Illinois
Environmental
Protection Agency

Bureau of Water
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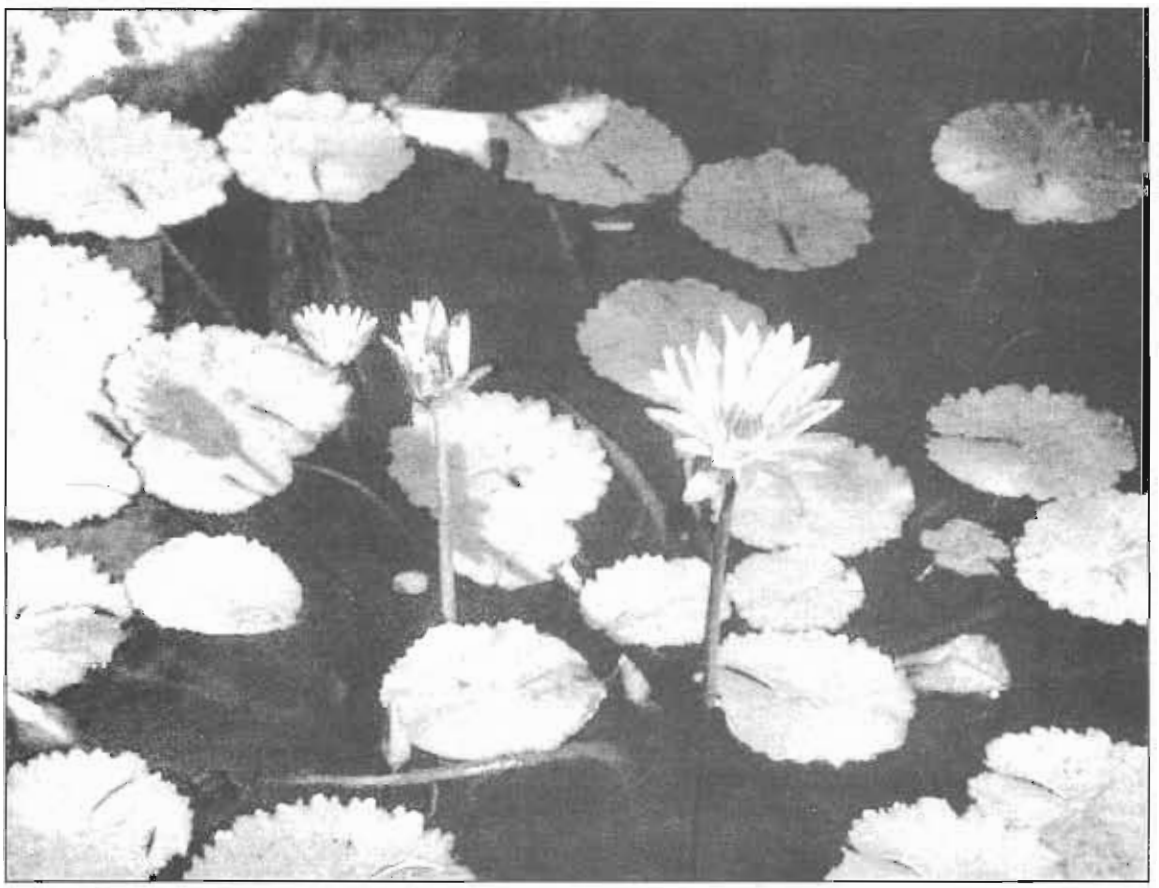
THE CONDITION OF ILLINOIS WATER RESOURCES 2000



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PURPOSE

The *Condition of Illinois Water Resources 2000,* was prepared by the Illinois Environmental Protection Agency (EPA) to describe in general terms the overall water quality conditions throughout Illinois. This includes facts about Illinois rivers and streams, inland lakes, Lake Michigan, and groundwater. The information in this report is summarized from more detailed information generated and submitted annually to the U.S. Environmental Protection Agency (U.S. EPA) as required by Section 305(b) of the federal Clean Water Act (CWA). In addition, a set of 33 water quality fact sheets has been created to look at specific water bodies in major Illinois watersheds. Inside the back cover of this report is a list of the 33 fact sheets and how they may be obtained from Illinois EPA.

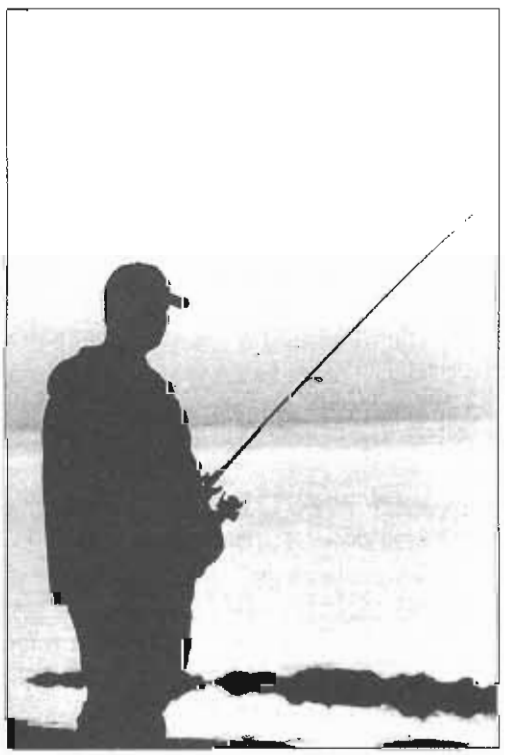
THE ILLINOIS WATER QUALITY (305b) REPORT

