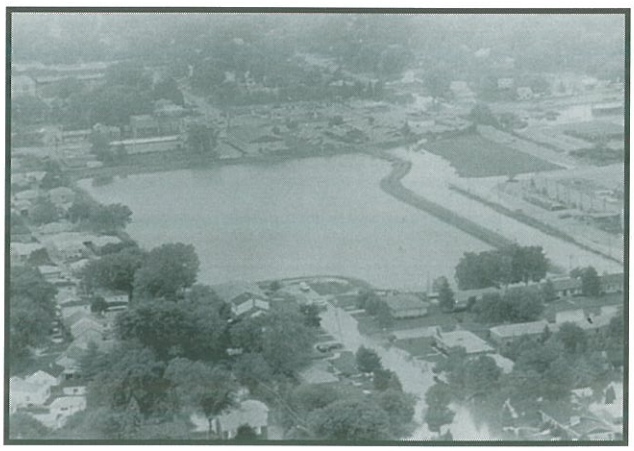
The Soil and Water Conservation Districts are conducting seminars for counties, municipalities, developers, and consultants.

Stream Preservation Program

The Illinois Office of Water Resources has implemented a watershed-wide stream preservation program. The program outlines annual inspection and maintenance procedures.

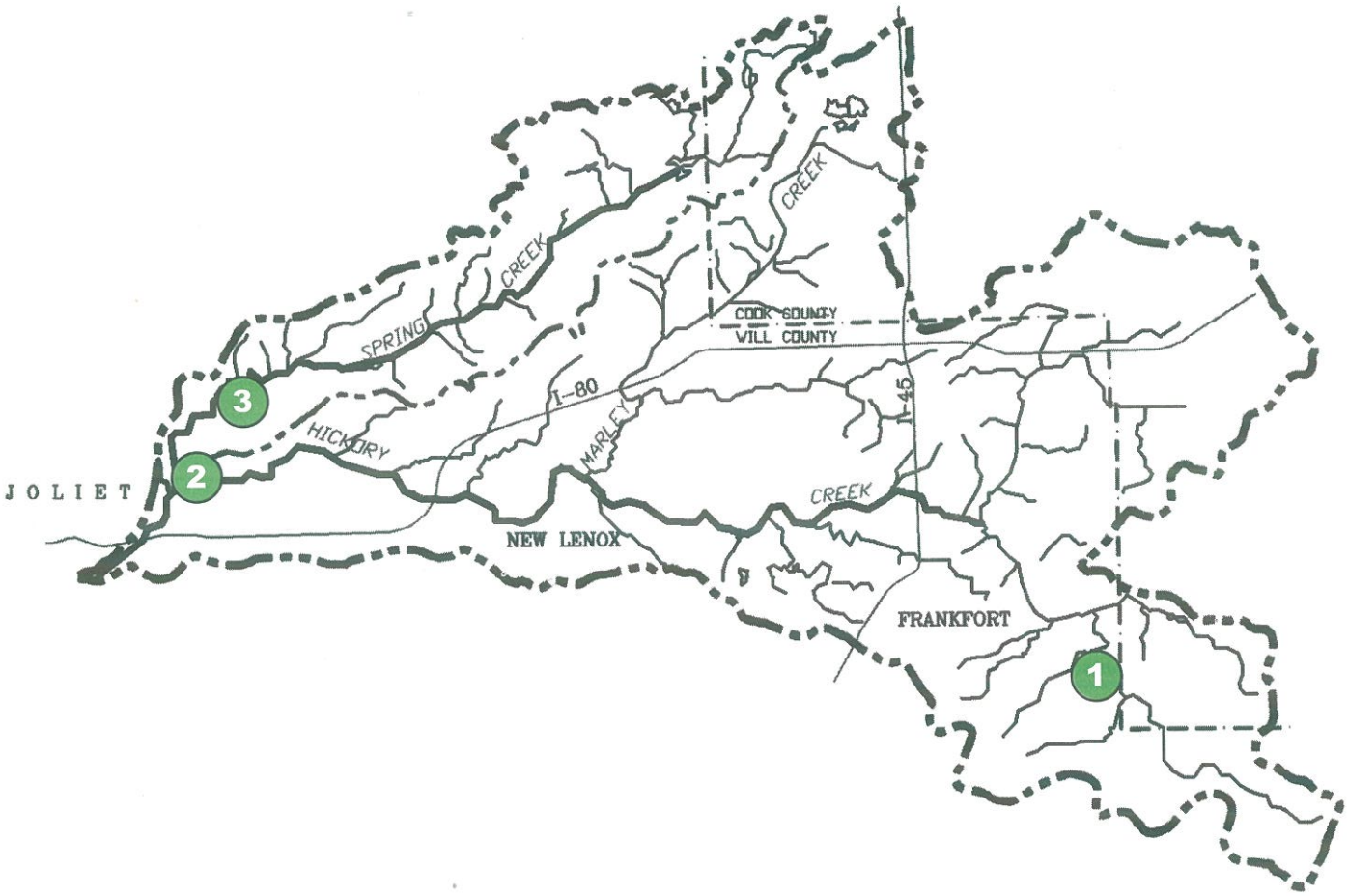
Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the Upper Salt Creek Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts.



Structure 106, view from the east. August 15, 1987. Silver Creek. Salt Creek.

