

NORTHEASTERN ILLINOIS PLANNING COMMISSION

1988-90 WATER QUALITY REPORT

The last several years have seen several significant developments in the area of water quality management. These developments have directly involved (or soon will) numerous local governments in northeastern Illinois. One of the more significant developments is in the area of urban nonpoint source management. The federal government, through the U.S. Environmental Protection Agency, is developing requirements for the regulation of stormwater discharges. These regulations will involve a permitting system for stormwater similar to that which exists for wastewater discharges. The programmatic and fiscal impacts of this program are likely to be substantial. This report describes a recommended planning program for local governments to characterize their local nonpoint source problems and to identify effective control programs. NIPC planning aids which identify best management practices for new development also are identified.

Local and state wetland protection programs have received increasing attention recently. These programs are intended to supplement federal programs by filling gaps in the existing regulations of the Corps of Engineers and U.S. EPA. Some of the local wetland protection needs are being addressed by county stormwater planning studies. These studies are concluding that the stormwater storage and water quality mitigation functions of wetlands need additional local protection. This report discusses wetland protection and water resources management issues which are being addressed in an interagency Special Area Management Plan (SAMP) for the upper Fox River. Other innovative wetland protection programs, such as the Advanced Identification projects ongoing in DuPage and Lake counties, will be discussed in subsequent reports.

Lake management is another area which has received considerable federal and state support in recent years, to the benefit of northeastern Illinois communities. This report summarizes several significant regional lake management activities including data collection and assessment, volunteer monitoring, and restoration activities. The Commission is currently working with the Cook County Forest Preserve District, the Chicago Park District, and the City of McHenry to implement restoration programs on some of our more valuable lake resources.

In recognition of the importance of groundwater as a source of drinking water, the State enacted in 1987 the Illinois Groundwater Protection Act. This report summarizes some of the more important provisions of this act which enable local governments to better protect their groundwater supplies.

Finally, the growing use of land treatment of wastewater in newly developing areas is discussed. Since 1980, numerous land treatment systems have been developed in northeastern Illinois. While land treatment is generally considered to be a preferred technology over traditional wastewater plants by the federal government, there are significant water quality and land use implications which must be considered by local governments. This report highlights some of the pros and cons of land treatment.

1988-1990 Accomplishments

- * Coordination of the 1988-90 Volunteer Lake Monitoring Program for numerous lakes in northeastern Illinois
- * Implementation of restoration strategies at the Skokie Lagoons
- * Completion of Phase I Clean Lakes Program project at four Chicago Park District lagoons
- * Completion of Model Stream and Wetland Preservation Ordinance
- * Completion of an urban pesticide, herbicide, and algicide usage survey for IEPA
- * Completion of Model Floodplain Ordinance which also incorporates water quality protection suggestions
- * Coordination of three annual national conferences for U.S. EPA entitled, "Enhancing the States' Lake and Wetland Management Programs"
- * Coordination and co-sponsorship of the Illinois Lake Management Association's Fourth and Fifth Annual Lake Management Conferences
- * Completion of a study of regional stormwater detention effectiveness, including an assessment of water quality performance
- * Completion of the 1985 water year hydraulic report for Illinois' diversion of Lake Michigan water
- * Development of a nonpoint source management planning methodology for small urban watersheds in northeastern Illinois
- * Completion of a Model Stormwater Detention Ordinance which includes recommendations for incorporating water quality measures in detention basins
- * Review of county stormwater management plans prepared under Public Act 85-905
- * Organization of a workshop for U.S. EPA on the use of various nonpoint source models
- * Advanced Identification (ADID)/wetland protection planning for Lake County

Developing Urban Nonpoint Source Management Plans - New Federal Requirements

Many local governments around the country are anxiously awaiting the release of final stormwater permitting regulations by the U.S. Environmental Protection Agency. After several delays, final regulations are now expected to be published in October 1990. These regulations, prepared in response to the Clean Water Act amendments of 1987, will specify two-part permit submittal requirements for local governments. Two sets of permit submittal deadlines have been established for separately sewered communities greater than 250,000 and 100,000 in population. Eventually, the requirements will apply to smaller communities as well. Based on these population criteria, it appears that no local government in northeastern Illinois will be subject to EPA's initial permit application submittal deadlines in 1991 and 1992. However, other factors, such as a community's contribution to known water quality problems, also may be considered in determining deadlines.

A review of draft regulations indicates that local governments will be required to develop water quality monitoring programs for their storm sewers, and develop management plans to remediate existing stormwater quality problems and to mitigate problems in newly developing areas. Early indications suggest that local governments will have a good deal of flexibility in preparing management plans based on local conditions.

In northeastern Illinois, the Commission's research in the area of nonpoint source pollution impacts has led to the conclusion that urban nonpoint sources are responsible for significant water quality and stream use impairments. In comparing urban streams to rural streams, it is evident that the urban streams, almost without exception, are more highly degraded than their rural counterparts. This degradation has been attributed to a number of sources including construction site runoff, stormwater runoff, illicit discharges, pesticide and fertilizer applications, channel modifications, as well as point sources. It also is apparent that urban stream use impairments occur whether or not point sources, such as municipal wastewater treatment plants, are present in the watershed.

