

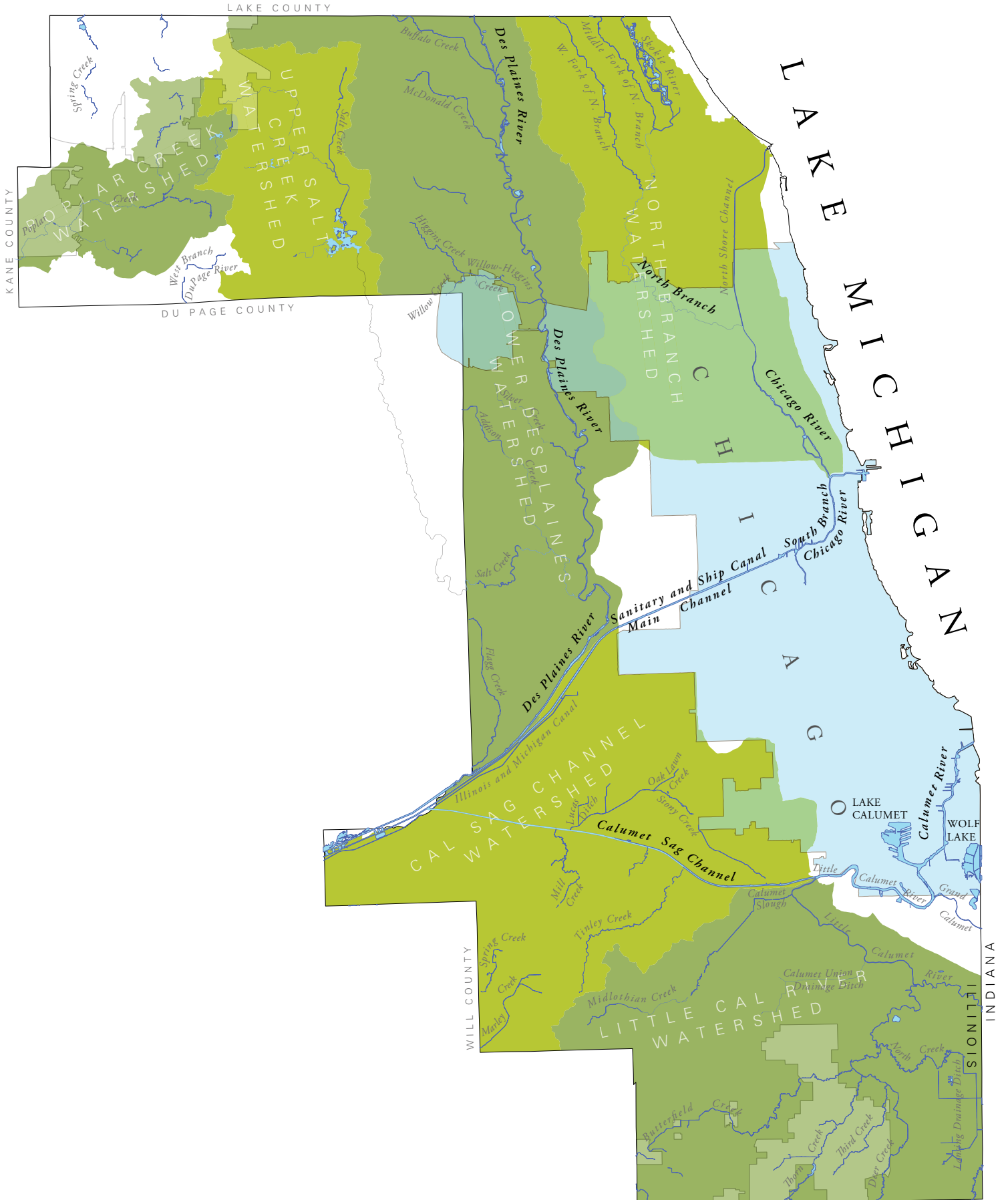
# Stormwater Management For Cook County

A new role for the Metropolitan Water  
Reclamation District of Greater Chicago



*Protecting Our Water Environment*

# Cook County Waterways and Watersheds





Aerial photograph of Dr. Mary Woodland Reservoir, located in Lynwood, after a storm event. This reservoir provides 351 million gallons of storage and benefits for the communities of Lynwood and Lansing.