According to Section 305(b) of the federal CWA of 1972, and guidance provided by U.S. EPA, each state is to prepare and submit to the U.S. Congress and the U.S. EPA an annual report which includes:

- an assessment of the water quality for surface and groundwater resources;
- an analysis of the extent to which such waters provide for the protection and propagation of shellfish, fish, and wildlife as well as allow for recreational activities;
- an analysis of the extent to which the requirements of the CWA have been achieved;
- an estimate of the environmental impacts, costs and benefits, and time frame to achieve the requirements of the CWA; and
- a description of the nature and extent of nonpoint source pollution and recommendations to address this pollution.

WATER QUALITY IN ILLINOIS

Illinois is blessed with abundant water resources. There are approximately 87,110 miles of interior streams in Illinois. Major interior rivers include the Des Plaines, Rock, Fox, Kankakee, Illinois, Sangamon, Kaskaskia, Vermilion, Cache, and Big Muddy. In addition, the state's natural borders to the west and southeast are formed by 1,089 miles of the Mississippi, Ohio, and Wabash rivers, respectively.



More than 87,600 inland lakes and ponds exist in Illinois (3,041 of which have surface areas of six acres or more). The majority of Illinois inland lakes (75 percent) are artificial impoundments, including reservoirs ranging up to 26,000 acres in surface area; dammed stream and side channel impoundments; and strip mine, borrow pit, and excavated lakes. Natural lakes include glacial lakes found in the northeastern counties, sinkhole ponds in the southwest, and oxbow and backwater lakes found along major rivers.

Illinois is bordered by one Great Lake - Lake Michigan. Illinois has jurisdiction over approximately one million acres of Lake Michigan stretching along the state's northeastern border and the city of Chicago. Lake Michigan is the third largest of the Great Lakes and is the largest

body of freshwater located entirely within the boundaries of the United States. Together, the Great Lakes form the largest freshwater system on earth, with the exception of the polar ice caps.

Principal aquifer areas for groundwater in Illinois cover 32,400 square miles or 59 percent of the state. This figure accounts for approximately 11,800 square miles of overlapping areas (aquifers at different depths). Approximately 18,600 square miles of Illinois (33 percent of the state) are underlain by shallow aquifers with 8,300 square miles designated as highly susceptible to groundwater contamination.

SURFACE WATER QUALITY MONITORING

The Illinois EPA has maintained a comprehensive surface water monitoring and assessment program since its inception in 1970. Changes and additions to the monitoring effort have been undertaken to keep pace with technological advances and broadening environmental concerns. Surface water monitoring activities focus on water and sediment chemistry as well as on physical and biological data (aquatic invertebrates, fish, and habitat). As a result of these monitoring programs, data from approximately 3,400 stations have been utilized in the assessment of surface water quality conditions. Data from these stations are utilized to make either "monitored" or "evaluated" resource assessments. "Monitored" assessments are based on data collected by Illinois EPA or other professional staff that is five years old or less. "Evaluated" assessments are based on volunteer collected data or monitored data that is more than five years old.

The Illinois EPA conducts a wide variety of water quality monitoring programs. Among these programs are the Ambient Water Quality Monitoring Network, Intensive River Basin Survey (in cooperation with the Illinois Department of Natural Resources), Facility-Related Stream Survey, Ambient Lake Monitoring Program, Clean Lakes Program Intensive, Volunteer (Citizen) Lake Monitoring Program, and the National Nonpoint Source Monitoring Program.

The objectives of these monitoring and assessment programs are to:

- analyze and interpret data/information to evaluate attainment of designated uses (aquatic life, drinking water, fish consumption, recreation, etc.);
- determine long-term trends in physical, chemical, and biological conditions;
- identify water quality problems and problem areas and further investigate the extent and cause(s) of the problems; and
- provide a measure of the effectiveness of Illinois' water pollution control programs.

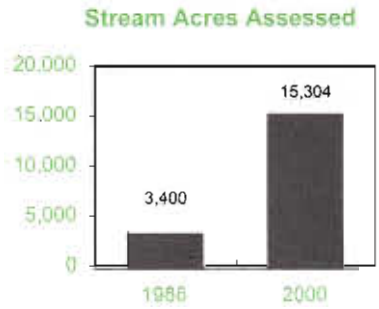
The Illinois EPA's water quality program is designed to evaluate and protect water resource "designated uses." Designated uses take into consideration the use and value of the waterbody for public water supply; for propagation of fish, shellfish, and wildlife; and for recreational, agricultural, industrial and navigational purposes. In Illinois, waterbodies have been classified for a variety of designated uses that include: general use, public and food processing water supplies, secondary contact, and indigenous aquatic life. Lake Michigan has its own designated uses based upon a set of more stringent water quality standards. Water quality conditions are described in terms of the degree to which a waterbody attains its designated uses.