Point source pollution has been reduced dramatically in Illinois during the last several decades. The solution to this problem, although expensive, was relatively

straightforward. Point source discharges were known to cause low dissolved oxygen levels, chemical toxicity, and bacterial contamination. These problems have largely been addressed with well-understood chemical, physical, and biological treatment processes, resulting in dramatic reductions in impacts on most receiving waters.

Nonpoint source pollution, unlike point sources, is diffuse in origin and is more difficult to characterize. It is known that runoff from streets and parking lots is contaminated with heavy metals, oil and grease, and sediment, each of which can adversely affect water quality and stream uses. Other urban nonpoint sources contribute additional impacts. However, unlike most point sources, the individual impacts of nonpoint sources, such as heavy metal contamination, often do not appear to be sufficient to cause the types of impacts observed in our waterbodies. It is clear, though, that the cumulative effects of urban nonpoint sources are substantial, resulting in the impairment of stream and lake uses.

In response to this problem, and with funding from the Illinois Environmental Protection Agency, Commission staff have prepared a report entitled "Methodology for Developing Urban Nonpoint Source Management Plans in Northeastern Illinois." The report recommends a watershed based procedure for characterizing stream and lake use impacts, identifying the causes and sources of use impairment, and recommending a management plan for eliminating or preventing adverse impacts.

This methodology recommends a two-phased approach to addressing nonpoint source problems. The first phase calls for the identification of water resource use objectives, a preliminary assessment of nonpoint source impacts and sources based on readily available information, the recommendation of realistic control practices, and the development of a more comprehensive monitoring program to better characterize existing nonpoint problems. The second phase involves more detailed collection of data, such as wet weather and dry weather storm sewer sampling and sediment sampling, to better define nonpoint sources and their impacts. This detailed data collection can be very expensive, but is likely to be required to comply with upcoming federal stormwater permitting requirements and also will be useful in justifying costly nonpoint control practices, such as retrofitting stormwater detention basins in developed urban areas.

The Commission plans to demonstrate the methodology this year in the Butterfield Creek watershed in south Cook County with funding from U.S. EPA. The Commission currently is working with stormwater planning groups from around the region, including the DuPage, Kane, and Lake County Stormwater Management Committees, to incorporate requirements for storm-

water best management practices in local regulations governing new development. Most of these best management practices are referenced in NIPC model ordinances (described below) which address stormwater drainage and detention; floodplain management; stream, lake, and wetland protection; and soil erosion and sediment control.

NIPC Model Ordinances Can Help Manage the Impacts of Growth

"Urban development has a negative impact on stream quality." This is the inescapable conclusion to be drawn from the assessment of stream quality in northeastern Illinois conducted by NIPC for the Illinois Environmental Protection Agency and reviewed in the 1987-88 Water Quality Report. The Commission is completing a series of model ordinances intended to assist communities in mitigating and managing those impacts.

In the IEPA assessment, streams or stream reaches were placed in one of four categories based on their ability to support aquatic life and recreation: full support; partial support with minor impairment; partial support with moderate impairment; and nonsupport. Of the stream reaches in northeastern Illinois characterized as "urban" (those whose watersheds contain more than 750 people per square mile), all but a few were in the lowest two quality categories. Of the streams categorized as "rural" (with fewer than 750 people in each square mile of watershed), nearly all were in the top two categories. Point sources--wastewater treatment plants and combined sewer overflows--are still a significant cause of use limitation in the metropolitan area, though far less than in past years. But as the Commission noted in its 1987-88 report on the region's waters, nonpoint sources are of increasing concern. These sources include:

- construction sites, from which soil is eroded and enters the streams;
- modification of streams through channelization, impoundment, or removal of shoreline vegetation and destabilization of banks; and
- stormwater runoff from streets and other paved surfaces, which contains oil and grease, chlorides, and various heavy metals.

Stream quality also can be degraded as a result of hydrologic changes caused by an increase in impervious land cover. Impervious urban surfaces absorb less

rainwater and consequently increase the stormwater volumes released into the streams. In many streams, bank-full conditions which formerly occurred only once every two years now occur three or four times a year. As streams adjust to this new regime, bank erosion produces considerable sedimentation downstream. A related effect of urbanization is a reduction in baseflows which are important to the survival of aquatic organisms during critical dry weather conditions.

These effects are nearly universal in the region's streams. Once they have occurred, they are difficult and costly to reverse. But they are not inevitable. Appropriate development standards, effectively enforced, can reduce or eliminate many of these impacts and preserve the ecological, recreational, and aesthetic benefits of natural waterways. Four basic sets of development controls are called for:

- stormwater drainage and detention
- floodplain management
- erosion and sedimentation control
- stream and wetland preservation

These controls are in place in the metropolitan area to varying degrees. Stormwater detention ordinances, which implement statutory limits on permissible runoff, have been adopted by the six counties and by most municipalities in the metropolitan area. Floodplain management ordinances are required for participation in the national flood insurance program, and are in place in the majority of communities. Erosion and sedimentation control ordinances have been adopted by most communities affected by the flood management programs prepared by the U.S. Soil Conservation Service and the Metropolitan Water Reclamation District of Greater Chicago. Stream and wetland preservation is a newly evolving concern, and relatively few communities have included such measures among their development ordinances.

