United States
Environmental Protection
Agency

Region 5
230 South Dearborn Street
Chicago, Illinois 60604

August 1984

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EPA WATER QUALITY

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Cover photo: Sedges and water grasses, Anderson Lake, Wisconsin.

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Region 5's Clean Water Program

By Charles H. Sutfin
Director, Region 5 Water Division

As Director of the Water Division for EPA Region 5, I am responsible for overseeing several programs that protect our midwestern rivers, lakes, streams, and underground sources of drinking water from pollution; I am also responsible for ensuring safe public drinking-water supplies.

Our authority and direction for this work comes primarily from the Clean Water Act, enacted in 1972 and since amended, and the Safe Drinking Water Act, passed by Congress in 1974. The Clean Water Act's goal is to restore the Nation's waters to what Congress described as "fishable, swimmable" conditions. The Safe Drinking Water Act was designed to ensure that public water systems provide safe drinking water and to protect underground sources of drinking water from contamination by the injection of waste into the ground.

The Clean Water Act is a comprehensive statute that gives EPA and the States authority to: (1) establish standards for water quality; (2) establish technology-based waste treatment guidelines for industries and municipalities; (3) conduct water quality management planning; (4) control the discharge of pollutants as required by the standards and guidelines through a permit system; (5) provide funding to municipalities to build sewage treatment plants that will comply with permits, and (6) monitor and enforce compliance with permit limitations. Monitoring water quality to determine our progress in achieving the water quality goals of the Act is also an important responsibility.

The Act provides for a strong Federal-State partnership in carrying out these responsibilities. We have delegated much of the day-to-day program management responsibility to the States. However, EPA is responsible for providing funds for States to use in the planning and management of their water quality programs, establishing policies and setting standards, providing technical assistance, and monitoring and evaluating State activities. We also can enforce discharge permits if a State fails to do so.

Here in Region 5, we have established several important goals for Clean Water Act programs during Fiscal Years 1985 and 1986: to eliminate the discharge of toxic substances into our waters; to ensure that municipal sewage treatment plants meet Federal permit requirements; to coordinate the management of water quality program activities to restore and maintain priority water bodies identified by the States and the Regional Office; and finally, to ensure timely legal or administrative action when there are serious violations of wastewater discharge permit requirements.

In order to control the discharge of toxicants in the Region, we are reissuing all municipal and industrial discharge permits during Fiscal Years 1984 and 1985. The new permits will include provisions requiring the

reduction or elimination of toxicants in wastewater. Concurrently, we are requiring pretreatment programs for municipal sewage treatment plants that accept industrial wastewater. Many toxicants enter our waterways after passing through municipal plants that are not capable of removing them; pretreatment programs are designed to prevent this problem.

We have identified more than 230 industries in the Region that will potentially need toxicant controls and we intend to reissue all of their permits by the end of 1985. We have also identified about 450 municipal sewage treatment plants that will need to develop industrial pretreatment programs.

The emphasis on pretreatment programs, however, is accompanied by a strong effort on our part to see that municipal sewage treatment plants comply with their discharge permits by July 1, 1988 — with or without Federal funding. The Agency has developed a national municipal policy to see that this is done. Part of this strategy depends on directing construction grants to the highest-priority projects. The Region currently has $814 million in construction grants available for obligation through the end of Fiscal Year 1985. We expect to receive additional appropriations of approximately $530 million for that year. Municipalities that do not receive Federal money will still be expected to comply with their permits by 1988, or as soon as practicable thereafter.

Region 5 has recently adopted a new management approach to water pollution control that focuses our program activities on priority water bodies designated by the States and our regional office. This approach involves coordinating our activities so that they result in measurable improvement on the designated waterways.

Often it takes several years before progress can be seen. The Grand Calumet River in Indiana, for example, it so severely polluted that it will take several years to clean up. It is one of our priority water bodies and will remain so until it's vastly improved.

Certain areas of the Great Lakes have also been designated as priorities, consistent with our commitments to the Great Lakes Water Quality Agreement with Canada. We have made tremendous progress in the Great Lakes by controlling phosphorus discharges from municipal sewage treatment plants on the lakes and their tributaries. However, the lakes are still affected by phosphorus runoff from farmland and by in-place pollutants in the harbors and estuaries.

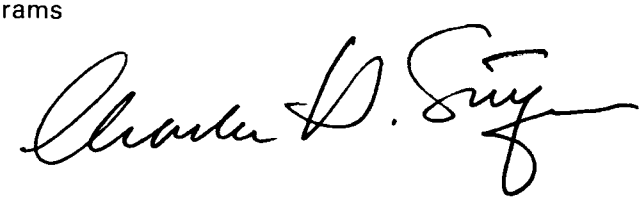
One of the most important things that we do in Region 5 is to make sure that the States are enforcing the requirements of the Clean Water Act as established in discharge permits for municipalities and industries. The Act provides for dual enforcement authority so that if a State fails to take necessary legal action, the Federal Government can step in. In most cases, States are responsible for taking enforcement actions. However, if they can't or won't, we will. So far this year we have referred 7 cases to the U.S. Department of Justice for prosecution and have issued 121 administrative orders to industries and municipalities that have not complied with the Clean Water Act.

Under the Safe Drinking Water Act, our highest priority is to protect underground sources of drinking water. This requires the coordination of many different EPA programs within the Region that have an impact on ground-water quality. Our goal is to see that we do not establish conflicting requirements under each of the different programs. In addition, we provide money for the States to use in establishing their own ground-water protection programs. Five of our six regional States are already actively working to do this.

In addition, we are also implementing a plan to see that every underground source of drinking water in the Region is sampled for the presence of volatile synthetic organic chemicals (VOC's). VOC's include such chemicals as benzene and trichloroethylene, which get into the ground water from leaking underground storage tanks, septic tanks, and other sources. When these chemicals are found in concentrations that exceed acceptable health risks, we assist communities in finding alternative drinking water supplies.

In conclusion, I would like to stress that major progress has been made in our Region under a strong and firm Clean Water Act. There are examples of this in every State and in the Great Lakes. We have the authority under the law to set discharge standards for toxicants and to set public health standards to ensure that the public is protected when they swim in, or drink, the water. The authority is there, and standards are revised through the years as we learn more about water pollution and its effects on human health and aquatic life.

I hope you will find this publication useful in your efforts to protect and improve our midwestern environment.



America's Waters Improvec After Clean Water Act

A recent report shows that 47,000 miles of American streams improved in quality during the decade following passage of the 1972 Clean Water Act. However, water quality in 11,000 stream miles was degraded during that time.