Hickory and Spring Creek Watershed
Project Locations



Office of Water Resources
1 SAUK TRAIL RESERVOIR
2 HICKORY AND SPRING CREEK CHANNEL
3 DRAPER AVENUE CULVERT

Hickory Creek Watershed Project Status

Projects of the Office of Water Resources

1 SAUK TRAIL RESERVOIR

FLOOD STORAGE: 1300 acre-feet
FLOOD PROTECTION TO: Will County
COST: Construction - $1,060,000 (OWR)
MAINTENANCE: Will County Forest Preserve District
STATUS: Completed in 1980

2 HICKORY AND SPRING CREEK CHANNEL IMPROVEMENTS

PROJECT: 7 miles of channel improvement (0.8 mile constructed to-date)
FLOOD PROTECTION TO: Joliet
COST: Construction - $30,940,000 (OWR)
LAND: $240,000 (Joliet)
MAINTENANCE: Joliet
STATUS: Partially completed

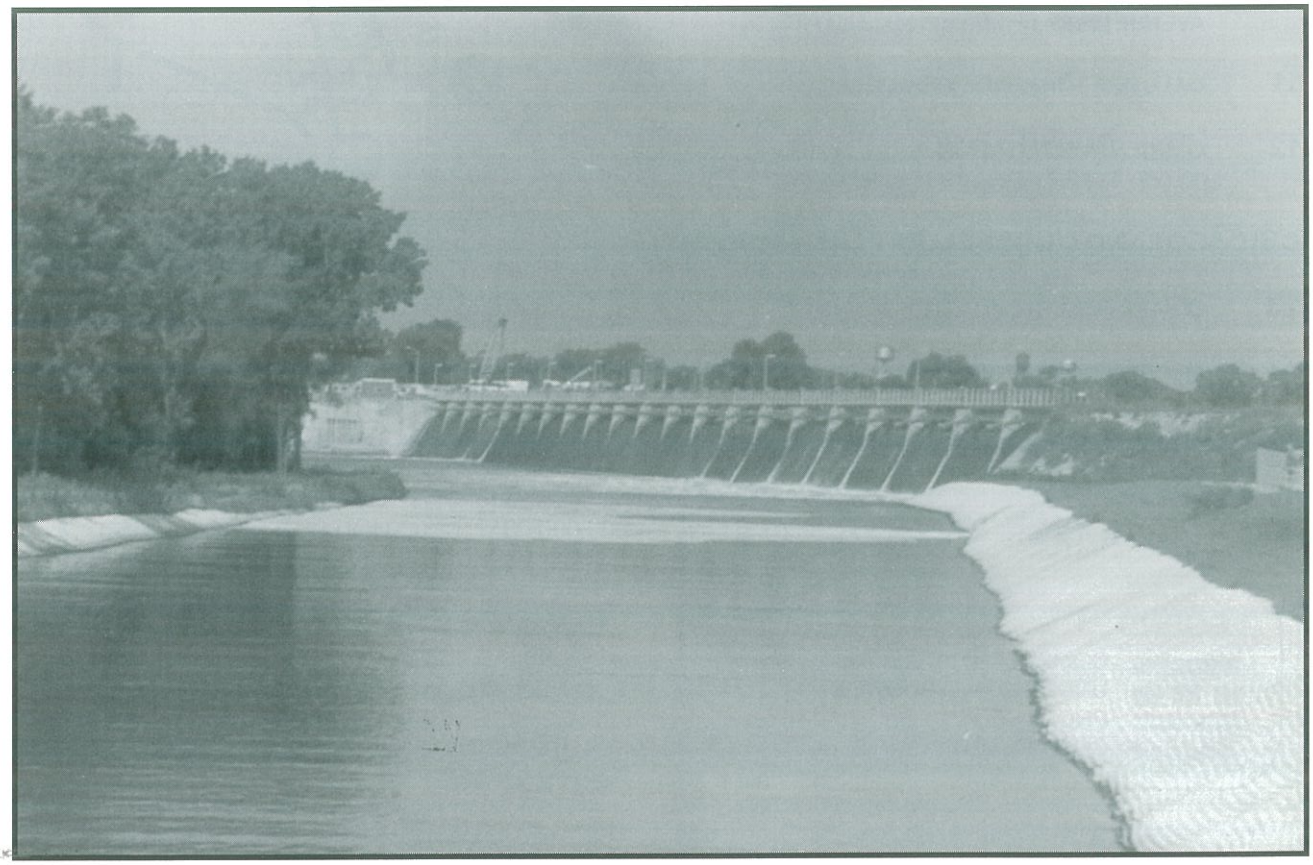
3 DRAPER AVENUE CULVERT

PROJECT: Replacement of Draper Avenue Culvert over Spring Creek.
FLOOD PROTECTION TO: Joliet
COST: Construction - $360,000 (OWR), $1,220,000 (IDOT)
STATUS: Under Construction (IDOT)

Hickory Creek Watershed Program Status

Floodplain Regulations

The Illinois Office of Water Resources regulates the floodways throughout the Hickory Creek Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the OWR and must not have significant adverse impacts.



Mouth of Hickory Creek at Brandon Road Lock and Dam on Des Plaines River.