## History of the District

The Metropolitan Water Reclamation District of Greater Chicago (District) is the agency charged with keeping sewage pollution out of Lake Michigan, the region's primary drinking water supply, and properly treating sewage to avoid contamination of the Chicago, Des Plaines, and Illinois Rivers. In addition, the District has a long history of providing flood protection to the citizens of Cook County.

The first major modification of the natural drainage system in the Chicago Metropolitan Area was made by the District in the 1890's. A series of canals were constructed to reverse the flow of the Chicago River and carry waste away from Lake Michigan.

The existing canal systems (Sanitary and Ship Canal, North Shore Channel, and

Calumet-Sag Channel) provide a substantial volume of flood control storage and flow capacity.

### Flood Control Program

While the District did not have a specific statutory responsibility in the area of flood control, its involvement and expertise in the areas of water pollution control and drainage led it to assume a flood control leadership role in the Metropolitan Area. By the mid-1960's, the District was involved in the design and construction of many flood control storage reservoirs and stream improvement projects. The first reservoirs were constructed and put into service in the early 1970's. To date 32 reservoirs have been completed with District participation. These reservoirs provide flood relief to thousands

of people. The District has sought Federal, State, and local participation in its flood control efforts, and was one of the principal sponsors of the floodwater management plans developed by the Natural Resources Conservation Service. These plans address flood control on a regional basis, and most of the reservoirs recommended by these plans have been completed and are operating.

### 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, sewage and stormwater are collected in different sewers. One system of



The Melvina Ditch Reservoir after a storm. The reservoir provides flood protection in the Cal-Sag watershed.

sewers collect stormwater, and the other system of sewers collects sewage. These areas are commonly called “separate sewer” areas. Surface flood detention reservoirs, mentioned previously, are provided in areas with separate sewer systems. In older communities, 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 883 square mile area under the jurisdiction of the District. Flood and pollution problems in these areas are handled 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 while 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 (elevations) will be controlled, reducing overbank flooding, basement flooding, and bypassing of raw sewage to Lake Michigan.

### District Sewer Permit Ordinance

The District’s Sewer Permit Ordinance (Ordinance) was enacted in 1972 and is applicable to the District’s service area. The Ordinance requires that the post-developed release rate of stormwater runoff not exceed the undeveloped conditions runoff rate for a development located in separate sewer areas. The ordinance requires developments sized 5 acres or greater and located in separate sewer areas to provide stormwater detention. The use of stormwater detention helps to reduce runoff during heavy storm periods and promotes comprehensive community-wide programs for flood control. The stormwater management legislation of 2004 affords the District the opportunity to update and expand this ordinance.

### Summary of Public Act 93-1049 (Act)

In November of 2004, the State of Illinois enacted legislation formalizing and expanding the District’s role in flood control by naming the District as the Regional Stormwater Management Agency for Cook County. The District will be involved in the planning, design, construction, operation

and maintenance of flood control facilities and related stormwater management projects. The authority granted to the District by the Act is applicable to all of Cook County and is not limited to the District’s corporate boundaries.

The Act calls for the formation of Watershed Planning Councils (WPCs). A WPC has been formed for each of the six established watersheds of the Chicago Metropolitan Area as listed below:

1. North Branch Chicago River
2. Lower Des Plaines Tributaries
3. Cal-Sag Channel
4. Little Calumet River
5. Poplar Creek
6. Upper Salt Creek

The Act describes specific responsibilities of the WPCs. The key responsibilities of the WPCs are as follows:

1. Advise the District on the needs and interests of local governments.
2. Advise the District on the development of the countywide stormwater management plan with respect to their specific watersheds.