For this 2000 report and the 33 water quality fact sheets, water quality is rated as either "good," "fair," or "poor" based on physical, chemical, and biological data collected through 1998. A "good" rating means a river or lake meets the needs of all designated uses. "Fair" means water quality has been impaired and the

waterbody meets some, but not all, of its designated uses. A waterbody that is rated as "poor" has water quality that has been severely impaired and cannot support designated uses to any degree.

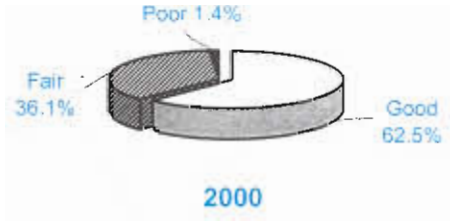
RIVERS AND STREAMS ASSESSMENT

The quality of rivers and streams plays a fundamental role in the overall health of the environment and has a direct bearing on both the economic and recreational opportunities available to the citizens of Illinois. Consequently, public interest in the value of water quality has increased significantly in recent years.

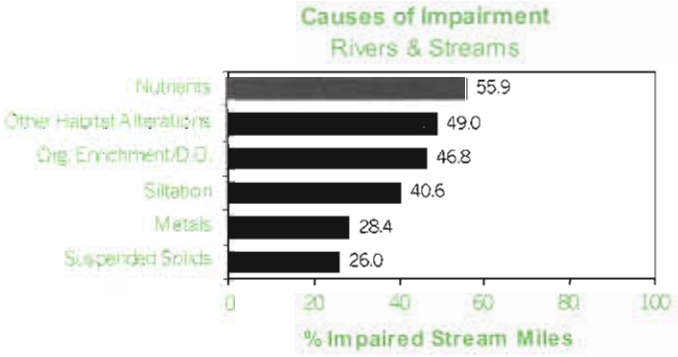


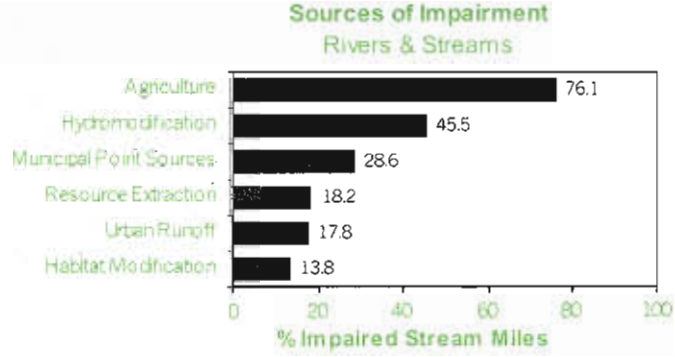
The miles of rivers and streams that are assessed by the Illinois EPA has increased significantly. In 1986, only 3,400 miles of rivers and streams were assessed as compared to the 15,304 miles that were assessed for this 2000 report. Of the 15,304 miles assessed in 2000 for overall resource quality, 62.5 percent were rated as "good," 36.1 percent were rated as "fair," and 1.4 percent were rated as "poor."