Many of the ordinances in the first three categories have been in place for a number of years but may not reflect the most recent thinking on comprehensively managing the impacts of growth. In response to this situation, the Commission is finishing work on a series of updated model ordinances which will offer comprehensive guidance to communities in managing floodplains, stormwater, and streams and wetlands.

The Model Floodplain Ordinance was prepared in cooperation with the Illinois Division of Water Resources and the Illinois Environmental Protection Agency, and was completed in May 1989. It contains the minimum provisions necessary to meet state and federal floodplain management regulations in northeastern Illinois. Public

Acts 85-905 and 85-1266 limit the kinds of development allowed in the floodway. The Model Floodplain Ordinance provides language necessary to meet these limits. Recent changes to the Federal Emergency Management Agency's (FEMA) flood insurance regulations have required changes to all local floodplain ordinances in order for communities to remain eligible for flood insurance subsidies. The new NIPC model contains the language necessary to achieve compliance with FEMA requirements. The model ordinance also contains suggested additional language designed by NIPC to provide more conservative floodway protection and to protect the environmental quality of streams. In particular, the NIPC language limits opportunities to modify the floodway for convenience of site design and specifies required environmental mitigation for all approved floodplain modifications.

The new Model Stormwater Drainage and Detention Ordinance has been completed very recently. The ordinance incorporates the findings of a NIPC research report, "Evaluation of Stormwater Detention Effectiveness in Northeastern Illinois," prepared for the Division of Water Resources. The new model ordinance recommends that, in the absence of detailed watershed plans, detention basins be designed to have a peak release of 0.15 cfs per acre while providing storage for the 100-year runoff event. This storage is equivalent to about 3.5 to 4.0 inches of runoff over the area tributary to the basin. The study determined that higher release rates and smaller detention volumes than these are likely to result in increases to downstream flood peaks. The model ordinance also recommends additional water quality requirements, including controlling the 2-year release rate to 0.04 cfs/acre, to protect existing beneficial stream uses from degradation by runoff from new development.

The Model Stream and Wetland Protection Ordinance was completed in 1988. It provides a comprehensive stream and wetland management tool for communities wishing to protect existing beneficial uses of their streams and wetlands from channel modification, filling, and draining activities. The ordinance utilizes the overlay zoning district concept to allow communities to create "greenways" along stream and wetland areas and to protect these areas from inappropriate development through a community's zoning powers.

Revisions to the Soil Erosion and Sedimentation Control Ordinance will be made in the coming year based on an evaluation of the effectiveness of existing controls. This evaluation is being funded by IEPA and will emphasize the importance of adequate enforcement.

HOW EFFECTIVE ARE YOUR DEVELOPMENT ORDINANCES IN PRESERVING HIGH WATER QUALITY?

Municipal officials may wish to assess the conformity of their regulations to the current highest standards reflected in model ordinances prepared by NIPC and other agencies. The following questions do not provide a thorough assessment, but identify areas of critical concern. The documents referred to in the adjoining article provide more complete standards. The NIPC staff can provide assistance in interpreting these sources.

- Do you require that detention basins be designed so that pollutant-laden sediments will have a chance to settle out of stormwater?
- Is storage provided for the 100-year storm based on recently revised Illinois State Water Survey rainfall estimates? Does the ordinance require a release of no more than .15 cubic feet of water per second from each acre during the 100-year storm, and no more than .04 cfs/acre during the 2-year event?
- Is modification of the floodway limited to only necessary activities? Is mitigation of impacts required even when appropriate uses (such as recreational areas) are allowed in the floodplain?
- Are wetlands protected from alterations such as drainage or excavation, which are not regulated by the Corps of Engineers? Are buffer areas required between wetlands and newly developed areas?
- Must an erosion control plan be approved before a construction permit will be issued for a residential, industrial or commercial development? Are erosion control requirements consistently enforced to prevent water quality degradation?

All of these ordinances are available from the NIPC Publications Department. The Model Floodplain Ordinance is also available from the Illinois Division of Water Resources. Commission staff can provide assistance in interpreting the model ordinances and in recommending administrative and enforcement programs.

Wetland and Water Resource Management in the Upper Fox River - SAMP

The Fox River north of Algonquin, including the Chain-O-Lakes recreational area, serves over 30,000 boaters with shoreline residents and businesses in over a dozen northern Illinois communities. These intensive uses along the waterway have created indispensable economic benefits but not without considerable environmental costs. An interagency-coordinated Special Area Management Plan (SAMP) process was formed in January 1990 to address the concerns of area residents and outside recreationists encompassing water quality, fish and wildlife habitats, boating safety, and many other water quality-related issues.

The safekeeping of environmental health and water resource protection depends on the collaborative efforts of municipal, county, state, and federal officials along with the appropriate technical expertise to deal with the complex problems of the waterway. The many channels and streams that are clogged with eroded sediments and deteriorating wetlands are perhaps symbols of the disjointed policies and ill-coordinated efforts of various agencies in the past. Over the two-year period of study, NIPC staff will serve to coordinate the SAMP technical working committees, each charged with making specific recommendations to combat the losses of beneficial uses and values of this large and precious water resource area.