3. Recommend rules and regulations to the District governing the provisions of the countywide stormwater management ordinance.

The Act calls for the following municipal conferences to be responsible for coordination of the WPCs:

1. Northwest Municipal Conference
2. South Suburban Mayors and Managers Association
3. Southwest Conference of Mayors
4. West Central Municipal Conference

The municipal conferences coordinate the activities of certain designated WPCs as follows:

**Northwest Municipal Conference (NWMC)**

- Poplar Creek Watershed
- Upper Salt Creek Watershed
- Lower Des Plaines Tributaries Watershed (in cooperation with WCMC)
- North Branch Chicago River Watershed (in cooperation with WCMC)

**West Central Municipal Conference (WCMC)**

- Lower Des Plaines River Tributaries (in cooperation with NWMC)
- North Branch Chicago River Watershed (in cooperation with NWMC)

**Southwest Conference of Mayors (SWCM)**

- Cal-Sag Channel Watershed

**South Suburban Mayors and Managers Association (SSMMA)**

- Little Calumet River Watershed

**Cook County Stormwater Management Plan**

The Act calls for the District to develop a countywide stormwater management plan. The Cook County Stormwater Management Plan (CCSMP) was developed by the District and approved by the District's Board of Commissioners in 2007. The CCSMP is a high level organizational plan and provides the District's vision of how the countywide stormwater management program will take shape.

The following information is presented in the CCSMP:

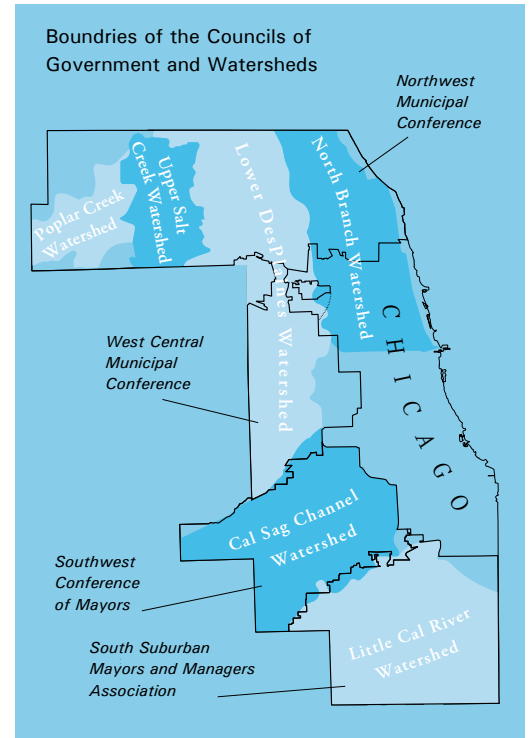
1. Goals of the Countywide Program
2. Guidelines for Detailed Watershed Plans (DWP)
3. Watershed Management Ordinance Approach
4. Parameters of the Countywide Program
5. Program Implementation

**Goals of the Countywide Program**

The mission of the District's Stormwater Management Program is to provide Cook County a program of effective rules, regulations, and projects that will reduce the potential for stormwater damage to life, public health, property, and the environment.

The program's goals, as listed below, are quite extensive and far-reaching:

- A) Protect existing and new development by minimizing the increase of stormwater runoff volume beyond that experienced under predevelopment conditions and by reducing peak stormwater flows.
- B) Identify and remedy existing regional flooding problems to the extent feasible.
- C) Establish comprehensive basin plans within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.
- D) Promote responsible land use practices in all areas of the watersheds of Cook County, particularly within floodplains and floodways.
- E) Establish uniform, minimum, countywide stormwater management regulations while recognizing and coordinating with those stormwater programs effectively operating within Cook County.
- F) Require cooperation and consistency in stormwater management activities between the government entities having stormwater jurisdiction, and clearly define the roles and responsibilities of each entity.
- G) Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.



A watershed planning council meeting held in 2006.