Stream Water Quality Conditions

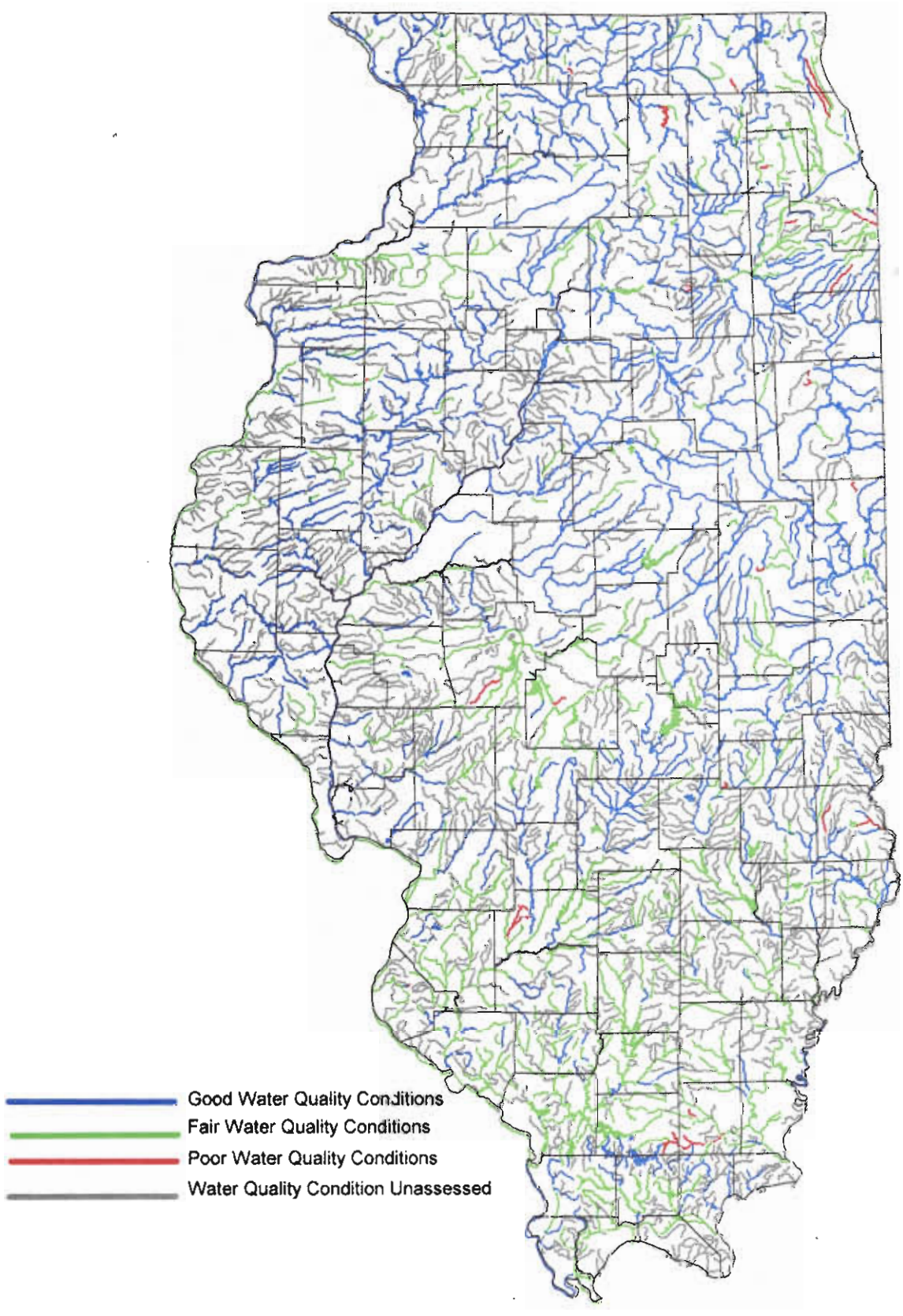


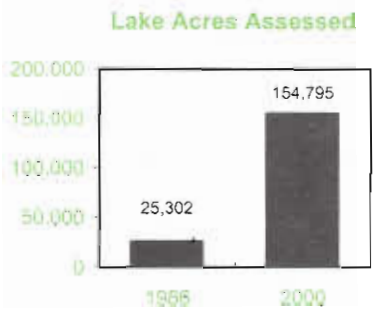
Various causes and sources of water quality problems are identified during the assessment process. For rivers and streams, the principal causes of impairment are nutrients, habitat alterations, organic enrichment/low dissolved oxygen and siltation. The principal sources of impairment are agriculture, hydrologic/habitat modifications, and municipal point sources. Overall, stream water quality has steadily improved over the last 28 years. The total miles of water pollution impact by municipal and industrial point sources have declined; fewer stream miles are being impacted by nonpoint source pollution; and increased species diversity in the Illinois, Rock, and Mississippi Rivers has been documented. In addition, from a chemical water quality perspective, the majority of the Illinois River mainstem has for the first time been rated as "good" even though excessive sedimentation exists in portions of the mainstem and its backwater lakes.





CONDITION OF ILLINOIS RIVERS AND STREAMS, 2000.



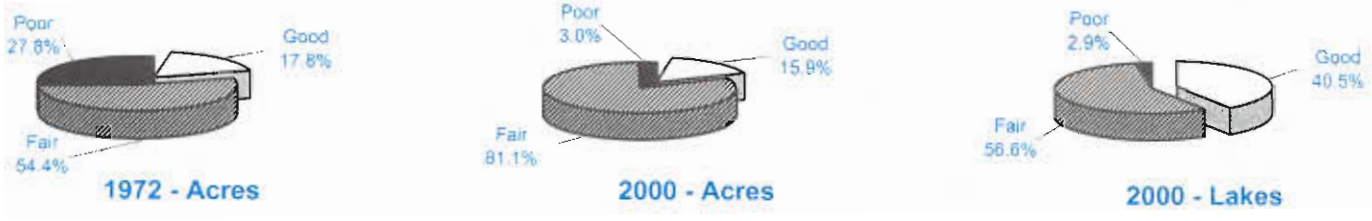


INLAND LAKES ASSESSMENT

In Illinois, more than 3,000 lakes (more than six acres in size) cover nearly 250,000 acres. These resources are a vital component of the economic and social well-being of the state, generating 90 million visitor days of general recreation annually. Publicly-owned lakes greater than 20 acres in size were assessed, along with public and non-public lakes in the Illinois EPA's Volunteer Lake Monitoring Program.