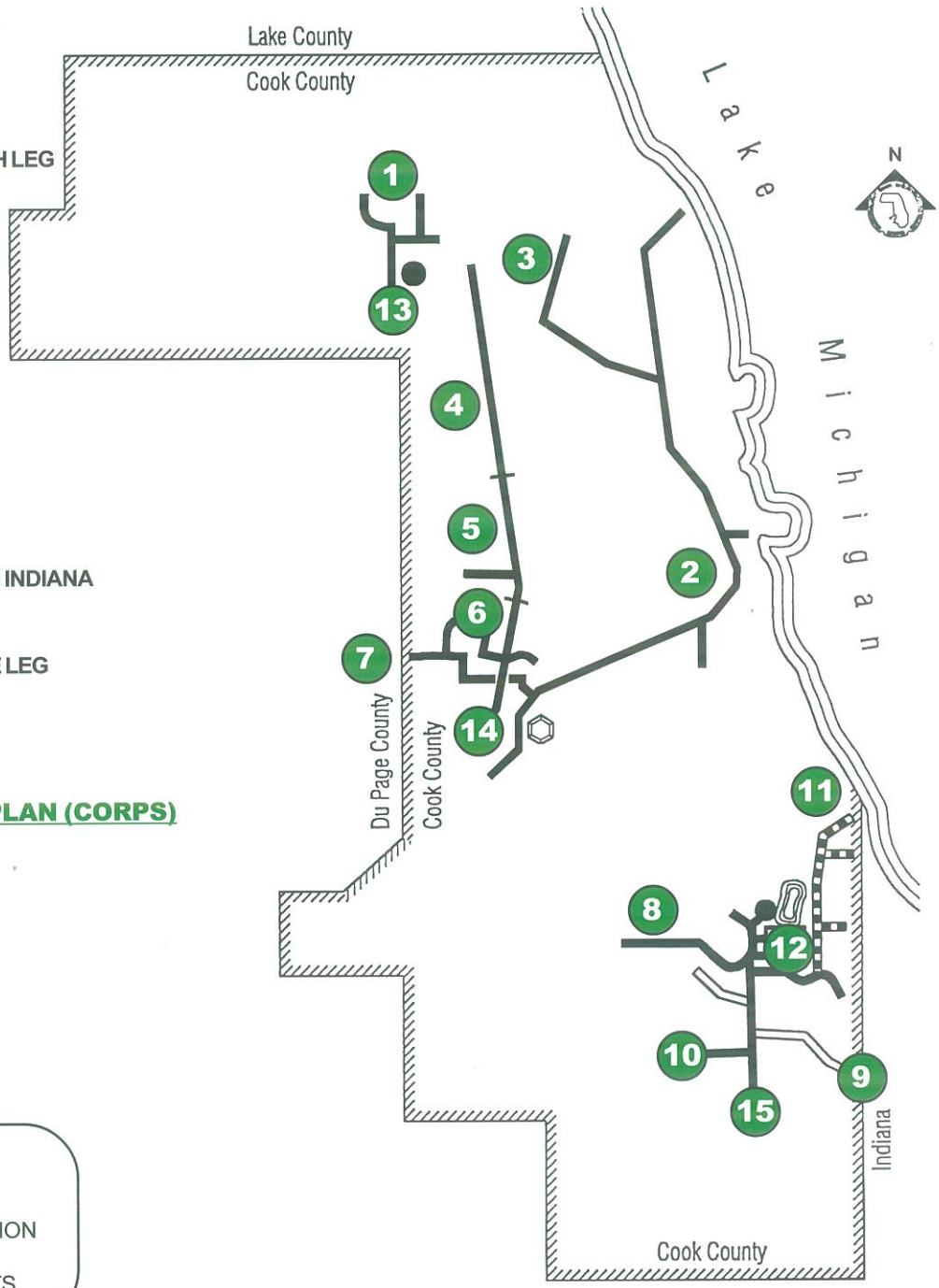
Central Basin Watershed Tunnel and Reservoir Project (TARP) Chicagoland Underflow Plan (CUP) - Project Locations

PHASE I TARP SYSTEMS

1	UPPER DES PLAINES SYSTEM
2	MAINSTREAM SYSTEM
3	MAINSTREAM, NORTH BRANCH LEG
4	DES PLAINES, NORTH LEG
5	DES PLAINES, MIDDLE LEG
6	DES PLAINES, SOUTH LEG
7	DES PLAINES, WEST LEG
8	CALUMET, CAL-SAG LEG
9	CALUMET, LITTLE CAL LEG
10	CALUMET, 140TH STREET AND INDIANA AVENUE LEGS
11	CALUMET, TORRENCE AVENUE LEG
12	O'BRIEN PUMP STATION

CHICAGOLAND UNDERFLOW PLAN (CORPS)

13	O'HARE RESERVOIR
14	McCOOK RESERVOIR
15	THORNTON RESERVOIR



LEGEND

- COMPLETED
- UNDER CONSTRUCTION
- PROPOSED
- COOK COUNTY LIMITS

Central Basin Watershed Tunnel and Reservoir Project (TARP) Chicagoland Underflow Plan (CUP) Project Status

Projects of the Metropolitan Water Reclamation District

1 UPPER DES PLAINES SYSTEM
TRIBUTARY AREA: 13.7 square miles
TOTAL TUNNEL LENGTH: 6.6 miles
FLOOD STORAGE: 212.8 acre-feet
TOTAL CONSTRUCTION COST: $64,000,000

TOTAL MAINSTREAM SYSTEM SUMMARY
TRIBUTARY AREA: 219.9 square miles
TOTAL TUNNEL LENGTH: 40.5 miles
FLOOD STORAGE: 3,170 acre-feet
TOTAL CONSTRUCTION COST:
$1,142,000,000
STATUS: Completed in 1985

2 MAINSTREAM TARP SYSTEM
TUNNEL LENGTH: 31.2 miles
CONSTRUCTION COST: $974,000,000
STATUS: Completed in 1985

3 NORTH BRANCH LEG MAINSTREAM TARP SYSTEM
TUNNEL LENGTH: 9.3 miles
CONSTRUCTION COST: $168,000,000
STATUS: Completed

DES PLAINES SYSTEM SUMMARY
TRIBUTARY AREA: 34.8 square miles
TOTAL TUNNEL LENGTH: 25.6 miles
FLOOD STORAGE: 1,267 acre-feet
TOTAL CONSTRUCTION COST: $469,000,000
STATUS: 66% Complete

4 NORTH LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 8.7 miles
CONSTRUCTION COST: $141,000,000
STATUS: Completion in 1999

5 MIDDLE LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 6.6 miles
CONSTRUCTION COST: $157,000,000
STATUS: Completed in 1993

6 SOUTH LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 6.8 miles
CONSTRUCTION COST: $157,000,000
STATUS: Completed in 1993

7 WEST LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 3.5 miles
CONSTRUCTION COST: $23,000,000
STATUS: Completed in 1988

CALUMET SYSTEM SUMMARY
TRIBUTARY AREA: 90.8 square miles
TOTAL TUNNEL LENGTH: 36.5 miles
FLOOD STORAGE: 1,638 acre-feet
TOTAL CONSTRUCTION COST:
$756,000,000
STATUS: 57% Complete

8 CAL SAG LEG CALUMET TARP SYSTEM
TUNNEL LENGTH: 9.2 miles
CONSTRUCTION COST: $153,000,000
STATUS: Completed in 1986

9 LITTLE CAL LEG CALUMET TARP SYSTEM
TUNNEL LENGTH: 7.7 miles
CONSTRUCTION COST: $191,000,000
STATUS: Completion in 2004

10 140TH STREET AND INDIANA AVENUE LEGS, CALUMET
TUNNEL LENGTH: 11.5 miles
CONSTRUCTION COST: $195,000,000
STATUS: Completed in 1996

11 TORRENCE AVENUE LEG, CALUMET TARP SYSTEM
TUNNEL LENGTH: 7.9 miles
CONSTRUCTION COST: $174,000,000
STATUS: Completion in 2002

12 O'BRIEN PUMP STATION
CONSTRUCTION COST $54,000,000
STATUS: Completion in 2005

MWRD Fact ...