Photo: Gary Sullivan, The Wetlands Initiative

Wetlands not only help to mitigate the effects of flooding and improve water quality, but also provide biodiversity and wildlife habitat.

- H) Coordinate with watershed councils to provide for the short and long term maintenance of natural waterways, manmade drainageways, and stormwater management facilities in new and existing developments.
- I) Seek to maximize available revenue sources in undertaking comprehensive watershed planning and stormwater facility construction activities, thereby leveraging and reducing reliance on the stormwater funds raised by levy.
- J) Protect existing water resources, including lakes, streams, floodplains, wetlands, and groundwater, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized.
- K) Develop and maintain a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood and water quality data needs of the program.
- L) Promote the awareness and understanding of stormwater management issues by the practitioner and the layperson through ongoing public information and education.
- M) Reduce or mitigate the environmentally detrimental effects of existing and future runoff in order to improve and maintain water quality and protect water related environments.
- N) Control sediment and erosion in and from any source, such as drainageways, developments, construction sites, and agricultural areas.
- O) Consider water quality and habitat protection measures in all stormwater management activities within Cook County.
- P) Preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas.
- Q) Encourage the public to consider stormwater as a resource rather than as a nuisance.
- R) Manage and operate the program in an effective and cost-efficient manner.
- S) Be in compliance with all applicable state and federal laws.

## Detailed Watershed Plans

In addition to the CCSMP, the Act requires the development of a Detailed Watershed Plan (DWP) for each established watershed of the Chicago Metropolitan Area. Major topics addressed in a DWP are as follows:

1. Identification of Stormwater Management Problem Areas
2. Hydrologic and Hydraulic Modeling
3. Identification of Potential Projects to Address Flooding and Water Quality Issues
4. Collection of Data to Analyze Potential Projects
5. Benefit-to-cost analysis for each potential project.

The primary objective of the watershed plans is to determine capital improvement projects to help alleviate existing stormwater management problems.

## Capital Improvement Program

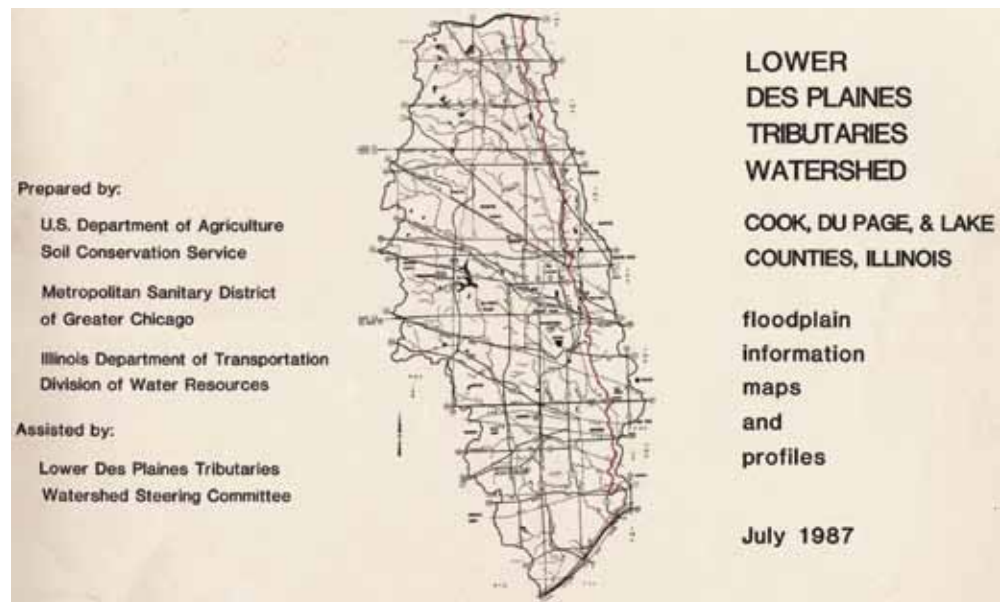
A key aspect of the District's countywide stormwater management program is the identification and implementation of capital improvement projects. Flood control



The Wilke Kirchoff Reservoir is located in Arlington Heights and provides 33 million gallons of stormwater storage. When not providing flood control benefits, this dual purpose facility can be utilized for recreational purposes.

projects may consist of reservoirs and levees. Water quality projects may consist of ecosystem improvements, streambank stabilization, wetland restoration and implementation of structural and non-structural Best Management Practices (BMPs). The EPA defines a BMP as a “technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of stormwater runoff in the most cost-effective manner.”