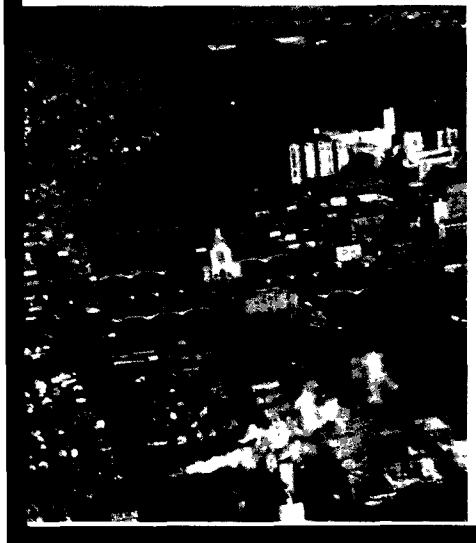
In a 1984 report entitled "America's Clean Water," the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) found that "tremendous investment " in pollution control by industry and government has paid off. "Even with substantial increases in the number of waste sources, pollution of the country's streams and lakes is being reduced," the report said. "Most of our water has maintained its quality despite the pressures of wastes from more people and more industry."

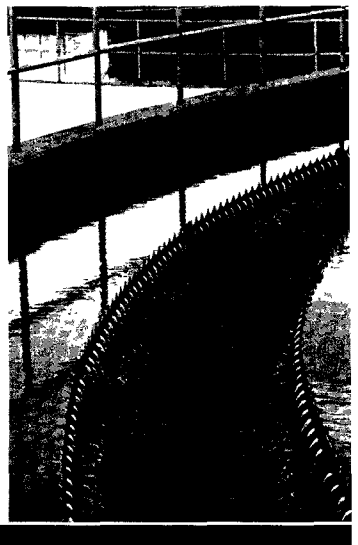
The Association, in cooperation with EPA, gathered its data from 56 reports provided voluntarily by State, interstate, and territorial water pollution control agencies. The report's findings reflect State evaluations of 42 percent of the Nation's streams (758,000 miles) and half (17.4 million acres) of the Nation's publicly owned lakes and reservoirs.

In the 49 States that submitted data to ASIWPCA, water quality in 296,000 miles of streams remained the same between 1972 and 1982, 47,000 miles improved, and 11,000 miles were degraded.

With regard to lakes and reservoirs, the States reported that 10.1 million acres of water maintained the same quality they had in 1972, 390,000 acres improved, and 1.7 million were degraded. The condition of 4.2 million acres was unknown or not reported.

Water quality in Region 5's streams, lakes and reservoirs generally improved between 1972 and 1982. However, Michigan officials reported that only 26.6 percent (348 miles) of the State's stream miles were supporting their designated uses in 1982, as compared to 40.9 percent (535 miles) in 1972. This statistic probably does not reflect an actual decline in water quality, but instead is the result of substantial cutbacks in monitoring, said Richard Hobrla, an environmental engineer for the Michigan Department of Natural Resources. "In 1982 we really knew far less about Michigan waters than we did in 1972," he said, naming budget cuts as the main reason. The State of Michigan did report improvement in lakes and reservoirs, though, from 75 percent of total acreage supporting designated uses in 1972 to 84 percent in 1982.





Other findings:

Municipal Sewage Treatment

Treatment capabilities increased at a higher rate than the Nation's population grew. Nationwide, a noticeable improvement in water quality resulted from a $260 per capita expenditure for municipal sewage system capital costs. However, a 1982 survey showed that $118 billion is still required to meet public wastewater system needs.

Industrial Wastewater Treatment

Industrial dischargers "have invested heavily to reduce their water pollution. . . . One key measure of industries' cleanup effort and progress is the greatly increased level of their compliance with State or Federally established discharge limitations, especially for plants with the largest wastewater flows."

Nonpoint Source Pollution

Agricultural pollution is generally being addressed through voluntary programs. Urban runoff control is generally voluntary also. "Nonpoint pollution from mining and construction activities are the only categories that are commonly subject to State regulation. In the case of mining, both active and abandoned mines; must be addressed."

More than a dozen States report using erosion and sediment control legislation to mandate reduction of construction site runoff.

State Programs

"State water quality programs have undergone a marked change in emphasis in recent years." While attention during the early years of the Clean Water Act focused on pollutants that had been commonly known to harm water quality or public health, the focus was later broadened "to identify and control nonpoint-source pollution, to measure and reduce toxic pollutants from point and nonpoint sources, and to protect ground-water resources. During recent years, attention in many States has also expanded from streams and rivers to increased emphasis on lake quality."

Current Pollution Problems

Municipal sewage treatment plants were ranked first by 19 States as the reason some of their streams were not supporting the uses for which they had been designated. Industrial point sources were ranked first by only 3 States, while nonpoint sources were ranked first by 26 other States.

Municipal pollutants of concern are those that "reduce the oxygen levels of the waters to which they are discharged, disease-related bacteria, and nutrients that stimulate undesirable growth of algae.

"The nonpoint-source pollutants most seriously affecting water quality in most States are suspended particles of solid materials, chemical nutrients (nitrogen and phosphorus) that promote undesirable growth of algae, waste-related bacteria, and pesticides and heavy metals."

The report also mentions challenges that will face water quality experts in the future. Municipal challenges will include proper plant operation and maintenance by qualified personnel, effective pretreatment programs, combined sewer overflow controls, and developing a regulatory program for managing sludge correctly.

In other areas, 40 reports stressed the need for effective nonpoint-source controls and adequate protection for ground-water quantity and quality. Controlling toxic pollutants was also a concern, with 41 States reporting that this problem "is one of the major problems they expect to be confronting in the years ahead."

Dedicated Judge Presides Over Detroit Sewage Cleanup

After 5 years of being in Federal receivership ordered by a Detroit Federal District Judge, the Detroit sewage treatment plant is about to revert to the control of the City and its Water and Sewerage Department. Once responsible for much of the pollution in the Detroit River and Lake Erie, the treatment plant is now "in substantial compliance" with the Clean Water Act, said Judge John Feikens, the man many credit with achieving this remarkable result. The following story is an account of the Judge's personal role in the cleanup process.

The 1982 Detroit News cartoon showed a man seated in an armchair, intently perusing a book entitled "How to Haul Your Own Sludge, A-Z." On the wall behind him was a picture labeled "Effluent Czar." Water was seeping in under the nearby door, where a mop stood at the ready. A briefcase identified the figure in the cartoon as Judge John Feikens, the man many people credit with bringing the Detroit Sewage Treatment Plant into the 20th Century.