Without the benefit of special funding, the SAMP project relies on large-scale volunteerism. To date, more than seventy individuals representing the two counties of Lake and McHenry, their municipal associations, the Illinois Department of Transportation, Division of Water Resources, citizen's environmental advocacy groups, the Army Corps of Engineers, Department of Conservation, both state and federal Environmental Protection Agencies, the State Water Survey, the Fox River Waterway Management Agency, and other concerned citizens have donated over one thousand staff-hours to the Plan.

An important element of the SAMP interagency agreement is the gathering of information from the public as to the major concerns facing residents and users of the waterway. A public hearing was conducted, and the following summary represents the principal issues of concern among the attendees.

Land Use Concerns:

- There was both opposition and support for the use of various proposed dredge disposal sites.
- Some citizens felt that more conservation areas need to be set aside, including open space for non-boaters.
- Several favored limiting the number of marinas, public access ramps, and taverns along the waterway.

Recreational Use Concerns:

- Many favored more "slow-no-wake zones" in places subject to crowding and shoreline erosion.
- More attention should be given to the needs of anglers and swimmers.
- Pier size and boat horsepower limits should be considered.
- The practice of waste disposal by boats into the waterway should be more strictly regulated and enforced.

Wetland Concerns:

- There was general concern about the negative effect of the spring drawdown (in preparation for spring flood events) on desirable wetland vegetation in the lakes, including lotus and grasses.
- Several favored no additional wetland fill and dredge activities.
- One speaker favored "barrier island" techniques, such as those used by the Army Corps of Engineers in Mississippi, to protect wetlands and supplement other erosion management methods.

Water Quality, Sediment and Flood Control Concerns:

- One speaker was concerned about the destabilizing effect of dredging activities in the channels, noting that soils on adjacent properties tend to subside and erode after dredged material is removed.
- There was interest in public disclosure of chemical analyses of water and sediment within the waterway.

- One speaker felt that the Corps of Engineers was not doing all it could to facilitate badly needed dredging.
- Pollutant source control was mentioned as a primary concern among those who felt that dredging is only treating a symptom of the sediment pollution problem.
- Poor septic systems were blamed, in part, for the water quality problems in the area.

In response to these concerns, several important planning initiatives are being developed under the guidance of the thirteen-member Steering Committee, including a boating impact and capacity study, a wetland evaluation and enhancement program, an analysis of existing water use and land use authorities, a sediment and pollutant reduction program, and new regulatory recommendations. The public hearing provided an important source of inspiration to all those involved in the Plan.

As one impassioned citizen who sought a more traditional and harmonious relationship with the Fox River wrote, "squeezed into that flickering moment between birth and death, we are but transient stewards of nature's creation... I ask you to assert an imaginative and responsible stewardship over that neglected and abused piece of the creation called the Fox River."

More Clean Lakes in Northeastern Illinois

Lakes represent the water resource most heavily used for recreation in northeastern Illinois, and concern for the quality of these lakes has been steadily increasing. In recent years, NIPC staff have conducted a number of lake investigations and implementation programs as part of the U.S. EPA's Clean Lakes Program. These projects have not only resulted in improved lake uses and water quality conditions at targeted lakes, but the research investigations have greatly increased our knowledge of the problems -- and solutions -- for lake management in the region.

The Skokie Lagoons Lake Restoration Program began in 1979 with a Diagnostic/Feasibility Study of the 226-acre series of lakes in extreme northeastern Cook County. This "Phase I Study" of the lakes resulted in their owner, the Forest Preserve District of Cook County, receiving federal matching funds (Phase II) for the implementation of the study's recommended lake

management program. With the completion in 1987 of a diversion system which carries municipal wastewater treatment plant effluent around the lagoons, removal of accumulated sediments and lake deepening has begun. As of June 1990, four of the seven lakes have been dredged and deepened for fisheries habitat improvement. Plans for boat access improvements, shoreland wildlife habitat enhancement, shoreline stabilization, and fisheries rejuvenation are all expected to be implemented in the near future. Supplementary Phase II matching funds from the U.S. EPA are expected to be forthcoming later in 1990 to continue the cleanup work in additional lake areas.

During 1989, NIPC also completed Diagnostic/Feasibility Phase I Studies at four of the Chicago Park District's lagoons: Humboldt Park, Columbus Park, Marquette Park, and Sherman Park. Plagued by somewhat similar problems, these urban lakes are vital to inner-city recreational users. Many of the Park District's lagoons have been in existence since the turn of the century, and the District has reaffirmed its commitment to restore and protect these water resources.

The Park District's Sherman Park Lagoon Restoration Program proposal was submitted and approved for funding by the U.S. EPA in mid-1990, and this Phase II project is expected to begin later this year. Major elements of the project include sediment removal and consolidation, installation of a groundwater well for water supply, shoreline erosion control and replanting with native wetland vegetation, and improved aquatic vegetation management approaches. Also approved by U.S. EPA for funding in mid-1990 were Diagnostic/Feasibility Studies for four additional District lagoons at Lincoln Park, Washington Park, Douglas Park, and Garfield Park.

1989-90 also saw the continuation of a Phase I project at McCullom Lake in McHenry County. Though the lake is quite appealing visually, the City of McHenry, which owns most of the lake, is interested in learning why the lake sometimes experiences overgrowth of aquatic vegetation. Lake users also are interested in improving the lake's swimming and fishing opportunities. When completed next year, the Phase I Study will document the sources and causes of water quality problems, and it will present a long-term plan for restoring and protecting this important community asset.