As required by Public Act 93-1049, a benefit-to-cost analysis is performed for each potential project the District may fund. In addition, the District prioritizes all projects on a countywide basis. The District’s Board of Commissioners has established absolute minimum requirements to ensure that all proposed projects meet certain parameters. Further information on these requirements can be found at [www.mwrd.org](http://www.mwrd.org) by clicking on Stormwater Management under Public Interest.



Many Detailed Watershed Plans (DWPs) have been conducted jointly among several governmental agencies.

## Regulatory Ordinance Approach

The District intends to develop a Watershed Management Ordinance (WMO) with an accompanying Technical Guidance Manual (TGM) to provide minimum standards for stormwater management, particularly concerning new development and re-development projects. The WMO will be applicable countywide and not limited to the District's service area. The District, with advice from the WPCs, will consider providing uniform, countywide regulations for the following areas:

1. Floodplain Management
2. Stormwater Drainage and Detention
3. Wetland Protection
4. Stream Habitat and Riparian Environment Protection
5. Soil Erosion and Sediment Control
6. Water Quality

In addition, the WMO and the TGM may provide recommendations and detailed specifications on BMPs pertinent to stormwater management.

## Maintenance

The District inspects 32 flood control facilities located within Cook County annually. In addition, the District shares responsibilities for the maintenance of some of these flood control facilities with communities, park districts and other agencies. The District also maintains certain reaches of waterways and streams located in Cook County.

Stream maintenance primarily focuses on the removal of debris from waterways and shorelines. During high flow periods, debris along shorelines or within the waterway can be carried downstream and create a blockage which can result in flooding and erosion. Debris accumulation also reduces the flow carrying capacity of the waterway which can cause flooding.



Diagram Source: Source: A Guide to Stormwater Best Management Practices, Chicago's Water Agenda, City of Chicago 2003

The bioswale shown demonstrates an example of a Best Management Practice (BMP). The vegetation stabilizes the soil and absorbs runoff, nutrients and possible contaminants.