Feikens, senior judge for the Federal District Court in Detroit, said he wouldn't describe himself as a czar. His own opinion of his role in the 7-year process of cleaning up the badly mismanaged Detroit sewage plant is more along the lines of the "head of a team." The success that resulted, he said, "required team effort."

Feikens first became involved in the entire effort in 1977, when the EPA filed a lawsuit against the City of Detroit for violating the sewage treatment plant's Federal wastewater discharge permit. Lake Erie and the Detroit River were horribly polluted with sewage, industrial wastes, oils, silts, sediments, and phosphorus — a condition to which Detroit, with the world's largest sewage treatment plant, was a major contributor.

After EPA and the City negotiated a consent judgment in 1977, in which Detroit promised to take action needed to bring the plant into compliance with its permit, EPA took the City into Judge Feikens' court for not complying with the terms of the consent order. In March 1979, the judge put the plant into Federal receivership with Detroit Mayor Coleman Young as the administrator.

This action, a close observer recalled, was "not to separate the City from its responsibilities, but to enable it to more effectively and efficiently carry out its responsibilities."

"All along, the judge stated that he didn't want to impose fines because they would be counterproductive," said Jonathan Bulkley, a civil engineering and natural resources professor at the University of Michigan. Bulkley was involved in the case first as one of three "special masters" called in to evaluate a dispute between the City and suburbs over sewerage fees and then as the court's "monitor" after the plant was placed into receivership in 1979.

"The watchword was productivity," Bulkley said. "I think he's an extraordinary person. He's taken a very strong interest in this case. He's been out to the plant on numerous occasions. He wants to understand what's taking place and what are the facts and he has demanded this from all of the parties at all times."

Dale Bryson, deputy director of EPA's Region 5 Water Divison, echoed that assessmet. As a participant in many of the legal maneuverings, Bryson said, "His was an iron hand in a velvet glove.

Judge John Feikens

Everybody knew they'd better tow the mark." Surveying the last 7 years of progress, Bryson remarked, "I don't think the compliance would have beer achieved without him."

Bill Muno, a Region 5 engineer wh was EPA's technical representative in the case, said he thinks Feikens "realized that the traditional legal process wasn't going to solve this problem. He just literally interjected himself into a monumental problem."

The judge himself said he thinks the whole effort was "a good team operation" and that he provided a focal point for the cleanup effort. "I don't think it's accurate to say I was a czar here, but it was helpful to have a focus where people could work together to get this treatment plant into compliance. Every substantial order that was entered in this case was the product of negotiation and settlement — not unilateral adjudication."

Looking back on the case that he frankly states was the biggest he's ever had, Feikens said he was

specially intrigued by it because "it emonstrated ways in which lawyers ould work together to find solutions o problems." A trial lawyer before ecoming a Federal judge 15 years go, Feikens said lawyers can't simply resolve conflicts. We've got to find olutions—not simply to decide what's ight or wrong." *The Detroit case, he* aid, "represented a real opportunity o do something, and the issues could e handled in a much more positive vay than they can in, say, lesegregation cases."

In a 1979 interview, Feikens said, "I ould have been the kind of judge who vaited for lawyers to come in with a ase. And I could have told the (Detroit ity) council, 'Live up to the consent lecree or pay $10,000 a day in fines.' ut that's not the way to solve the roblem."

One of the factors complicating the etroit case was the attempt by the uburbs to gain control of the plant. 'The Mayor took the position that the ity owned the treatment plant, and ccording to property concepts it was heirs. 'I'll be for a regional sewer ystem when you're ready to go for a egional school system,' " Feikens ecalls Young as saying.

He said he remained committed to keeping the plant under the urisdiction of the City of Detroit because "I don't know under what precept of law it could be taken away from them" and "large cities had to demonstrate that they could handle problems like this. It's a source of pleasure to me that the City is able to handle this kind of problem."

Feikens, 66, then recounted the following saying: "The first role of government is to support and promote education. The second role of overnment is to have good sewer ystems."

He may just be right.

CLEAN WATER ACT

The Federal Water Pollution Control Act (Clean Water Act) is one of the foundations of Region 5's Water Division. Passed in 1972 by Congress and amended in 1977 and 1981, the Act's goal is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." In order to achieve that result, Congress articulated two other national goals: to eliminate the discharge of pollutants into navigable waters by 1985 and, in the interim, to achieve water of a quality that provides for the propagation of fish, shellfish and wildlife, and for recreation in and on the water.

The Act also declared a national policy of prohibiting the discharge of toxic pollutants in toxic amounts; assisting the States in the financing of publicly owned sewage treatment plants; developing areawide waste treatment management to control pollution sources in each State; and developing the technology necessary to eliminate the discharge of pollutants into navigable waters.

The Act is divided into several major parts, or titles, and is implemented by the U.S. Environmental Protection Agency (EPA). These titles provide the Agency with the direction and authority to require discharge permits, new facilities, pretreatment of industrial wastes, and water quality standards.

The titles of the Act, along with some of their most significant provisions, are:

Title I — **RESEARCH AND RELATED PROGRAMS**

This title articulates the national goals and policies stated above. Among other provisions, it authorizes EPA to develop plans and demonstration projects to eliminate pollution in the Great Lakes or its watersheds

Title II — **GRANTS FOR CONSTRUCTION OF TREATMENT WORKS**

The purpose of this title is to require and to assist the development and implementation of waste treatment management plans and practices that will achieve the goals of the Act.

EPA is authorized to award grants to States for 75 percent of a project's construction costs. Congress has since modified the law so that — effective Oct. 1, 1984 — Federal construction grants will pay only 55 percent of the total cost.

This title also encourages development and implementation of areawide waste treatment management plans. Governors of the 50 States were to identify areas that had substantial water quality problems as a result of urban-industrial concentrations or other factors The governors were then to designate organizations capable of developing waste treatment management plans for those areas.

The title also directs the EPA administrator to annually survey the performance of waste treatment plants built with EPA grants.

Title III — **STANDARDS AND ENFORCEMENT**

This title directed point sources to comply with effluent limitations by July 1, 1977 using the best practicable control technology available. Best practical technology is a level of treatment usually defined by EPA on an industry-by-industry or process-by-process basis.

Publicly owned sewage treatment plants were to have achieved secondary treatment by July 1, 1977. This date, however, has been amended to July 1, 1988 for some plants. Secondary treatment, as defined in the act, is a level of treatment that usually involves microbiological digestion of organic materials in wastewater.

Industrial dischargers were to control toxic discharges by July1, 1984. This goal was not met, since EPA hadn't completed writing its toxic standards

This title outlaws the discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste into navigable waters.