Lake Water Quality Assessment

Another recent lake management activity of the NIPC staff is regional lake monitoring and assessment. In October of 1988, the U.S. Environmental Protection Agency approved a request by the Illinois Environmental Protection Agency for a Lake Water Quality Assessment grant from the federal Clean Lakes Program. The grant is being used to improve the quantity as well as the quality of lake information in Illinois, with a completion date set for April 1991.

To assist IEPA in accomplishing the numerous goals of the grant, NIPC was contracted to collect data on several lakes within the six-county region. Between early August and mid-September of 1989, 53 lakes were visited by the Commission's Natural Resources Department staff and sampled for water and sediment quality.

Following this field work, additional lake assessment data was compiled and updated for these plus 76 other lakes in the region, for inclusion in IEPA's 1988-89 Illinois Water Quality Report. Information collected included lake morphology; hydrology; ownership/access; designated uses and impairments; recreational facilities; water quality problems; causes and sources of impairment; and lake/watershed management practices. State reports are submitted to the U.S. Environmental Protection Agency and forwarded, along with a national summary report, to Congress.

1989 Volunteer Lake Monitoring Program

NIPC serves as the regional coordinator for the Illinois Environmental Protection Agency's Volunteer Lake Monitoring Program (VLMP). Participants are trained to measure water transparency with a Secchi disc: an eight-inch, weighted metal plate painted black and white in alternating quadrants, attached to a calibrated rope. The disc is lowered into the water and the depth to which it is visible is recorded. This measurement, called the Secchi disc depth, is used to document changes in the clarity of the lake water. Typically, three sites are monitored in each lake twice per month from May through October.

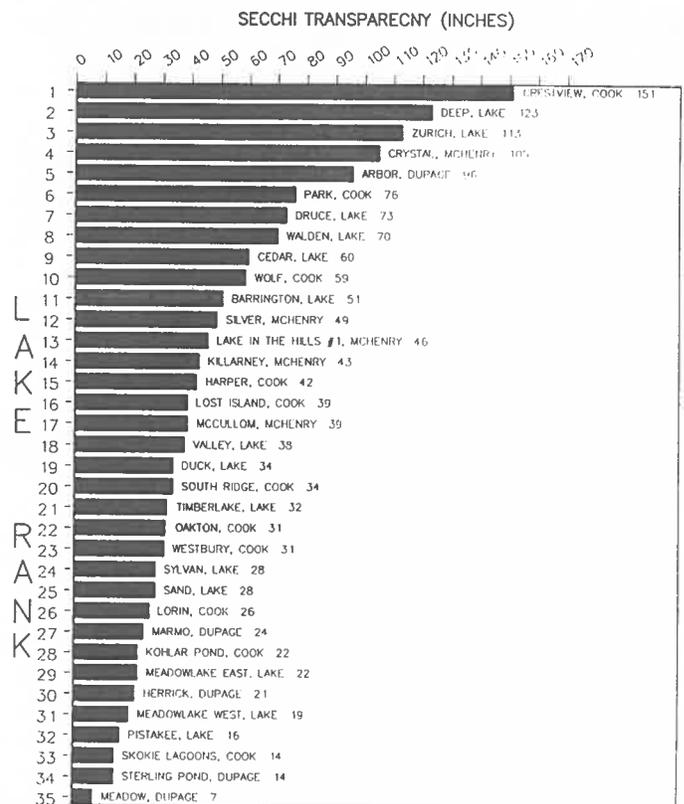
The volunteers also record a series of field observations including water color, suspended sediment and algae, aquatic weeds, and weather conditions. Recent

lake management activities or other factors which could impact the lake also are documented.

During 1989, 35 lakes in the northeastern Illinois region were monitored during four more sampling periods. Additionally, at five lakes, the volunteers performed more comprehensive water quality sampling. Figure 1 presents the ranking of the participating lakes by average annual transparency. As can be seen, Crestview Lake in Streamwood exhibited the greatest average clarity in 1989 at 151 inches, while Meadow lake at the Morton Arboretum exhibited the lowest clarity with an average of 7 inches (due to substantial algal growth).

This program, conducted since 1981, has provided valuable information regarding trends in water quality at individual lakes, as well as regionally. It also has been a valuable tool for public education and technical assistance for lake residents and managers in the region.

Figure 1
LAKE RANKING - 1989 VLMP
NORTHEASTERN ILLINOIS



State Groundwater Protection Regulations

A substantial number of communities and businesses in northeastern Illinois are dependent on groundwater for their water supply. The risk of contamination of these water supplies by other activities--waste disposal, storage of de-icing materials, pesticide application, and others--is thus of serious concern. Such contamination also may affect surface water quality since shallow groundwater is often a source of water for lakes and streams.

In 1987, the General Assembly enacted the Illinois Groundwater Protection Act (Public Act 85-0863) to begin addressing this risk throughout the state. The Act provides for a comprehensive set of measures requiring close cooperation among state and local agencies. Particular emphasis is placed on preventive measures. This is important since groundwater contamination, once it occurs, is extraordinarily difficult to clean up in a short period of time.