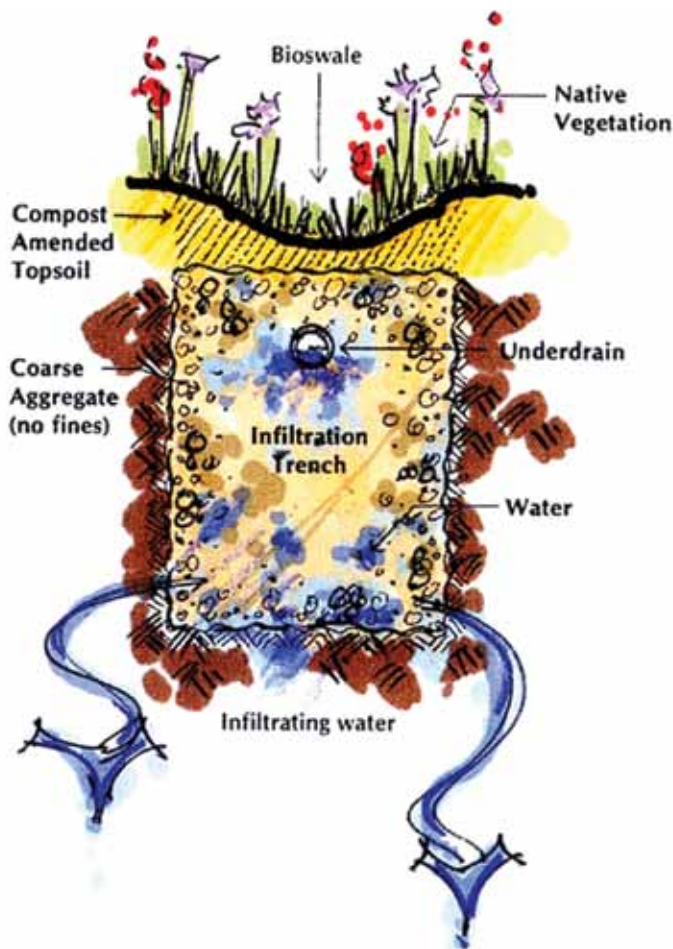


Diagram Source: Source: A Guide to Stormwater Best Management Practices, Chicago's Water Agenda, City of Chicago 2003

This diagram illustrates the components that make up a drainage bioswale. The bioswale is an aesthetically pleasing method of controlling stormwater runoff while reducing pollutants as the water is filtered through the soil and coarse aggregates.



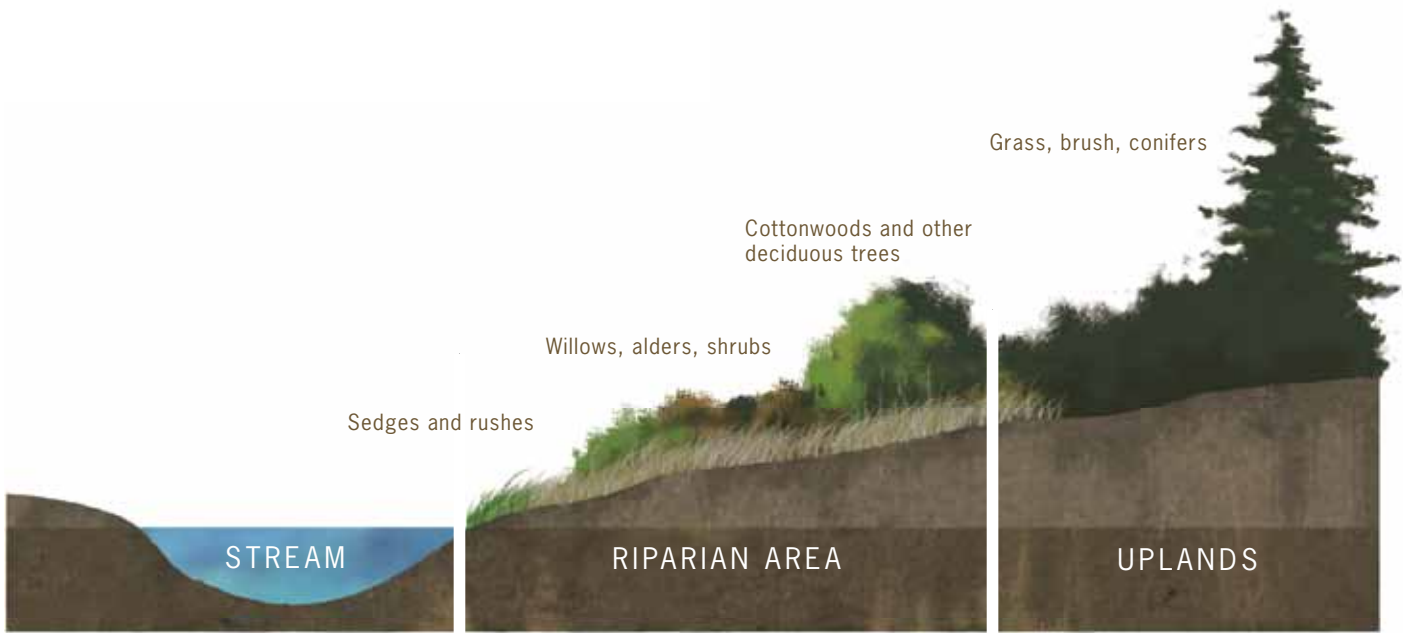


Diagram of riparian and upland ecosystems and what sort of vegetation may be found in each.