The use of water quality standards is encouraged where necessary to protect the public health or welfare, or serve the purposes of the Act. Standards consist of designated uses of navigable waters and the water quality criteria necessary to attain or preserve those uses.

EPA is to provide States and other Federal agencies with information on how to control nonpoint-source pollution

The EPA administrator is to report to Congress biennially on the quality of U.S. waters

Title IV — **PERMITS AND LICENSES**

This title establishes the National Pollutant Discharge Elimination System. It gives the EPA administrator the authority to issue a permit for the discharge of any pollutant or combination of pollutants

EPA Tells Sewage Plants To Comply With Law by 1988

EPA has adopted a national Municipal Policy that reaffirms the Agency's commitment to clean water. This policy is designed to ensure that publicly owned sewage treatment plants comply with pollution control requirements by July 1, 1988.

EPA feels the policy is necessary because many sewage treatment plants have been lax about treating their wastes to the level specified in the Clean Water Act — despite almost $37 billion in grants awarded to local communities since 1972 for plant construction.

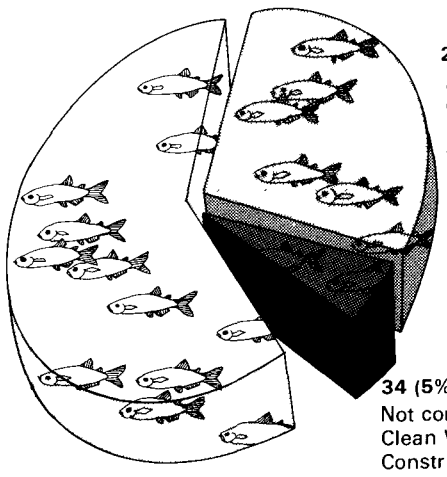
The Agency is now stressing nationwide compliance with Clean Water Act requirements by 1988 and will take whatever administrative or judicial action is necessary to achieve it, said Charles H. Sutfin, director of Region 5's Water Division.

The National Municipal Policy requires every publicly owned sewage treatment plant to comply with the law whether or not it receives Federal financing in the form of EPA construction grants. EPA has traditionally financed 75 percent of the cost of new treatment plants, but will be cutting its share to 55 percent after Oct. 1, 1984.

"Some publicly owned treatment works assumed that compliance is contingent on funding," said Ken Fenner, chief of Region 5's Water Quality Branch. "Compliance with the law is not contingent on national grant funds. This principle was established many years ago and should be a surprise to no one."

Two hundred and eighty publicly owned treatment plants in Region 5 are currently not complying with the law, despite the fact that Congress has twice extended the deadline for doing so. "Credibility suffers when you have to continually revise compliance dates," said Fenner. Nationwide, as many as 1,700 treatment plants are not in compliance.

Region 5 Municipal* Compliance with Clean Water Act Requirements 1983



*Municipal wastewater treatment plants discharging at least 1 million gallons of effluent daily.

The Clean Water Act originally set July 1, 1977, as the deadline for bot municipal and industrial facilities to achieve certain levels of pollution control. Because the municipal compliance rate has been so dismal, tl deadline was extended by Congress July 1, 1983 and then to July 1, 1988. In contrast to the poor record of municipalities is the performance of industrial facilities, who have general been complying with the terms of th Clean Water Act since 1977.

The Clean Water Act requires secondary treatment for municipal treatment works or best practical technology for industries. Secondary treatment is a level of treatment that usually involves microbiological digestion of organic materials in was water. Best practical technology is usually defined on an industry-by-industry, or process-by-process basis

The new municipal policy requires all States to assess their non-complying publicly owned treatment plants and put them into one of three categories:

1) Fully constructed facilities not compliance with their NPDES permits.
2) Municipalities expected to receive State or Federal grant assistance by Sept. 30, 1986.
3) Municipalities that still need to construct additional facilities ir order to meet the 1988 deadline.

Once the States determine this, sa Fenner, they must work with local sewerage districts and municipalities to develop a plan that details exactly how each plant is going to come into compliance by 1988. These plans must be completed by Sept. 30, 1985 and will be made legally binding on municipalities to take the measures needed to meet the requirements of their Federal or State wastewater discharge permits by 1988. Commur ties that do not comply with their permits by the 1988 deadline will be subject to enforcement procedures wi possible fines. Compliance will be cl sely monitored by EPA and the State

Fully constructed treatment plants not in compliance with their permits must develop composite correction plans. These plans will detail how the plant intends to come into compliance as soon as possible. After a diagnostic evaluation of the problem, local officials should, in their composite correction plan, discuss the cause of the noncompliance, the corrective steps needed to achieve compliance, the cost of the corrective measures and possible means of financing them, and an expeditious schedule for completing the required steps and coming into compliance.

If the plant in question was built with EPA grants made after May 12, 1982, the sewerage district or municipality must certify that plant's performance 1 year after it begins operation. EPA will place a high priority on tracking these performance certifications. Any deficiencies must be corrected at other than EPA expense.

Sewerage districts or municipalities that fall into category 2, those that are expected to receive some funding by 1985, are to complete their grants and construction phases as soon as possible.

Municipalities in category 3, those that need to build new facilities in order to comply with the requirements of the Clean Water Act, must develop what EPA calls municipal compliance plans.

These plans should identify the treatment technology needed; the costs of building, operating, and maintaining the proposed facility; financing options; and the date by which the new plant will be operating.

EPA and the States will work closely with municipalities that are not expected to receive grants. Every effort will be made to provide them with technical information about financing and alternative, less costly, treatment technologies.

Region 5 Recognizes Best Wastewater Treatment Plants

Each year, EPA Region 5 presents awards to the best-operated wastewater treatment plants in the Region. Six plants were selected to receive the awards this fiscal year. They are: Fairbury, Ill.; Kokomo, Ind.; Houghton Lake Sewer Authority, Mich.; New Ulm, Minn.; Lima, Ohio; and River Falls, Wisc.

Proper plant operation and maintenance plays a major role in determining whether a sewage treatment plant will be able to treat wastewater to the degree required by its National Pollutant Discharge Elimination System (NPDES) permit. EPA stresses the importance of operation and maintenance by selecting the best plants in the Region for recognition. A summary of the plants and their achievements follows:

Fairbury, Ill.

The City was selected for having the best-operated small wastewater treatment plant The plant treats a flow of 660,000 gallons per day, serving a population of about 3,500. The plant consistently produces an extremely high quality effluent.