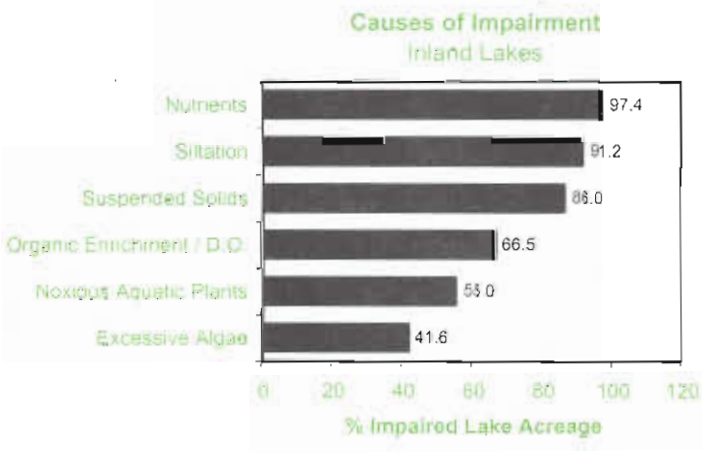
Like rivers and streams, the number of inland lake acres assessed by Illinois EPA has increased significantly. In 1986, only 25,302 acres were assessed as compared to the 154,795 acres that were assessed for this 2000 report. Of the acreage assessed (154,795 acres) for overall resource quality, 15.9 percent were rated as "good," 81.1 percent were rated as "fair," and 3.0 percent were rated as "poor." Of the number of lakes assessed (348), good, fair, and poor conditions were 40.5, 56.6 and 2.9 percent, respectively.

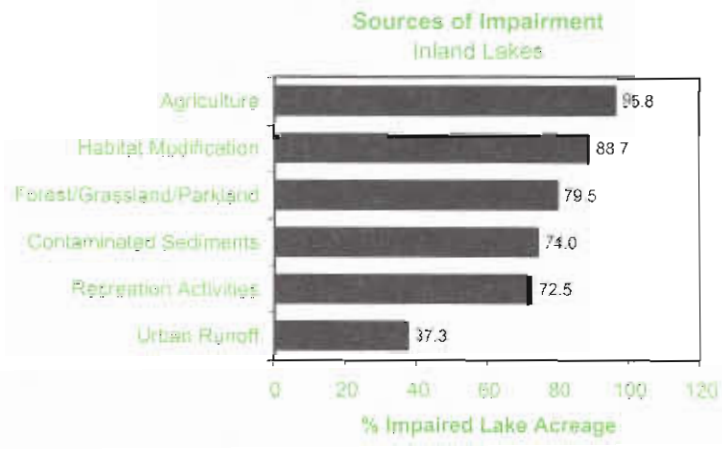
Lake Water Quality Conditions



Various causes and sources of water quality problems were identified during the assessment process. For inland lakes, the principal causes of impairment are nutrients, siltation, and suspended solids. The principal sources of impairment are agriculture, habitat modifications, and forest/grassland and parklands.

A major effort to improve inland lakes began in 1995 with the passage of Conservation 2000. The Illinois EPA now receives approximately $1.6 million annually to implement expanded public education, technical assistance, monitoring, and financial incentives programs. Because of Conservation 2000, Illinois has one of only a handful of state-funded, comprehensive lake management programs in the country.





LAKE MICHIGAN ASSESSMENT

As a natural resource of immeasurable value, Lake Michigan serves a broad spectrum of purposes. It provides drinking water for an estimated six million residents in the northeastern Illinois area. Its recreational and habitat value attract fishing, boating, swimming, and other water-oriented interests. Because of the importance of this natural resource, Lake Michigan is protected to a greater degree than inland lakes by having more stringent water quality standards.

Lake Michigan is monitored through a cooperative agreement between the city of Chicago and the Illinois EPA. All 63 miles of Illinois' Lake Michigan shoreline were assessed for this report, and were rated as having "good" overall water quality. All 63 miles of shoreline support drinking water uses. Sources of impairment threatening the water quality of Lake Michigan include atmospheric deposition, urban runoff and contaminated sediments. Illinois' portion of Lake Michigan does have a sport fish advisory for some fish species that limits their consumption.

ILLINOIS GROUNDWATER CONDITIONS

Groundwater withdrawals average 953 million gallons per day (MGD). Groundwater in Illinois supports domestic (drinking water use), commercial, agricultural, industrial, mining, thermoelectric, and special resource uses. Special Resource Groundwater is described as the groundwater contributing to highly sensitive areas such as dedicated nature preserves. In addition, groundwater in Illinois supports ecologically sensitive areas such as the karst plain located in Monroe, St. Clair and Randolph counties.