Each year, thousands of visitors tour TARP's Mainstream Pumping station, located in Hodgkins, Illinois, 300 feet below the surface.

The Mainstream Pumping Station boasts 6 pumps: 4 with a combined capacity of 710 million gallons per day and two with a combined capacity of 316 million gallons per day.

Projects of the U.S. Army Corps of Engineers

13 CUP O'HARE RESERVOIR

FLOOD STORAGE: 1,050 acre-feet
TOTAL COST: CONSTRUCTION (Estimated) $36.2 million (COE), 4.4 million (MWRDGC) Estimated, May 1997
LAND - 93.7 acres, $4.4 million (MWRDGC)
MAINTENANCE: MWRDGC
STATUS: Completed in 1998

Chicago Underflow Plan - O'Hare Reservoir

(WRDA 1986)
The Corps is constructing a 350-million gallon reservoir to alleviate sewer backup flooding in portions of Des Plaines, Mount Prospect and Arlington Heights. The project consists of constructing the reservoir; relocating Higgins Creek; relocating utility lines (five oil and gas lines); constructing connections to the already completed tunnels in the Tunnel and Reservoir Plan (TARP) system; installing groundwater controls (reservoir liner, under drainage system); installing an aeration system and washdown system; and performing wetland mitigation to compensate for wetlands disturbed during construction. The local sponsor is the Metropolitan Water Reclamation District (MWRDGC).

14 CUP-McCOOK RESERVOIR

FLOOD STORAGE: 32l,100 acre-feet
TOTAL COST: CONSTRUCTION - $363,300,000 (COE, MWRDGC) (Oct. 1996 Estimate)
LAND Approx. 140 acres, $6.3 million (MWRDGC)
MAINTENANCE: MWRDGC
STATUS: Completion in 2014

15 THORNTON COMPOSITE RESERVOIR

(To Be Combined With NRCS Reservoir, See No. 7 on page 40)
FLOOD STORAGE: 14,600 acre-feet
TOTAL COST: Construction 1 $76,700,000 (1986 Estimate), (COE, MWRDGC), LAND $5 million (MWRDGC)
MAINTENANCE: MWRDGC
STATUS: Completion in 2013

Salt Creek, Roosevelt Road at Route 83. August 1987

Central Basin Watershed Tunnel and Reservoir Project (TARP) Chicagoland Underflow Plan (CUP) Program Status

TARP consists of two phases, the tunnels (Phase I), which are a water pollution control project, and the reservoirs (Phase II), which are associated primarily with urban flood control.

TARP goals are listed below:

- **Prevent** backflows into Lake Michigan.
- **Eliminate** Waterway pollution caused by combined sewer overflow.
- **Provide** an outlet for flood waters from combined areas.
- **Comply** with Federal and State environmental laws.
- **Accomplish** results in the most cost effective manner.

TARP Tunnels

The TARP tunnels consist of 109 miles of tunnels ranging in size between 9 feet and 33 feet in diameter constructed 150 to 350 feet below grade in solid rock. The tunnels will intercept combined wastewater from the 645 existing overflow points by means of 252 drop shafts and convey it to huge pumping stations which will pump these captured flows to treatment plants. All captured combined sewage will be treated prior to discharge into the area's waterways, which will result in an approximately 85 percent reduction of their pollution potential. The estimated cost of Phase I is $2.44 billion.

As this element of TARP is primarily a pollution control project, its construction cost was initially funded through USEPA Clean Water Act grants covering 75% of eligible costs until that program was phased out. Since 1987, construction costs have been primarily funded with low-interest loans made by the IEPA under the State's Revolving Loan Fund Program.

As of April 1998, 93 per cent of the TARP tunnel projects have been awarded. The cost of projects under construction or completed is $2.16 billion. The remaining tunnels have an estimated cost of $252 million.

TARP Reservoirs

The flood control benefits of TARP will be minimal until the reservoirs become operational. Three reservoirs were originally planned with a total storage capacity of 127,550 acre-feet (41.5 billion gallons). Immediately after a rainstorm, the contents of the reservoirs will be pumped to major water reclamation plants for treatment prior to being discharged to the local waterways. Since these are primarily flood control projects, authority for their implementation was assigned to the U.S. Army Corps of Engineers by Congress in 1976, with the MWRDGC being the local sponsor.

The Corps reevaluated the TARP program on the basis of determination of the Federal interest rather than the goals previously established. The reevaluation was published as two separate reports, one covering the Upper Des Plaines System (O'Hare), and the other covering the Mainstream System (McCook Reservoir) and the Calumet System (Thornton Reservoir). The plan developed by the Corps to meet the National Economic Development (NED) requirements is called the Chicagoland Underflow Plan.

Chicagoland Underflow Plan (CUP)

CUP consists 47,850 acre-feet (15.5 billion gallons) of storage in three reservoirs.