The first line of defense for the protection of water supply wells is the establishment of a setback zone around each wellhead. No new potential source of groundwater pollution (such as a landfill) or potential route for pollutants into an aquifer (such as an injection well) may be established within the setback zone around a water supply well. At the same time, no new well may be drilled within a similar setback zone around an existing potential source or route.

The minimum setback distance is 200 feet for any public or private water supply well. The minimum zone is increased to 400 feet for a community water supply well which draws from a particularly vulnerable aquifer. The Act contains a schedule for determining when a well, source, or route is considered "new" and thus subject to restrictions.

In some situations, the minimum setback may be inadequate to protect a water supply from potential contamination. Several further remedies are provided by the Act. A municipality or county acting by ordinance, or the IEPA by petition to the Illinois Pollution Control Board, may establish a maximum setback zone. This may extend as much as 1000 feet from the wellhead of a community water supply well. Before a maximum setback can be established, a technical study must be conducted to identify the area from which the well draws water and the geologic characteristics of that area.

No potential primary source of pollution (such as a community waste disposal facility or a storage area for large quantities of petroleum or pesticides) may be established within an extended setback zone. A secondary source (such as an on-site disposal facility or a small-scale storage facility) is permissible in such a zone. These provisions of the Act took effect on July 1, 1989.

More extensive protection for a groundwater resource may be provided by designating a "regulated recharge area." This is done by the Pollution Control Board upon IEPA's recommendation after a petition by a county or municipal government. The statute defines this as a "compact" geographic area but does not otherwise establish size limitations. The local government must first conduct a groundwater protection needs assessment to determine such things as the adequacy of existing local land use controls to protect groundwater, the extent of the water source's recharge area, and the existence of potential pollution sources within the recharge area. Once a regulated recharge area is established, regulations with respect to new activities apply throughout it. Existing activities within the area of lateral influence (up to 2500 feet from the wellhead) also may be subject to regulation. A critical element of the entire regulatory program will be the establishment of groundwater standards. These will provide the basis on which the severity of contamination can be assessed and the need for corrective and/or punitive action determined. Issues involved in the establishment of standards include the contaminants to be regulated, the degree of contamination which is considered "acceptable," and the extent to which a policy of nondegradation should be pursued. The IEPA has submitted a set of proposed standards to the Pollution Control Board.

The Groundwater Protection Act contains a number of other provisions. Useful background information for local officials is contained in [A Primer on Certain Provisions of the Illinois Groundwater Protection Act](#), available from the IEPA Division of Public Water Supplies at (217) 782-9470.

Land Treatment of Wastewater

In the past several years, NIPC has been called upon to review an increasing number of proposals for land treatment of wastewater in new developments. In a land treatment process, wastewater is treated in an aerated lagoon system and then used to irrigate lawns, golf courses, nursery stock, or other vegetated areas. The approach is offered by its proponents as a less expensive and more environmentally sensitive alternative to traditional municipal treatment.

Land treatment of wastewater is not a new technology. The prototype for the current systems was installed in Muskegon, Michigan in 1973. The technology was first applied in northeastern Illinois at Trammel Crow's Hamilton Lakes development in Itasca in 1980. Since then, ten other systems--most of them in Lake County--have been installed to serve a variety of land uses. Nearly twenty others are in various stages of development.

The operation of a land treatment system is relatively simple. Wastewater is introduced into the bottom of a deep (up to 20 feet) lagoon where it is held for two to seven weeks while the wastes are decomposed by natural microorganisms. Air is introduced into the lagoon in order to prevent the odors associated with anaerobic conditions. When this phase of treatment is complete, the water is passed through a sand filter and a chlorinator and then applied by spraying to land planted in grass or other cover crop. Nutrients are absorbed by the vegetation and contaminants are removed from the water as it passes through the soil. Storage lagoons are provided to hold treated water during times when irrigation is not practical.

The primary prerequisite of the system is adequate land for the treatment and storage lagoons and for irrigation. A system treating one million gallons per day (equivalent to approximately 4000 households) may require from 250 to 400 acres of irrigable land, depending on the soil type and the desired rate of irrigation. This land is customarily owned or leased by the system operator. It need not be adjacent to the development, since the treated water can be piped as easily as untreated wastewater can.

Proponents of land treatment cite a number of advantages of the approach over traditional wastewater treatment systems:

- Even with the expanses of land required, the system is less expensive to construct and operate since it has few moving parts or material requirements. The entire cost is customarily borne by the private developer, as is the responsibility for maintenance and operation.
- Nutrients in the wastewater are put to productive use rather than being discharged into surface waters where they may contribute to excess growth of algae and aquatic plants. In fact, the system is effectively "zero discharge" unless low soil permeability in the irrigation area requires that subsurface drains be used. Because of this, land treatment projects are not required to secure discharge (NPDES) permits from the Environmental Protection Agency.
- Net groundwater consumption is reduced since wastewater is reused for irrigation and then allowed to percolate back into the earth.
- Because of the land requirement, the system encourages low development densities and retention of open space in landscaping, recreational use, or cropland.

However, concerns have been raised about some impacts of the land treatment approach:

- Because development can take place without regard to the location of treatment plants or interceptor sewers, and because of the open land required, use of land treatment may encourage undesirable urban sprawl.
- Wastewater from new developments is diverted away from treatment facilities which were sized to accommodate it under long-range facilities plans. Treatment authorities confronted by this loss of anticipated revenue may have difficulty meeting their obligations to bondholders.
- Local governments, with little authority to regulate maintenance and operation of the systems, may have to step in if homeowners' associations or other private operators fail in their functions.