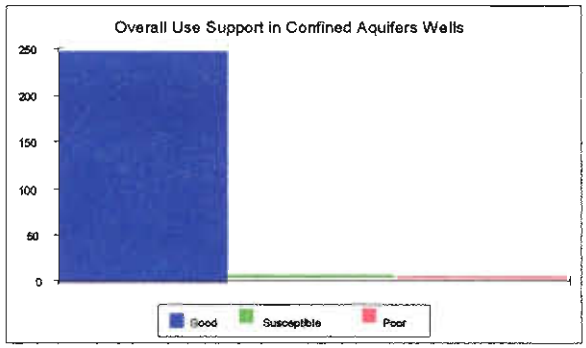
Approximately 4.1 million people use groundwater as a source of public water supply in Illinois. There are 5,534 groundwater- dependent public water supplies in the state of which 1,195 are community water supplies (CWSs). The community supplies serve about 3.1 million people. Approximately 400,000 residences of the state are served by their own private wells. Seventy percent of CWSs in the state withdraw water from confined aquifers that have natural geologic protection from surface and near surface activities. However, the remaining 30 percent of the communities withdraw water from unconfined aquifers that are susceptible to pollution from land use and other surface activities.

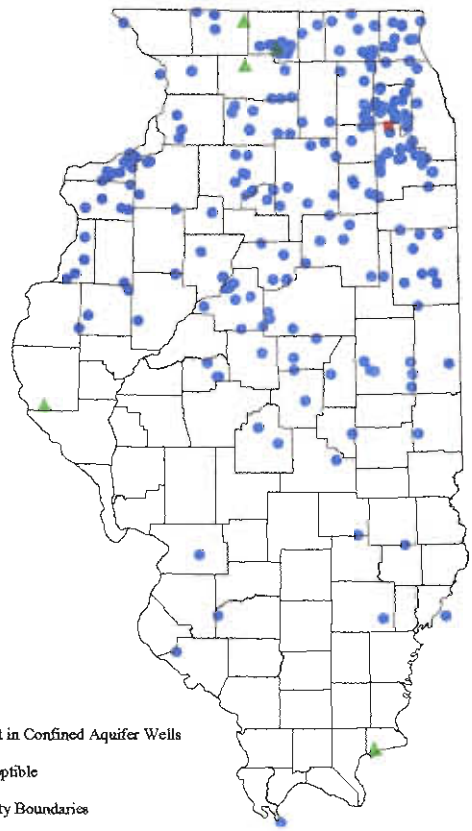
Groundwater quality is a major concern in Illinois. Water quality degradation or contamination results from point and nonpoint sources throughout the state. In many industrialized areas, including the metropolitan areas of Chicago, Rockford, and St. Louis, groundwater has been degraded by improperly contained or disposed of chemicals. In many agricultural areas, the quality of groundwater in shallow aquifers has been degraded by the routine application of agricultural chemicals. Nearly 10 percent of the CWS wells in the state are predicted to be impacted by one of three contaminant groups assessed (volatile organic/aromatic compounds, nitrate, immunoassay alachlor and triazine), resulting in either susceptible or poor water quality. The figure on the following page illustrates the statewide distribution of good, susceptible, and poor water quality in confined and unconfined CWS Network wells. As shown in the figure,