Employees participated in the actual layout and design of the plant's 1978 expansion. This collaboration with consulting engineers resulted in an outstanding laboratory and elimination of costly bearings in the clarifiers.

Kokomo, Ind.

Kokomo received its award for having the best-operated large wastewater treatment plant in the Region. The plant treats a daily flow of about 21 million gallons, serving a population of about 70,000. About one-third of the wastewater comes from area industries.

The plant operates at effluent levels well above its permit limits and is known for an outstanding operation and maintenance program. Half of the 34 employees are certified as wastewater treatment plant operators.

Houghton Lake Sewer Authority, Mich.

The sewer authority and its wastewater treatment plant at Houghton Lake, Mich., received an award for being the best-operated wastewater treatment plant in the State of Michigan.

The facility treats residential wastewater only and discharges treated effluent to adjacent marshland, flood irrigation fields or seepage ponds. The use of marshland for additional sewage treatment has served as a model for the design of similar systems throughout the United States.

New Ulm, Minn.

The City of New Ulm had the best-operated wastewater treatment plant in Minnesota The plant treats about 2.7 million gallons of wastewater daily, serving nearly 14,000 people. About 20 percent of the flow is industrial.

The training and certification program at the plant is outstanding, with seven of eight employees certified as wastewater treatment plant operators.

Lima, Ohio

The Lima, Ohio, wastewater plant received the award for the best-operated advanced treatment plant in the Region.

The plant treats about 12 million gallons a day, including about 2 million gallons of industrial wastes Toxic loads have been substantially reduced through an effective industrial monitoring and control program. The plant's high quality effluent has had a noticeable positive impact on the Ottawa River

River Falls, Wisc.

This city's plant received U.S.EPA's O&M award for having the best-operated secondary wastewater treatment plant in Region 5 The plant treats a daily flow of about 1 million gallons and operates at effluent levels significantly below permit limits.

GREEN BAY SUCCESS STORY:

City, Paper Mills Join In Sewage Solution

The industry in Green Bay, Wisc., is paper. Green Bay is where huge mills devour trees and spit out toilet tissue, disposable diapers and paper-sheet fabric softener. Paper is Green Bay's reason for being, its lifeblood, and much of its economy. But paper did not come without its costs.

Throughout much of this century, acidic pulp-processing wastes routinely flowed into the Fox River, intermingling with domestic sewage to create a filthy morass out of what was once a natural treasure.

The citizens of Green Bay realized as early as 1931 that the Fox River needed help. By 1935, the town had built a $1.8 million sewage treatment plant to handle domestic wastes. But the problem of the paper mills lingered until the 1960's, when, under pressure from State and Federal environmental agencies, the four largest mills joined the Green Bay Metropolitan Sewerage District in a pilot pollution control project. The object was to determine if paper mill wastes could be successfully treated with municipal wastes. Using sewerage district funds, contributions from the mills, and a Federal grant, the district constructed a small prototype plant and concluded that the mill wastes could indeed be treated.

In a relatively unusual move, two of the four mills joined the sewerage district in 1971 to construct a $65.5 million facility at the mouth of the Fox River. This 52 million gallon a day plant opened in 1975. The two mills that became partners in the project were Proctor & Gamble and the James River Corp.

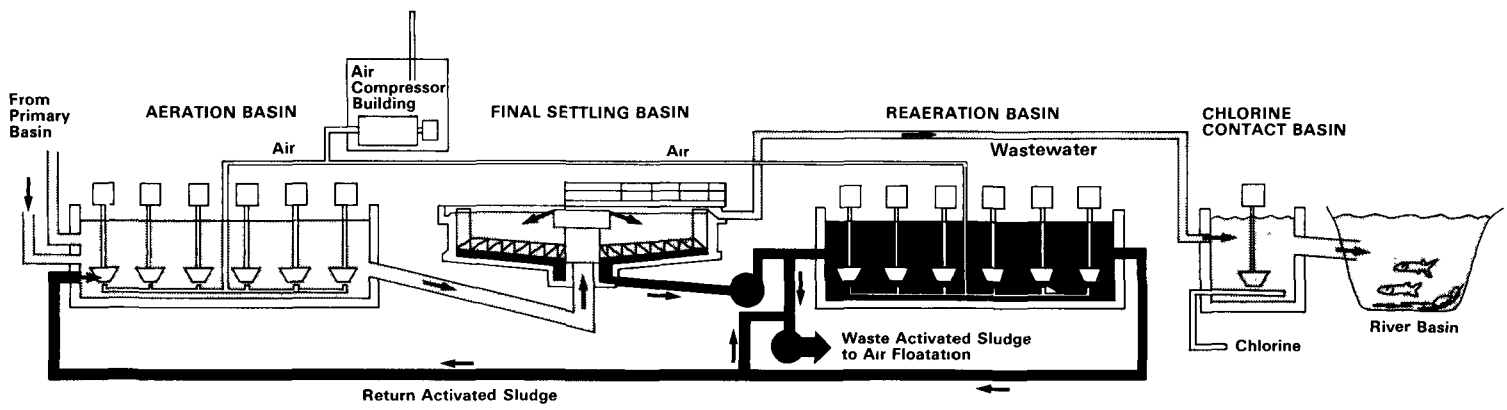
The James River Corp. bought into the project because "it was becoming obvious" that the pulp mill couldn't continue to dump wastes into the Fox River with only minimal or no treatment, said Bruce Robertson, manager of environmental affairs for the corporation. The company's economic analysis showed that it would be cost-effective to make $5 million to $7 million in changes to the mill and to help finance the new municipal plant. "The only alternative we seriously considered was shutting down the mill," said Robertson.

The other two major mills in the Green Bay area decided to treat their wastes on site rather than participate in the municipal plant.

The result of all this has been improved water quality in the Fox River. Water skiers and fishermen have reappeared. "I'm not saying you can eat the fish," said Lynda Bentley, quality control manager for the sewerage district, "but they're there. I know the water quality has improved. Just getting the paper mills off the river was a big improvement."

The paper mill wastes and the metro sewage enter the treatment plant's pump house through two separate sets of underground pipes. There, large objects are screened out and hauled to a landfill. The domestic sewage is sent to several clarifying basins for primary treatment, a step which the mill wastes bypass because of the small percentage of solids in their waste streams. After solids have

BIOLOGICAL WASTE WATER TREATMENT



COURTESY OF THE GREEN BAY METROPOLITAN SEWERAGE DISTRICT

Quality control technician Mary Simon checks process water for ammonia.

settled to the bottom of the clarifying basins, the water is sent to secondary treatment, where it comingles with the mill wastes. The sludge from the clarifying basins is sent through a pipeline to sludge treatment.