Under state legislation enacted in 1988, any proposed land treatment system must be submitted to NIPC for review and must receive a development permit from IEPA. County review is also required if wastewater from

one county is to be used for irrigation in another. Because of their implications for facility planning, land treatment projects are treated by the Commission as amendments to the regional water quality management plan. The Commission has added the following to its plan amendment criteria:

"The applicant must demonstrate that the unit of local government granting zoning to the project has formally accepted financial responsibility for the wastewater land treatment system in the event of system malfunction or failure. Such acceptance must be in the form of a resolution from the unit of local government granting zoning."

The IEPA has developed draft criteria for approval of these projects. Recent project review letters from the Agency indicate concern with the operating safety of the systems, the adequacy of storage capacity, and the presence of buffer zones or other assurances that irrigation spray will not reach homes or areas where human contact is likely. Proponents of land treatment cite new regulations adopted by the State of Florida and based on ten years of virus studies. These provide for generally unrestricted use of wastewater which has been pretreated to secondary treatment standards, filtered, and disinfected. The systems being designed in Illinois, according to their advocates, meet these requirements.

AREAWIDE WATER QUALITY STEERING COMMITTEE (AWQSC) REVIEW ACTIONS

January 1, 1988 to June 30, 1990

WQ NUMBER	APPLICANT	TYPE ACTION	LEVEL	FINDING	WQ NUMBER	APPLICANT	TYPE ACTION	LEVEL	FINDING
86-WQ-001	CITY OF NAPERVILLE	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-008	VILLAGE OF PLAINFIELD	FACILITY PLAN REVIEW	11	CONSISTENT
86-WQ-003	CITY OF ST. CHARLES	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-009	DOWNERS GROVE SD	FPA BOUNDARY CHANGE	11	SUPPORT
88-WQ-004	CITY OF JOLIET	FACILITY PLAN REVIEW	11	CONSISTENT	89-WQ-013	DUPAGE DEPT ENV COM	FPA BOUNDARY CHANGE	11	SUPPORT
86-WQ-005	VILLAGE OF ROUND LAKE BEACH	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-014	VILLAGE OF RD LAKE BEACH	FPA BOUNDARY CHANGE	11	SUPPORT
88-WQ-007	HAMPTON DEVELOPMENT	FPA BOUNDARY CHANGE	11	NON SUPPORT	89-WQ-020	ROSE PACKING CO	FPA BOUNDARY CHANGE	11	SUPPORT
88-WQ-008	VILLAGE OF ROUND LAKE BEACH	FPA BOUNDARY CHANGE	11	NON SUPPORT	89-WQ-021	CALVARY TEMPLE	LAND TREATMENT	11	NON-SUPPORT
88-WQ-010	CONSUMERS ILLINOIS WATER COMPANY	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-022	SHO-DEEN INC.	LAND TREATMENT	11	NON-SUPPORT
88-WQ-011	NORTH SHORE SANITARY DISTRICT	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-023	EQUITY DEVELOPING CORP	LAND TREATMENT	11	NON-SUPPORT
88-WQ-019	LAKE IN THE HILLS S.D.	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-024	METRO UTILITY CO	FPA CREATION	1	CONDITIONAL SUPPORT
88-WQ-020	WHEATON S.D.	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-025	Elgin S.D.	FPA BOUNDARY CHANGE	11	SUPPORT
88-WQ-021	VILLAGE OF E. DUNDEE	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-026	VILLAGE OF SUGAR GROVE	FPA AMENDMENT	11	NON-SUPPORT
88-WQ-025	VILLAGE OF SUGAR GROVE	FPA BOUNDARY CHANGE	11	CONDITIONAL SUPPORT	89-WQ-027	CITY OF ST. CHARLES	FPA AMENDMENT	11	SUPPORT
88-WQ-026	VILLAGE OF CARPENTERSVILLE	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-031	CITY OF WILMINGTON	FPA BOUNDARY AMEND	11	SUPPORT
88-WQ-027	NORTHWESTERN UNIVERSITY	NPDES REQUEST	11	SUPPORT	89-WQ-032	VILLAGE OF ALGONQUIN	FPA BOUNDARY CHANGE	11	SUPPORT
88-WQ-030	CITY OF ST CHARLES	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-033	LANDMARK HOMES	LAND TREATMENT SYSTEM	11	CONDITIONAL SUPPORT
88-WQ-031	VILLAGE OF BOLINGBROOK	FACILITY PLAN REVIEW	11	CONSISTENT	89-WQ-036	LAKE CO. PUBLIC WORKS	PLANT EXPANSION	11	SUPPORT
88-WQ-033	VILLAGE OF HAINESVILLE	FPA BOUNDARY CHANGE	11	SUPPORT	89-WQ-042	VILLAGE OF MAPLE PARK	NEW PLANT-REVISED FAC. PLA	11	SUPPORT