Overall Use Support in CWS Network Wells

CWS Network Wells in Confined Aquifers

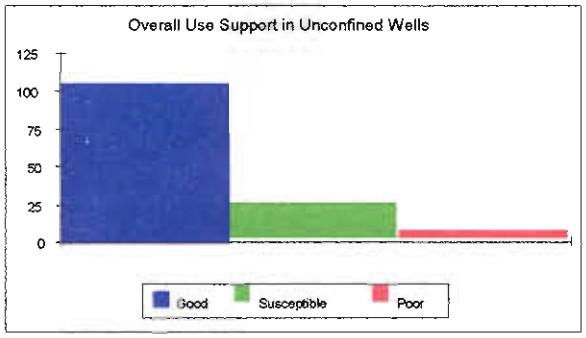
Good	Susceptible	Poor
248	5	1

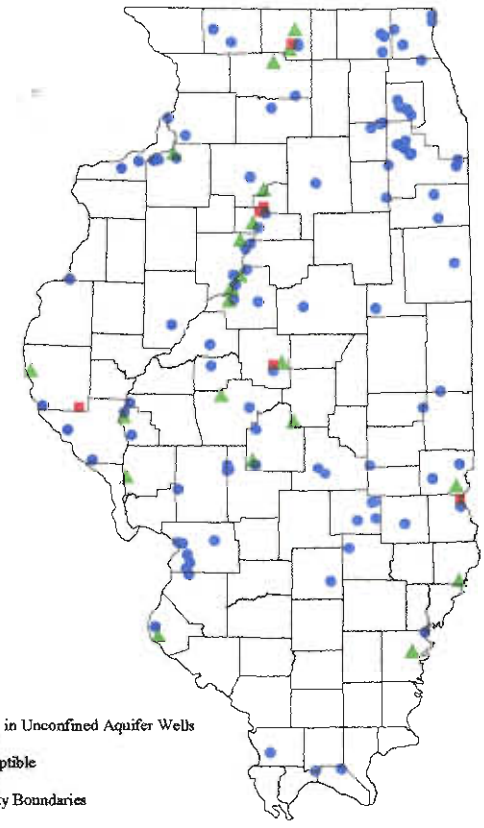




CWS Network Wells in Unconfined Aquifers

Good	Susceptible	Poor
106	24	6



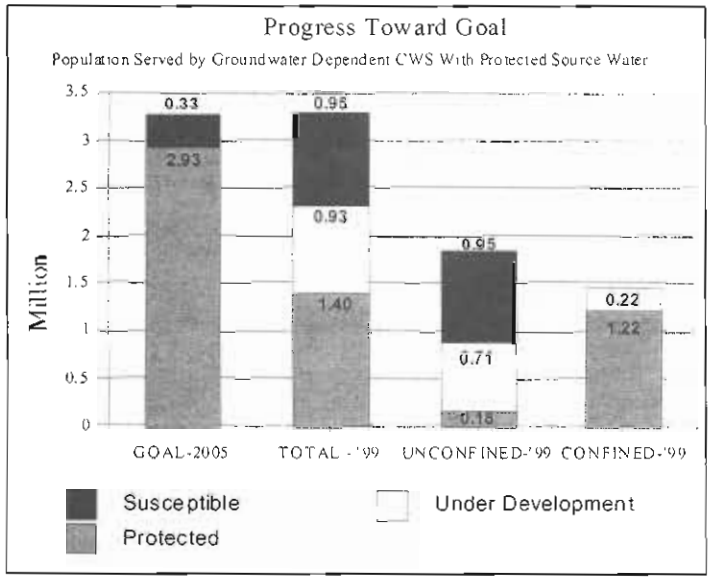


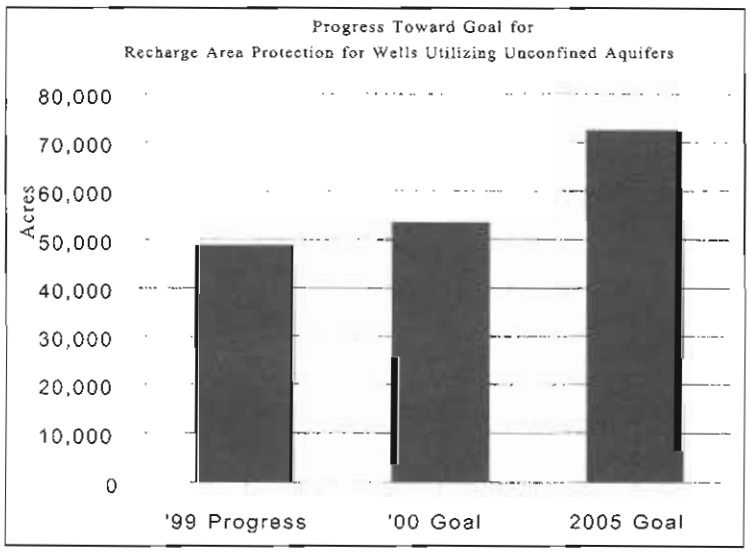
Source Information
County boundaries obtained from the ISGS.
Use support information and map compiled by Illinois EPA Groundwater Section

approximately 22 percent of the CWS wells using unconfined aquifers and 2 percent of the CWS wells using confined aquifers have been impacted.

SOURCE WATER PROTECTION

Protection of Illinois' valuable groundwater resource is critical. The Illinois EPA has made considerable progress in groundwater protection through such initiatives as the groundwater quality standards, Regional Groundwater Protection Planning Programs, and the Safe Drinking Water Act Monitoring Waiver Program. Illinois continues to address the need for protecting groundwater by accomplishing the mission set forth in the Illinois Groundwater Protection Act and through federal, state and local partnerships to establish groundwater protection programs. These partnerships have utilized regulatory and non-regulatory programs to achieve success. As illustrated in the figure to the right, Illinois EPA is measuring the population served by systems with protected unconfined and confined aquifer resources.