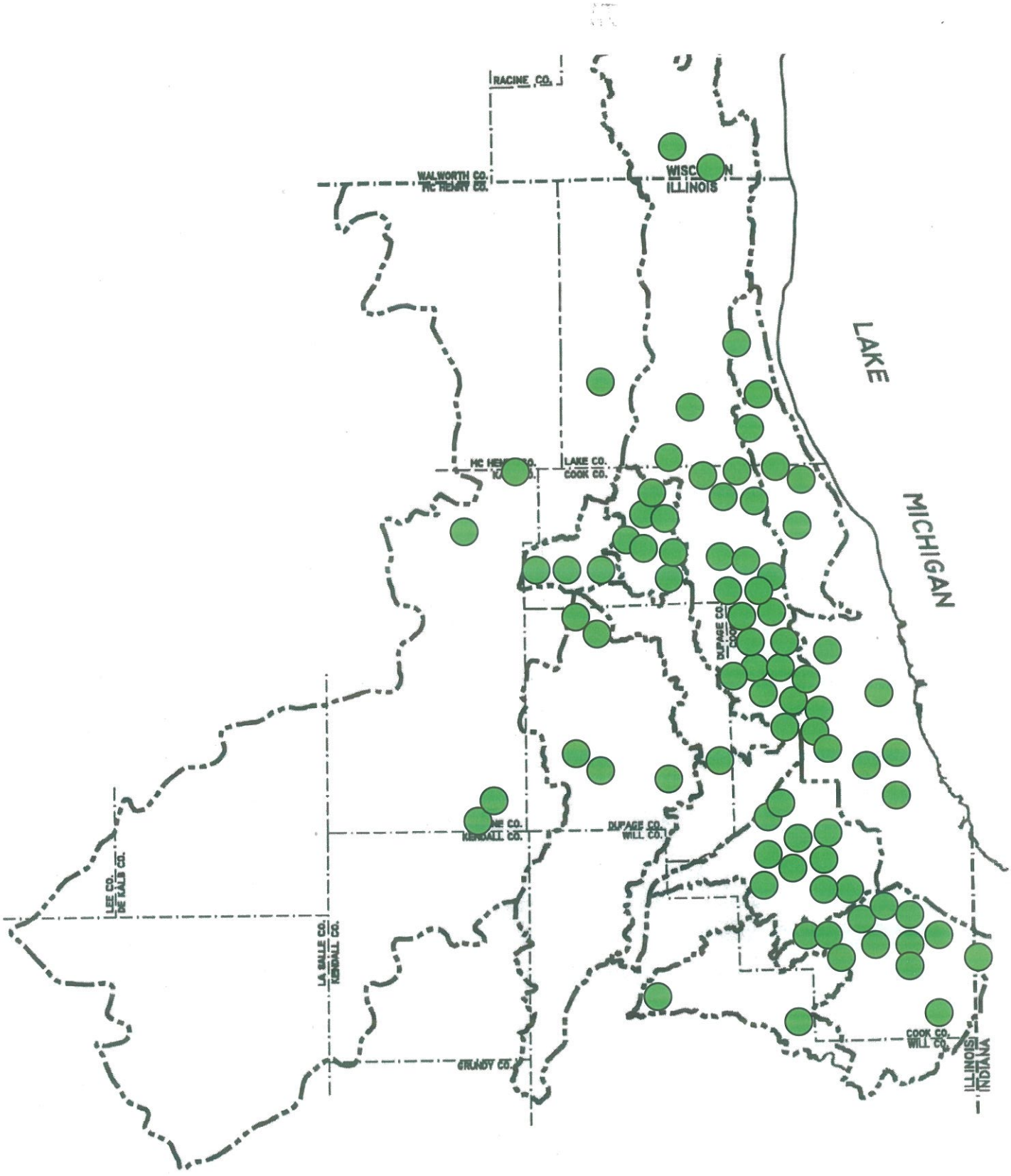
The O'Hare reservoir, with a storage capacity of 1050 acre-feet (330 million gallons), was authorized for construction under the 1986 Water Resources Development Act. Construction began in 1990 and was completed in June 1998.

The Thornton and McCook Reservoirs were authorized for construction under the 1988 Water Resources Development Act.

The Thornton Composite Reservoir will provide storage for both the TARP tunnels and the Thorn Creek Watershed. The total storage capacity will be 24,200 acre-feet (7.9 billion gallons). In the initial phase the Thornton Transitional Reservoir with a storage capacity of 9,600 acre-feet (3.1 billion gallons) will be constructed for storage of overflows from Thorn Creek. Subsequently the Thornton Transitional Reservoir will be decommissioned upon construction of the Thornton Composite Reservoir for storage of 14,600 acre-feet (4.8 billion gallons) of flood waters collected by TARP within combined sewer areas served by the Calumet TARP Tunnel system along with the 9,600 acre-feet of Thorn Creek overflows.

The McCook Reservoir will provide storage for floodwaters collected by TARP within combined sewered areas served by the Mainstream TARP Tunnel System. The total storage capacity will be 32,100 acre-feet (10.5 billion gallons), and will be implemented in three stages.

Watersheds of the Chicago Metropolitan Area



Floodwater Management Projects

Table 3

Structural ProgramSummary By Watershed

		North Branch Chicago River	Des Plaines River	Cal-Sag CHannel	Little Calumet River	DuPage River	Fox River	Poplar Creek	Upper Salt Creek	Hickory Creek	TOTAL
Reservoirs	Planned	3,868	2,975	33	9,600	0	0	0	0	0	16,476
Volume In	Constructed	3,600	5,903	359	3,744	3,075	360	208	6,103	1,300	24,652
Acre-feet	TOTAL	7,468	8,878	392	13,344	3,075	360	208	6,103	1,300	41,128
Channel	Planned	0	2.55	0	4.7	0	0.76	0	0	5.86	13.87
Modifications:	Constructed	0	4.2	13.2	4.75	4.1	1.84	0	0.76	1.14	29.99
Length in Miles:	TOTAL	0	6.75	13.2	9.45	4.1	2.6	0	0.76	7.00	43.86
Construction:	Planned	$20,786	$17,575	$0	$106,885	$0	$4,195	$750	$610	$35,130	$185,931
In $1,000's	Constructed	$21,347	$102,362	$11,276	$29,181	$6,740	$5,069	$658	$33,145	$12,230	$222,008
	TOTAL	$42,133	$119,937	$111,276	$136,066	$6,740	$9,264	$1,408	$33,755	$47,360	$407,939
Land Costs:	Planned	$2,992	$2,861	$0	$20,723	$0	$0	$250	$0	$210	$27,036
In $1,000's	Constructed	$11,527	$22,030	$1,016	$8,140	$1,345	$719	$520	$25,132	$30	$70,459
	TOTAL	$14,519	$24,891	$1,016	$28,863	$1,345	$719	$770	$25,132	$240	$97,495
Total Costs In $1,000's		$56,652	$144,828	$12,292	$164,929	$8,085	$9,983	$2,178	$58,887	$47,600	$505,434

PART III

Where To Go For More Information

FLOOD CONTROL PROJECTS OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Metropolitan Water Reclamation District of Greater Chicago
Flood Control Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-3240

FLOOD CONTROL PROJECTS OF THE OFFICE OF WATER RESOURCES

Illinois Department of Natural Resources, Office of Water Resources
Division of Planning
3215 Executive Park Drive
Springfield, Illinois 62703-3215
(217) 782-4636