The culverts shown are located just upstream of the Margreth Riemer Reservoir in Palatine. Shown are before and after photographs of maintenance performed by the Palatine Park District. It is important that the debris be removed from waterways to allow for proper conveyance of the waterway and to prevent blockages which can result in flood damage upstream.



Fallen trees impede the flow of waterways.



District personnel remove trees, cut them up into manageable pieces and transport them to a disposal site.

## How You Can Help

Stormwater management does not merely apply to flood control. It can also be used to improve water quality and conserve potable water. You can help out by implementing Best Management Practices at your residence. Example BMPs include rain barrels, cisterns, green roofs, rain gardens, permeable paving and natural landscaping. One simple measure would be to disconnect your downspouts from the public storm sewer system. The stormwater could be stored in rain barrels to be used to water gardens or directly discharged to rain gardens instead of flowing into our sewers. Reduction of

stormwater flow into our sewers reduces the amount of flow discharged into our waterways and can help to alleviate flood damages from occurring due to overbank flooding.

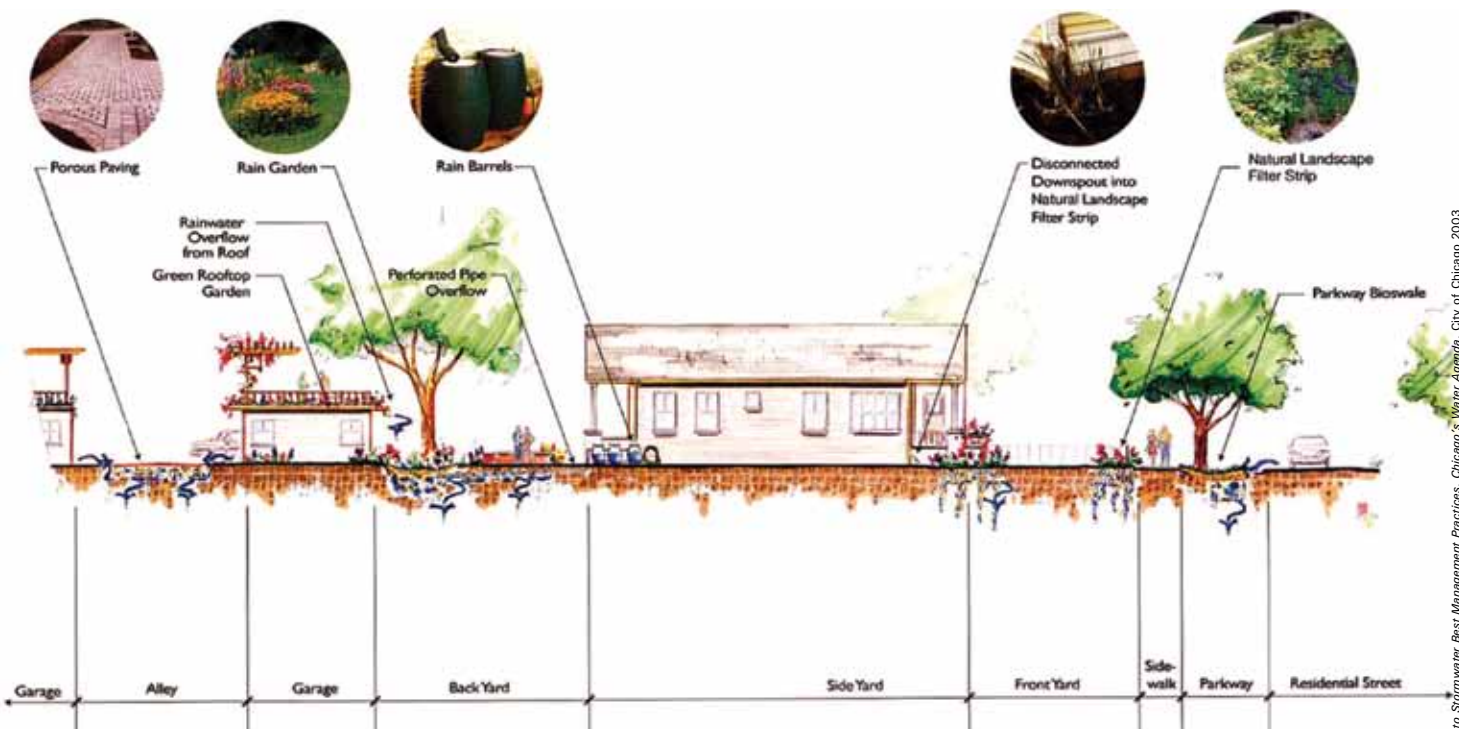
It is illegal to dump paint, oil, or any hazardous material into a street inlet as these materials will also pollute the waterway to which the storm sewer eventually discharges. Residents living near waterways should take extra care to remove debris on their property which could wind up in the waterway. Yard waste should be properly disposed of and not dumped into or along the banks