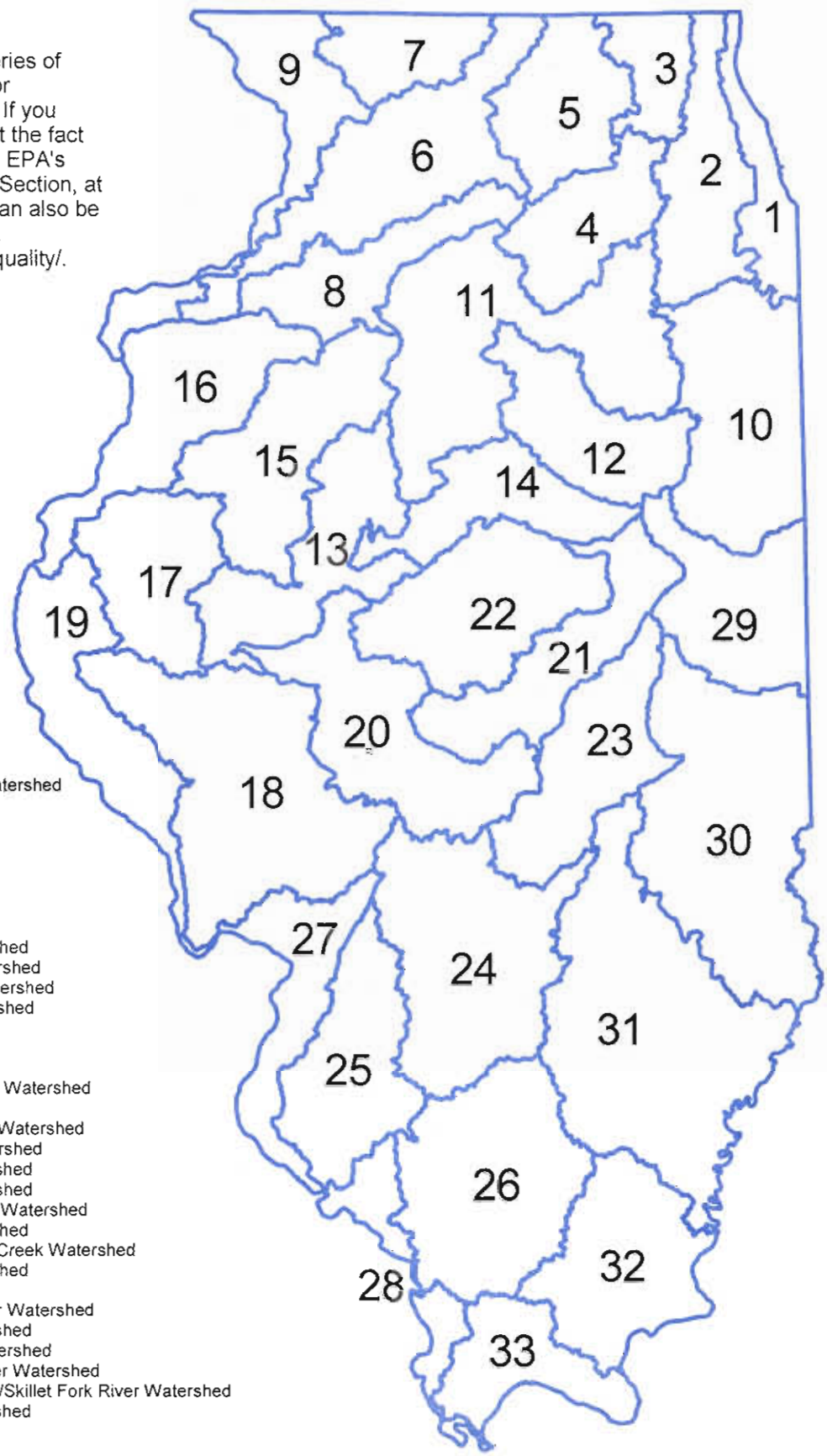




Since approximately 1.8 million people in Illinois rely on sensitive unconfined aquifers for their source of drinking water, Illinois has placed added emphasis on the protection of these groundwater systems. Protecting the land surface areas around susceptible unconfined aquifer wells (recharge areas) can help prevent contamination of groundwater. Coupled with the population served, as documented in the figure to the left, measuring the acres with protection programs under development or in place provides an effective indicator of Illinois' progress in protecting these susceptible areas.

Watersheds of Illinois

The Illinois EPA has created a series of 33 fact sheets, one for each major watershed in the state of Illinois. If you would like more information about the fact sheets, please contact the Illinois EPA's Bureau of Water, Surface Water Section, at 217/782-3362. The fact sheets can also be found at Illinois EPA's web site at www.epa.state.il.us/water/water-quality/.



1 Great Lakes/Calumet River Watershed
2 Des Plaines River Watershed
3 Upper Fox River Watershed
4 Lower Fox River Watershed
5 Kishwaukee River Watershed
6 Rock River Watershed
7 Pecatonica River Watershed
8 Green River Watershed
9 Mississippi North River Watershed
10 Kankakee/Iroquois River Watershed
11 Upper Illinois/Mazon River Watershed
12 Vermilion (Illinois) River Watershed
13 Middle Illinois River Watershed
14 Mackinaw River Watershed
15 Spoon River Watershed
16 Mississippi North Central River Watershed
17 La Moine River Watershed
18 Lower Illinois/Macoupin Creek Watershed
19 Mississippi Central River Watershed
20 Lower Sangamon River Watershed
21 Upper Sangamon River Watershed
22 Salt Creek of Sangamon River Watershed
23 Upper Kaskaskia River Watershed
24 Middle Kaskaskia River/Shoal Creek Watershed
25 Lower Kaskaskia River Watershed
26 Big Muddy River Watershed
27 Mississippi South Central River Watershed
28 Mississippi South River Watershed
29 Vermilion (Wabash) River Watershed
30 Embarras/Middle Wabash River Watershed
31 Little and Lower Wabash River/Skillet Fork River Watershed
32 Saline River/Bay Creek Watershed
33 Cache River Watershed