FLOOD CONTROL PROJECTS OF THE P.L. 566 PROGRAM

U.S. Department of Agriculture, Natural Resources Conservation Service
http://www.il.nrcs.usda.gov

New Lenox Field Office
Will-South Cook Counties
1201 South Gougar Road
New Lenox, IL 60451
(815) 462-3106

St. Charles Field Office
Kane-DuPage Counties
545 Randall Road
St. Charles, Illinois 60174
(630) 584-8240

Woodstock Field Office
North Cook, Lake, McHenry Counties
1143 No. Seminary, P.O.Box 168
Woodstock, IL 60098
(815) 338-0049

FLOOD CONTROL PROJECTS OF THE CORPS OF ENGINEERS

U.S. Army Corps of Engineers, Chicago District
111 North Canal Street
Chicago, Illinois 60606
(312) 353-6400

STREAM PRESERVATION PROGRAM

Illinois Department of Natural Resources, Office of Water Resources
Division of Planning
3215 Executive Park Drive
Springfield, Illinois 62703-3215
(217) 782-4636

FLOODPLAIN REGULATIONS

Illinois Department of Natural Resources, Office of Water Resources
Division of Water Resource Management
Chicago Engineering Studies Unit
201 West Center Court
Schaumburg, Illinois 60196-1096
(708) 705-4341

FLOOD MITIGATION PROGRAMS

Illinois Department of Natural Resources, Office of Water Resources
Flood Mitigation Regional Stormwater Programs
310 South Michigan, Room 1606
Chicago, Illinois 60604
(312) 793-3123

Lake County Stormwater Management Commision
Ward Miller, Director
333-B Peterson Road
Libertyville, Illinois 60048
(847) 918-5260, FAX (847) 918-9826
http://www.co.lake.il.us/

LAND PROTECTION PROGRAMS

Will-South Cook County Soil and Water Conservation District
New Lenox Field Office
1201 South Gougar Rd.
New Lenox, IL 60451
(815) 462-3106

Lake County Soil and Water Conservation District
100 North Atkinson Road, Suite 102A
Grayslake, IL 60030-7805

North Cook Soil and Water Conservation District
899 Jay Street
Elgin, Illinois
Mail address - P.O. Box 407
Streamwood, IL 60107
(847) 468-0071

Kane-DuPage Soil and Water Conservation District
545 Randall Road
St. Charles, Illinois 60174
(630) 584-7961

McHenry Soil and Water Conservation District
1143 North Seminary Avenue
Woodstock, Illinois 60098
(815) 338-0099

Northeastern Illinois Planning Commission
222 S. Riverside Plaza, Suite 1800
Chicago, IL 60606
(312) 454-0400

ON-SITE STORM WATER DETENTION

Metropolitan Water Reclamation District of Greater Chicago
Local Sewer Systems Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-3250

Lake County Stormwater Management Commision
Ward Miller, Director
333-B Peterson Road
Libertyville, Illinois 60048
(847) 918-5260, FAX (847) 918-9826
http://www.co.lake.il.us/

COUNTY STORMWATER MANAGEMENT COMMITTEES/AGENCIES

Cook County Stormwater Management Committee
Ed Rochford, Mayor
City of Prospect Heights
1 North Elmhurst Road
Prospect Heights, IL 60070-1509

DuPage County Stormwater Management Division
Tony Charlton, Chief Engineer
421 North County Farm Road
Wheaton, Illinois 60187
(630) 682-7130

Kane County Dept. of Environmental Management
Tim Harbaugh, Director
719 South Batavia Avenue
Geneva, Illinois 60134
(630) 232-5971

Lake County Stormwater Management Commision
Ward Miller, Director
333-B Peterson Road
Libertyville, Illinois 60048
(847) 918-5260, FAX (847) 918-9826
http://www.co.lake.il.us/

McHenry County Stormwater Management Division
Sue Ehardt, Deputy Director of Planning and Development
McHenry County Dept. of Planning and Development
2200 N. Seminary Ave., Annex Bldng A
Woodstock, IL 60098
(815) 334-4560

Will County Stormwater Management Division
Gordon McCluskey, Committee Chair
Will County Stormwater Management Committee
501 Ella Avenue
Joliet, IL 60429
(815) 727-8430

TUNNEL AND RESERVOIR PLAN (TARP)

Metropolitan Water Reclamation District of Greater Chicago
Sewer Design Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-4010

CHICAGO UNDERFLOW PLAN (CUP)

U.S. Army Corps of Engineers Chicago District
111 North Canal Street
Chicago, Illinois 60606
(312) 353-6400

FLOODPLAIN MANAGEMENT AND TECHNICAL ASSISTANCE

U.S. Army Corps of Engineers Chicago District
111 North Canal Street
Chicago, Illinois 60606
(312) 353-6400

GREENWAY PROGRAMS

Illinois Department of Natural Resources
Office of Realty and Environmental Planning
Division of Planning
524 South Second
Springfield, IL 62701-1787
(217) 782-7940

Northeastern Illinois Planning Commission
222 S. Riverside Plaza, Suite 1800
Chicago, IL 60606
(312) 454-0400

OPENLANDS PROJECT
220 S. State Street, Suite 1880
Chicago, IL 60604-2103
(312) 427-4256, FAX (312) 427-6251

ECOSYSTEM PROGRAM

Illinois Department of Natural Resources
Office of Realty and Environmental Planning
Division of Planning
524 South Second
Springfield, IL 62701-1787
(217) 782-7940

Chicago Wilderness
Des Plaines River Ecosystem
Fox River Ecosystem
Prairie Parklands
Upper DuPage Ecosystem
Liberty Prairie Foundation

WHERE TO GO FOR MORE INFORMATION
Collar Counties Stormwater Management Committees
McHenry County Planning and Development Department
220 N. Seminary Avenue
Woodstock, IL 60098
(815) 334-4560

Federal Emergency Management Agency (FEMA)
175 West Jackson Blvd, 4th floor
Chicago, IL 60604
(312) 408-5500

Glossary

Backwater: a) A rise in upstream water level caused by an increase in flow downstream. b) An upstream water level rise caused by obstructions downstream, such as ice jams or debris.