88-WQ-034	CITY OF JOLIET	FPA BOUNDARY CHANGE	11	CONDITIONAL SUPPORT	90-WQ-001	W.W. GRAINGER INC.	LAND TREATMENT	11	SUSPENDED
88-WQ-036	ABBOTT LABS	NEW DISCHARGE	11	CONSISTENT	90-WQ-002	VILLAGE OF ALGONQUIN	EXPANDED STP	11	SUPPORT
88-WQ-037	LANDMARK HOMES	LAND TREATMENT	11	SUPPORT	90-WQ-003	VILLAGE OF DEERFIELD	FPA AMENDMENT MAP REVISION	11	SUPPORT
88-WQ-039	THE HOODY CHURCH	LAND TREATMENT	11	SUPPORT	90-WQ-007	VILLAGE OF CHANNAHON	FPA AMENDMENT	11	SUPPORT
88-WQ-040	DUPAGE CO DEPT OF ENV CONCERNS	FPA BOUNDARY CHANGE	11	SUSPENDED	90-WQ-008	City of McHenry	FPA amend-Plant Expansion	11	SUPPORT
88-WQ-041	CORPORATEUM DEVELOP. CORP.	LAND TREATMENT	11	SUPPORT	90-WQ-009	VILLAGE OF LAKE VILLA	FACILITY PLAN AMENDMENT	11	CONSISTENT
88-WQ-042	AURORA SANT DIST	FPA BOUNDARY CHANGE	11	SUPPORT	90-WQ-012	CITY OF ST CHARLES	FPA AMENDMENT	11	SUPPORT
88-WQ-043	PHEASANT LAKE RST	PLANT EXPANSION	11	CONDITIONAL SUPPORT	90-WQ-013	LAKE IN THE HILLS S.D.	FPA AMENDMENT	11	RAISED TO LEVEL 1
88-WQ-045	GLENBARD WASTEWATER AUTHORITY	FPA BOUNDARY CHANGE	11	SUPPORT	90-WQ-014	LAKE IN THE HILLS S.D.	FPA AMENDMENT	11	SUPPORT
88-WQ-046	GOLDEN ACRES PARTNERSHIP	LAND TREATMENT	11	CONDITIONAL SUPPORT	90-WQ-015	THORN CREEK BASIN S.D	FPA AMENDMENT	11	SUPPORT
88-WQ-047	CITY OF NAPERVILLE	PLANT EXPANSION	11	CONSISTENT	90-WQ-017	DUPAGE CO. DEPT. OF E.C.	SLUDGE COMPOSTING FAC. PLA	11	SUPPORT
88-WQ-048	METRO UTILITY CO.	FPA BOUNDARY CHANGE	11	CONDITIONAL SUPPORT	90-WQ-018	Village of New Lenox	Plant Expansion	11	SUPPORT
88-WQ-050	PRENTISS PROPERTIES	LAND TREATMENT	11	SUPPORT	90-WQ-019	Lake in the Hills S.D.	Plant expansion	11	SUPPORT
88-WQ-051	VILLAGE OF SHOREWOOD	PLANT EXPANSION	11	CONDITIONAL SUPPORT	90-WQ-021	Sheaffer & Roland, Glenwood Scho	Land Treatment system	11	SUPPORT
88-WQ-052	VILLAGE OF HUNTLEY	PLANT EXPANSION	11	NO ACTION	90-WQ-022	Village of Round Lake Beach	FPA amendment	11	DEFERRED
89-WQ-001	VILLAGE OF SHOREWOOD	FACILITY PLAN REVIEW	11	CONSISTENT	90-WQ-023	Village of Frankfort	FPA amendment	11	SUPPORT
89-WQ-002	CONSUMER ILLINOIS WATER CO.	NEW TREATMENT PLANT	11	CONDITIONAL SUPPORT	90-WQ-024	Impregila/Ebasco/Losinger	New Discharge	11	SUPPORT
89-WQ-003	THE MARC GROUP	LAND TREATMENT	11	CONDITIONAL SUPPORT	90-WQ-025	Joan Bakely	New Discharge	11	SUPPORT
89-WQ-007	GLENBARD WASTEWATER AUTHORITY	FPA BOUNDARY CHANGE	11	SUPPORT	90-WQ-026	City of Aurora	New Discharge	11	SUPPORT

NORTHEASTERN ILLINOIS PLANNING COMMISSION – COMMITTEE MEMBERSHIP AS OF JUNE 1990

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Jerry Butler
Vice President

Dean C. Cunat
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Past Commission President

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David D. Orr, *Alderman,
19th Ward, Chicago*

Richard H. Smith, *Alderman,
8th Ward, Chicago*

Suzanna Marquez,
Assistant to the Mayor

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Mary T. Latta, *President,
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David L. Pierce, *Mayor,
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Margaret P. Price, *Mayor,
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Sheila H. Schultz, *President,
Village of Wheeling*

Daniel J. Shea, *President,
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Cook County Board of Commissioners*

Joseph P. Mathewson, *Member,
Cook County Board of Commissioners*

Constance C. Zimmermann, *Member,
DuPage County Board*

Nick P. Kerasiotis, *Member,
Kane County Board*

Eleanor S. Rostron, *Member,
Lake County Board*

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Will County Board*

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Appointed by the Board of the Chicago Transit Authority

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Joanne H. Alter

Appointed by the Board of the Illinois Association of Park Districts

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Appointment Pending

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1988-90 WATER QUALITY REPORT



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