During the secondary phase of treatment at Green Bay, the two waste streams are digested by microbes in four 2.8-million-gallon aerating basins. The process used at Green Bay is called contact stabilization and was determined to be the most appropriate for handling the mill wastes, according to Bill DeBauche, director of treatment for the sewerage district.

During the contact stabilization process, the wastes are digested by bacteria during a 2½-hour period in the aerating basins. About 95 percent of the organics in the wastes are broken down during this process, DeBauche said. The treated water is chlorinated and discharged into the Fox River, while the sludge is recycled so that the bacteria can be reused. Excess bacteria created during the contact stabilization process are destroyed.

The Green Bay plant dewaters and dries its sludge before incinerating it. The district uses a thermal conditioning unit to pressurize and heat the sludge to the point where the cell walls are broken to release the water within.

After this process, a vacuum filter dries the sludge to achieve about a 38 to 40 percent solids concentration. The sludge is then sent to the incinerator via a conveyor belt. The incinerator evaporates all moisture from the sludge and then burns it at a temperature of about 1400. The inert ash that remains after incineration is taken to the county landfill for disposal. Meanwhile, the hot gas from the incinerator is used to heat water that generates steam for the thermal conditioning process. Extra steam is used to heat the administrative building and other areas of the plant when the incinerator is operating. During down times, natural gas is used.

The sewerage district is currently experimenting with an anaerobic upflow sludge blanket reactor that will digest the high-strength waste stream from the thermal conditioning unit. In addition, a sludge centrifuge facility is being built to improve the solids concentration in sludge before it reaches the thermal process.

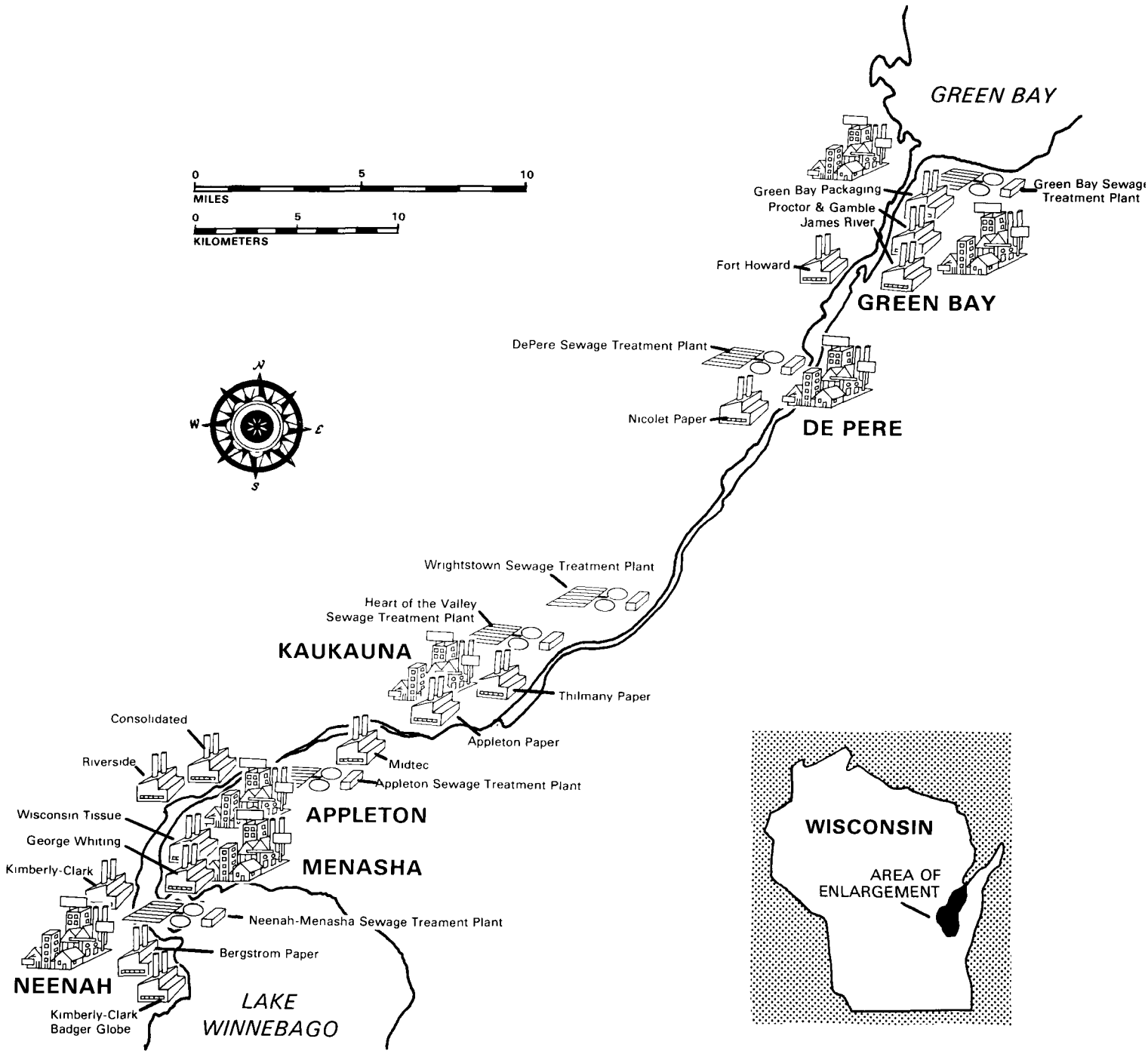
The sewerage district's facility consists of seven buildings clustered near the point where the Fox River empties into Green Bay. A network of tunnels connects the facilities and houses most of the pumps, pipes, and other equipment. "If it doesn't have to be outside, it's not outside," explained Mark Vanden Heuvel, training and safety coordinator.

Thirty-five maintenance men bicycle or ride small electric-powered carts to their work sites. Every piece of equipment in the plant has a backup, said Vanden Heuvel, so that mechanical problems don't interfere with the treatment process. "We never go into a failure situation," he said. A computer keeps track of the equipment and schedules routine maintenance.

A combined municipal-industrial waste treatment plant is unusual in the United States, largely because industrial wastes require different and more specialized treatment than domestic sewage.

The cost of building the plant and making associated sewer system improvements was $85.8 million, said Joseph A. Elson, director of finance and administration for the sewerage district. EPA and the State of Wisconsin paid 80 percent of that total, leaving $17.2 million to be financed by the district and the mills. The mills have agreed to pay off $7.5 million in bonds before 1995 and pay about half of the plant's annual operating budget of $13 million, according to Elson.