Basin (Catchment, Watershed, Tributary area): A region or area drained by a river system. The total land area that contributes runoff to any given point on a river, stream, or storm drainage system.

Biotechnical engineering: Channel or bank modification techniques that use vegetation in innovative ways in contrast to traditional bank sloping and riprap protection.

Channel: A natural or artificial waterway which periodically or continuously contains flowing water.

Community Rating System (CRS): A program developed by the Federal Emergency Management Agency to encourage -- by use of flood insurance premium reductions -- community and state activities that go beyond the basic National Flood Insurance Program requirements; the Community Rating System gives communities credit for certain activities to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance.

Confluence: The place where streams meet.

Crest: The highest water level at a given location during a flood event.

Cross-section: A plot which depicts the vertical shape of the channel in which a stream flows.

Dam: A structure built across a waterway to impound water. Dams are used to control water depths for navigation or to create space to store water for flood control, irrigation, water supply, hydropower, or other purposes.

Debris: Misplaced objects such as logs, trees and other vegetation, building wreckage, vehicles, shopping carts or dead animals carried by water in a flood (or by wind, as in a hurricane or tornado).

Design flood: The maximum amount of water for which a flood control project will offer protection. Selection is based on engineering, economic, and environmental concerns.

Discharge: Rate of flow in a river or stream measured in volume of water per unit of time

Ecosystem: Biological communities (including humans) and their environment (or watershed) treated together as a functioning system of complementary relationships, including transfer and circulation of energy and matter.

Ecosystem management: Management of the biological and physical resources of an ecosystem or watershed in an attempt to maintan the stability of its structural, functional, and economic attributes, including its normal variability.

Encroachment: Activity or construction within the floodway, including fill, new construction, substantial improvements, and other changes that impact hydrologically.

Environmental assessment: an examination of the beneficial and adverse impacts on the environment of a proposed action, such as a planned development or a water resources project, and alternative solutions.

Erosion: Displacement of soil particles on the land surface due to water or wind action.

Flood/flooding: A general and temporary condition of partial or complete inundation of normally dry land areas by the overflow of river and/or the unusual accumulation of waters from any source.

Flood control structures: Structures such as dams, dikes, levees, drainage canals, and other structures built to modify flooding and protect areas from flood waters.

Flood frequency: The frequency with which a flood of a given magnitude has the probability of recurring. For example, a 100-year frequency flood refers to a flood of a magnitude that has a one-percent chance of being equalled or exceeded in any year. Although calculation of possible recurrence is often based on historical records, there is no guarantee that a 100-year flood will occur at all or that it will not recur several times within any 100-year period.

Flood hazard: The potential for inundation that involves risk to life, health, property, and natural floodplain values.

Flood Insurance Rate Map (FIRM): An official map of a community on which the Federal Emergency Management Agency has delineated both the special hazard areas and the risk premium zones applicable to the community. FIRMs typically identify the elevation of the one-percent annual chance flood and the areas that would be inundated by that level of flooding; they are used to determine flood insurance rates and for floodplain management.

Flood insurance: The insurance coverage provided through the National Flood Insurance Program (NFIP).

Floodplain management regulations: Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances that cover, for example, floodplains, grading, and erosion control and other regulations to control future development in floodplains and to correct inappropriate development already in floodplains.

Floodplain management: A decision-making process whose goal is to achieve appropriate use of floodplains. Appropriate use is any activity or set of activities that is compatible with the risk to natural resources and human resources. The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to watershed management, emergency preparedness plans, flood control works, and floodplain management regulations.

Floodplain: Lands adjoining the channel of a river, stream, watercourse, or lake, that have been or may be inundated by floodwater during periods of high water that exceed normal bank-full elevation and other areas subject to flooding.

Floodproofing: The modification of individual structures and facilities, their sites, and their contents to protect against structural failure, to keep water out, or to reduce the damaging effects of water entry.

Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved to convey the volume and the peak discharge of the base flood without cumulatively increasing the water surface elevation more than a designated amount. The base flood is commonly the 1-percent chance flood.

Freeboard: A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for the many uncertain factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge obstructions, and the hydrological effect of urbanization of the watershed.

Gaging station: A data collection facility located on a stream where one or more variables are measured. Discharge, stage, and other variables are commonly measured.

Geographic Information System (GIS): A computerized system designed to collect, manage, and analyze large volumes of spatially referenced and associated attribute data.

Greenway: A protected linear open-space area that is either landscaped or left in its natural condition. It may follow a natural feature of the landscape such as a river or stream, or it may occur along an unused railway line or some other right of way.

Hydraulics: The applied science concerned with the behavior and flow of water in pipes, channels, structures, and the ground. Hydraulic computer models are used to simulate the effects of channels, bridges, vegetation, storage, and other physical features on the stage, or depth of flow, in a stream or storm drainage system.

Hydrology: The science dealing with the properties, distribution, and circulation of water on and below the surface of the land and in the atmosphere. Hydrologic computer models are used to simulate the effects of rainfall, infiltration, evapotranspiration, and runoff.

Land treatment measures: Measures used to reduce soil erosion and runoff of water to streams or other areas; techniques include maintenance of trees, shrubbery and vegetative cover; terracing; slope stabilization; grass waterways; and contour and strip farming.

Levee: An embankment that confines flow during high water periods, thus preventing overflow into lowlands.

Meander: Winding course of a stream or river.

Mitigation: Any action taken to permanently eliminate or reduce the long term risk to human life and property and to the negative impacts on natural and cultural resources that can be caused by natural and technological hazards.

Mouth of river: The point of discharge of a stream into another stream, lake, or the sea.

Nonstructural measures: A term originally devised to distinguish techniques that modify susceptibility to flooding (such as watershed management, land use planning, regulation, floodplain acquisition, floodproofing techniques and other construction practices, and flood warning) from methods used to control flooding, such as dams, levees, and channels.

One-percent annual chance of flood: A flood of a magnitude that has a one-percent chance of being equalled or exceeded in any given year. Often referred to as the 100-year flood or base flood, the one-percent annual chance flood is the standard most commonly used for floodplain management and regulatory purposes in the United States.