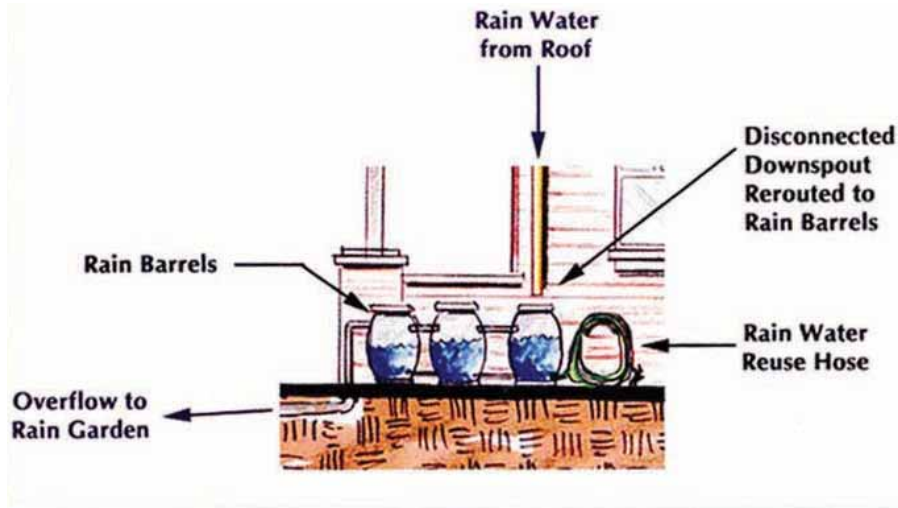
of creeks or streams. Branches, bushes and other debris cause blockages at culverts and bridges which can cause flood damages for you and your neighbors. If you see anyone dumping garbage or any debris into a waterway, please call 1-800-332-DUMP.



Debris piled along waterways (left) by residents or business owners can be swept away during high flow events possibly resulting in blockages (right), which can result in flooding.

Examples of best management practices residents can implement in their own backyards.





## For Further Information

Please visit the District's website at [www.mwr.org](http://www.mwr.org) and click on "Stormwater Management" or write to [Stormwater@mwr.org](mailto:Stormwater@mwr.org) if you are interested in obtaining more information on the following:

1. Cook County Stormwater Management Plan
2. Detailed Watershed Plans
3. Absolute minimum requirements for projects to be funded under the District's program
4. Best Management Practices

Rain barrels, another Best Management Practice, can be used to temporarily store stormwater, which can later be used as an efficient way to water lawns, landscaping and gardens.

Green roofs, like this one shown atop Chicago's City Hall, capture stormwater that would otherwise drain to sewers and rivers. Green roofs are also aesthetically pleasing and help cool building interiors in the Summer.



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[www.mwrd.org](http://www.mwrd.org)

*Cover photo: Joe Rakoczy*