MUNICIPAL AND INDUSTRIAL WASTE DISCHARGERS TO THE LOWER FOX RIVER



Agency Studies Fox River Toxicants

A decade ago, Wisconsin's Fox River was one of the worst polluted in the Nation. It was so filthy that the U.S.- Canada International Joint Commission singled it out as one of 25 pollution hot spots in the U.S. portion of the Great Lakes Basin.

The River's condition has dramatically improved since then through Federal, State and local efforts. But although many conventional pollutants have been effectively controlled, toxicants are still a cause for concern. More than 100 chemicals have been identified in the effluent of pulp and paper mills, publicly owned sewage treatment plants, and in the sediment and fish of the Lower Fox River. As a consequence, the State of Wisconsin has issued advisories warning people to restrict or discontinue their consumption of certain kinds of fish caught in the area.

Certain bird species in the Green Bay area are suffering from physical deformaties and stillbirths. The incidence of these deformaties is substantially higher in the Green Bay Basin, where these birds feed almost solely on fish, than in other parts of the State, according to Lee Liebenstein, a toxic substances specialist for the Wisconsin Department of Natural Resources.

Because of concern about this toxic pollution and its potential effects on Lake Michigan, EPA has undertaken several research projects. Working out of the Agency's Environmental Research Laboratory in Duluth, Minn., researchers are studying the toxicity of Fox River water and its effects on aquatic life. In addition, the Agency is financing a study by researchers at the University of Michigan and Michigan Technological University of dissolved oxgen levels in Green Bay.

The reproduction pattern of a popular sportsfish, the walleye, has shown that industrial toxicants may be interfering with the ability of these fish to reproduce, according to Ken Biesinger, a research biologist at EPA's Duluth lab. Biesinger said the lab will also study walleye livers for elevated levels of certain enzymes — a telltale sign that something is wrong.

In order to measure the toxicity of wastewater discharges to the Lower Fox, staffers at the Duluth lab subjected water fleas and fathead minnows to varying concentrations of effluent from the industries along the river.

To do this, scientists gathered effluent samples from each of the plants, diluted them with river water collected upstream from the industry in question, and then added the minnows and water fleas. Nelson Thomas, chief of the lab's Water Quality Branch, said the experiments have shown that the toxicity of the wastes varies widely.

The Fox River experiments were part of a pilot testing program in seven highly polluted areas around the Nation. The results, along with other technical information, will be used to help rewrite discharge permits to prevent industries from discharging toxic wastes in toxic amounts.

Similar testing was done at Baltimore Harbor, Md.; Ottawa River, Ohio; Scippo Creek, Ohio; Skeleton Creek, Ok.; Five Mile Creek, Ala.; and the Naugatuck River, Conn.

THOMAS ERDMAN, UNIVERSITY OF WISCONSIN

TIMOTHY J KUBIAK, U S FISH AND WILDLIFE SERVICE

Above: Common tern with crossed beak.
Below: Double-crested cormorant.

Pretreatment Can Avert Many Sewage Plant Problems

Officials at more than 400 publicly owned sewage treatment plants in Region 5 are developing industrial pretreatment programs to protect sewerage systems and the environment from extra-strength or toxic industrial wastes.

These programs, mandated by the Clean Water Act, apply to plants with a flow greater than 5 million gallons a day, or those that have experienced operating upsets due to industrial discharges.

In order to develop pretreatment programs, officials at these sewage treatment plants must first identify and evaluate the industries that discharge into their system and the types of wastes that are discharged. Once this is done, the municipality must set industrial effluent limits that will protect the integrity of the treatment plant, the sludge (a by-product of treatment), and the waters into which the plant discharges its treated wastewater. EPA must approve all pretreatment plans.

Municipalities are guided in their development of industrial effluent limits by EPA regulations covering 19 categories of industrial dischargers. Eventually, 25 categories of industries will be regulated. These regulations require specific industries to treat their wastes to a certain quality before discharging them into a publicly owned sewer system. Standards are in place for pulp and paper mills, ore mining pharmaceutical timber products, and iron and steel industries, among others. Five thousand electroplating and metal finishing companies in the Region will have to meet pretreatment standards beginning this year.

Toxic pollutants that can be eliminated or reduced through pretreatment include benzene, phenol, chloroform, cyanide, lead, and asbestos.

Certain substances have always been prohibited from any sewer system. They are substances that create a fire or explosion hazard in the sewers or treatment works, are corrosive, obstruct flow in the sewer system, interfere with operation, upset the treatment processes or cause a violation of the plant's NPDES permit, and increase the temperature of the wastewater to above 104°.

Pretreatment of toxic industrial wastes can prevent four serious problems at sewage treatment plants damage to sewers and plant structures; interference with plant operations; the pass-through of pollutants through plants and into streams, lakes and rivers; the contamination of sludge; and the exposure of workers to chemical hazards.

Industrial wastes can interfere with proper sewage treatment plant operation by inhibiting the bacteria used in activated sludge systems, a condition that could then result in the inadequate treatment of all wastes entering the plant. Even pollutants that don't interfere with the treatmen system may pass through the plant untreated because the systems are nc designed to remove them.

Successful removal of toxicants during waste treatment results in contaminated sludge. Later, these chemicals may be released into the ai if the sludge is incinerated or they ma seep through the ground into underground or surface waters if the sludge is put in landfills. The presenc of industrial pollutants in sludge sharply limits the disposal options available to municipalities.

Finally, toxic or hazardous contaminants in sewage may expose workers to chemical hazards such as the poisonous hydrogen sulfide gas.

"The bottom line is that pretreatmer means there will be fewer operting upsets and an improvement in effluer and sludge quality," said Valerie Jones regional pretreatment coordinator.

"There are several elements inheren in any pretreatment program," said

Jones, "but most important are local support, a good attitude, and adequate staff, funds, and equipment."

Depending on the size of the sewerage district, a local pretreatment program can cost between $15,000 and $2 million to develop and between $20,000 and $1 million each year to operate, according to Jones. EPA awards grants to help localities develop programs and operating costs are recovered from the users of the system.

The Milwaukee Metropolitan Sewerage District, which has one of the 25 approved local pretreatment programs in the Region, has estimated the fiscal 1984 cost of its pretreatment and associated programs at $360,000. Milwaukee industries are billed according to the volume of their wastes, said John Schultz, manager of industrial waste for the district. The industries also pay costs incurred in the collection and analysis of waste samples. EPA paid for 75 percent of the approximately $350,000 it cost to develop the program.