Pumping station: A structure containing one or more pumps which is used to evacuate water from one location and displace the water to another location.

Recurrence interval: The statistically derived probability of occurence of a flood event converted to a time interval (e.g. a 1% chance flood = 100 year flood). The average interval in which a flood of a given size is equalled or exceeded as an annual maximum.

Regulatory floodway: The area regulated by Federal, State, or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount.

Reservoir: A pond, lake, tank, basin or other space, which is used for storage, regulation, and control of water for flood control, power, navigation, recreation, water supply, and other purposes.

Riffle: A natural shallow flow area extending across a streambed in which the surface of flowing water is broken by waves or ripples. Typically, riffles alternate with pools along the length of a stream channel.

Riparian ecosystems: Distinct associations of soil, flora, and fauna occurring along a river, stream, or other body of water and dependent for survival on high water tables and occasional flooding.

Riparian vegetation: Hydrophytic vegetation growing in the immediate vicinity of a lake or river.

Riparian zone: The border or banks of a stream. Although this term is sometimes used interchangeably with floodplain, the riparian zone is generally regarded as relatively narrow compared to a floodplain. The area is typically subject to frequent, short duration flooding.

Runoff: Flow that is discharged from an area by stream channels or other storm drainage systems; sometimes subdivided into surface runoff and groundwater runoff.

Scour: Erosion due to flowing water; usually considered as being localized as opposed to general streambed degradation.

Slope (of channel or river): Fall per unit length along the channel centerline, sometimes represented as feet per foot or feet per mile.

Stage: The height of the water surface in a river or other body of water measured above an arbitrary datum, usually at or near the river bottom.

Stream: A body of water that may range in size from a large river to a small rill flowing in a channel. The term is sometimes applied to a natural channel or drainage course formed by flowing water whether it is occupied by water or not.

Structural measures: Measures such as dams, reservoirs, dikes, levees, floodwalls, channel alterations, high-flow diversions, spillways, and land-treatment measures designed to modify floods.

Substantial improvement: Any repair, reconstruction, or improvements of a structure, the cost of which exceeds 50 percent of the market value of the structure either before the improvement or repair is started or if the structure has been damaged and is being restored, before the damage occurred.

Substantial damage: The amount of damage to a structure caused by flooding that may be sustained before certain regulatory and flood insurance requirements are triggered. As defined in National Flood Insurance Program regulations, a building is considered substantially damaged when the cost of restoring the building would exceed 50 percent of the market value of the structure.

Thalweg: An imaginary line extending down a channel that follows the lowest elevation of the channel bottom.

Tributary: A stream or other body of water that contributes its water to another stream or body of water.

Watershed (Basin, Catchment, Tributary area): A region or area drained by a river system.

Wetlands: Those areas inundated by surface or groundwater with a frequency sufficient to support and, under normal conditions, or would support a prevalence of vegetative or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include bottomland hardwoods, swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mud flats, and natural ponds.

Cooperating Agencies and Municipalities

Addison
Addison Creek Conservancy District
Alsip
Arlington Heights
Arlington Heights Park District
Aurora
Bannockburn
Bellwood
Bloomingdale
Blue Island
Broadview
Brookfield
Buffalo Grove
Calumet City
Calumet-Union Drainage District
Chicago Heights
Chicago Ridge
City of Chicago
Cook County
Cook County Forest Preserve District
Country Club Hills
Crete
Crestwood
Deerfield Park District
Des Plaines Drainage District 2
DuPage County Stormwater Management Division
DuPage County Forest Preserve District
East Skokie Drainage District
Elgin
Elgin Sanitary District
Elk Grove
Elk Grove Park District
Elmhurst
Elmhurst Park District
Flossmoor
Ford Heights
Franklin Park
Glenview
Glenwood
Gurnee
Hanover Park
Harvey
Hazel Crest
Hazel Crest Park District
Hickory Hills
Highland Park
Highland Park Park District
Hinsdale
Hoffman Estates
Homewood
Homewood-Flossmoor Park District
Itasca
Kane-DuPage Soil & Water Conservation District
Kane County Development Dept.
Kane County Forest Preserve District
Kenosha County, Wisconsin
Kenosha County, Wisconsin Soil & Water Conservation District
La Grange
Lake Bluff
Lake County Stormwater Management Commission
Lake County Forest Preserve District
Lake County Soil & Water Conservation District
Lake Forest
Lansing
Lansing Park District
Libertyville
Lincoln-Lansing Drainage District
Lincolnshire
Long Grove
Lynwood
Lyons
Markham
Markham Park District
Matteson
Melrose Park
Metropolitan Water Reclamation District of Greater Chicago
Midlothian
Mount Prospect
Niles
Northbrook
North Chicago
North Cook Soil & Water Conservation District
North Skokie Drainage District
Northeastern Illinois Planning Commission
Northfield
Northlake
Oak Brook
Oak Forest
Oak Lawn
Olympia Fields
Orland Hills
Orland Park
Palatine
Palatine Park District
Palos Heights
Palos Hills
Palos Park
Park Forest
Prospect Heights
Richton Park
Riverdale
Riverside
Robbins
Rolling Meadows
Roselle
Salt Creek Rural Park District
Sauk Village
Schaumburg
Schaumburg Park District
Southeastern Wisconsin Regional Planning Commission
South Chicago Heights
South Holland
State of Illinois, Department of Natural Resources
State of Illinois, Office of Water Resources
State of Illinois, Water Survey
Steger
Streamwood
Thornton
Tinley Park
Tinley Park Park District
Union Drainage District 1, 2, and 4
University Park
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Natural Resources Conservation Service
Villa Park
West Skokie Drainage District
Weller Creek Drainage District
Westchester
Western Springs
Wheeling
Wheeling Park District
Will County
Will County Forest Preserve District
Will-South Cook Soil & Water Conservation District
Wilmette
Winnetka
Wood Dale
Wood Dale Park District
Worth


USDA
NRCS


KANE COUNTY STORMWATER
MANAGEMENT PLANNING COMMITTEE


LAKE COUNTY




CITY OF CHICAGO

ILLINOIS

FOREST PRESERVE DISTRICT
OF COOK COUNTY