Although the Clean Water Act required pretreatment programs to be in place by July 1, 1983, all of the more than 400 treatment plants in Region 5 have failed to meet that deadline. Region 5 water quality officials hope to approve 200 of the programs by Sept. 30.

Four Region 5 States have been delegated the authority to run the pretreatment program on behalf of EPA. This means that they have regulations or laws equivalent to those of the Federal Government. The States of Michigan, Minnesota, Ohio, and Wisconsin have all received delegated authority. However, EPA retains its oversight function and can take enforcement action to ensure compliance if a State fails to do so.

So far, EPA has ordered 122 municipalities in the Region to submit pretreatment plans for the Agency's approval by Sept. 30.

Water Quality Standards Protect Region 5 Waterways

Pollution control requirements based on specified technology have been widely used to reduce the amount of waste discharged into streams, lakes, and rivers. These controls specify the technology to be used in different industries to provide a certain quality of wastewater treatment.

Where technology-based controls are not enough to achieve the Clean Water Act's goal of "fishable, swimmable" waters throughout the country, water quality-based requirements are established. These requirements rely on the use of water quality standards—rules or laws that define the use or uses to be made of a water body and the water quality criteria necessary to protect those uses. Uses include: swimming and recreation; protection and propagation of fish, shellfish, and wildlife; public, industrial, or agricultural water supply; and navigation. Waste transport is not considered a legitimate use.

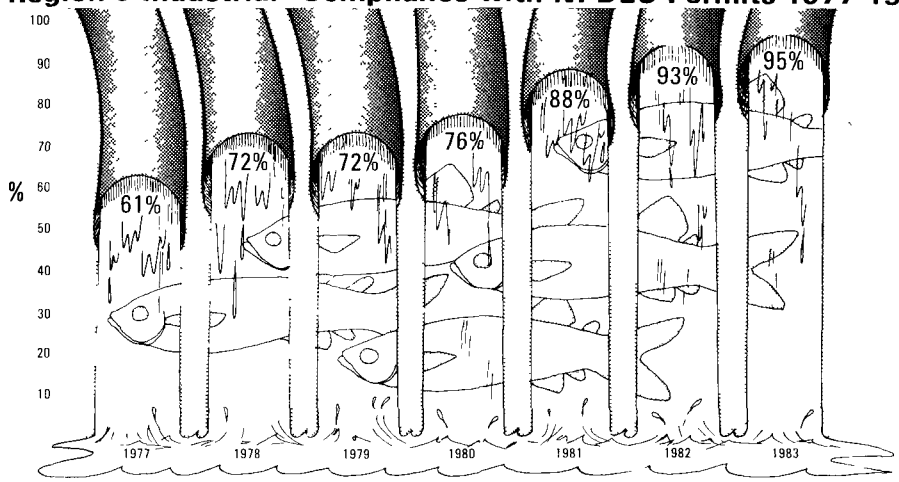
Water quality standards are established by the States with the approval of the appropriate EPA regional office. These standards serve as the regulatory basis for establishing treatment controls and strategies beyond the best practical technology requirement of the Clean Water Act.

Water quality criteria may be based on physical, chemical, or biological parameters. This means that States may specify the temperature or other physical factors that a water body is to meet, the in-stream chemistry necessary to protect the desired uses, and the biological conditions necessary to support the desired use.

When permits were first issued in the 1970's under EPA's National Pollutant Discharge Elimination System (NPDES) program, about 25 percent of the permits in the Great Lakes region contained permit restrictions based on water quality considerations. In the course of reissuing NPDES permits, the States are revising many industrial and municipal permits so that the combined total discharges on any given water body are low enough to meet water quality standards. This process is called wasteload allocation.

States are required to review, and if necessary revise, their water quality standards every three years. EPA's job is to do the research necessary to support water quality programs, to oversee State programs for consistency and compliance with national laws and regulations, and to mediate interstate disagreements.

Region 5 Industrial* Compliance with NPDES Permits 1977-1983



*For major industrial plants only. Major dischargers are defined on a point rating system that considers the facility's manufacturing operation, the nature of the discharge and the water quality in the receiving stream. There are 689 major dischargers in Region 5

*Using 4th quarter data

City-Country Runoff A Major Environmental Concern

Although the Nation's waterways are generally much cleaner than they were before the Clean Water Act was passed in 1972, agricultural and urban runoff are still causing water quality problems in the Midwest and other areas.

This runoff, called nonpoint-source pollution, is responsible for the most serious water quality problems in 11 States and is considered a significant cause of water quality problems in 25 others. The Midwest, with its fertile and extensive agricultural lands, is especially affected.

EPA Administrator William D. Ruckelshaus has told Congress that nonpoint-source pollution is "of major importance . . . because it dilutes and dissipates the environmental return on time, resources, and effort we have already expended" on clean water.

Consequently, EPA has targeted nonpoint-source control as a significant environmental concern for the 1980's and is working with local soil conservation districts, the U.S. Department of Agriculture, and the States to help control agricultural runoff.

EPA also is asking each State to identify specific bodies of water that are most harmed by nonpoint-source pollution and to develop control methods tailored to each one. EPA will provide technical expertise and will share its knowledge with communities throughout the Nation.

Agricultural runoff is of special concern because soil eroding from cropland can clog lakes, reservoirs, ponds, and estuaries. The soil often carries with it nitrates and phosphorus which stimulate algal growth. The algae can rob the water of dissolved oxygen and speed eutrophication, the natural aging process of a lake.

Because nonpoint-source pollution has been an especially serious problem in Region 5, EPA helps promote conservation tillage in 31 counties in Ohio, Indiana, and Michigan. These counties were selected after studies by EPA and other Federal agencies showed them to be major contributors to the phosphorus problem in Lake Erie.

EPA provides money to local soil conservation districts so that they can educate farmers about the benefits of conservation tillage and purchase equipment to rent or loan to farmers at planting time.

Conservation tillage can refer to any number of tillage practices, but generally it is any system that reduces soil and water loss. This is usually accomplished by protecting the surface of the field with crop residues. No-till, for example, uses a disk or other device to cut through the residue of the previous crop so that seeds can be planted. It leaves a maximum protective residue and requires no seedbed preparation prior to tilling, but may require an increased use of herbicides.

Another form of conservation tillage, called ridge plant, involves planting on ridges of plowed soil. This method allows a warmer soil temperature for planting and entraps rainwater in the furrows between the ridges.

The conservation farming program has been well received in the Lake Erie Basin, according to Bruce Julian, a field specialist with the Conservation Tillage Information Center in Ft. Wayne, Ind. At planting time, he said, "the demand exceeds the ability to get (loaned) equipment to them."

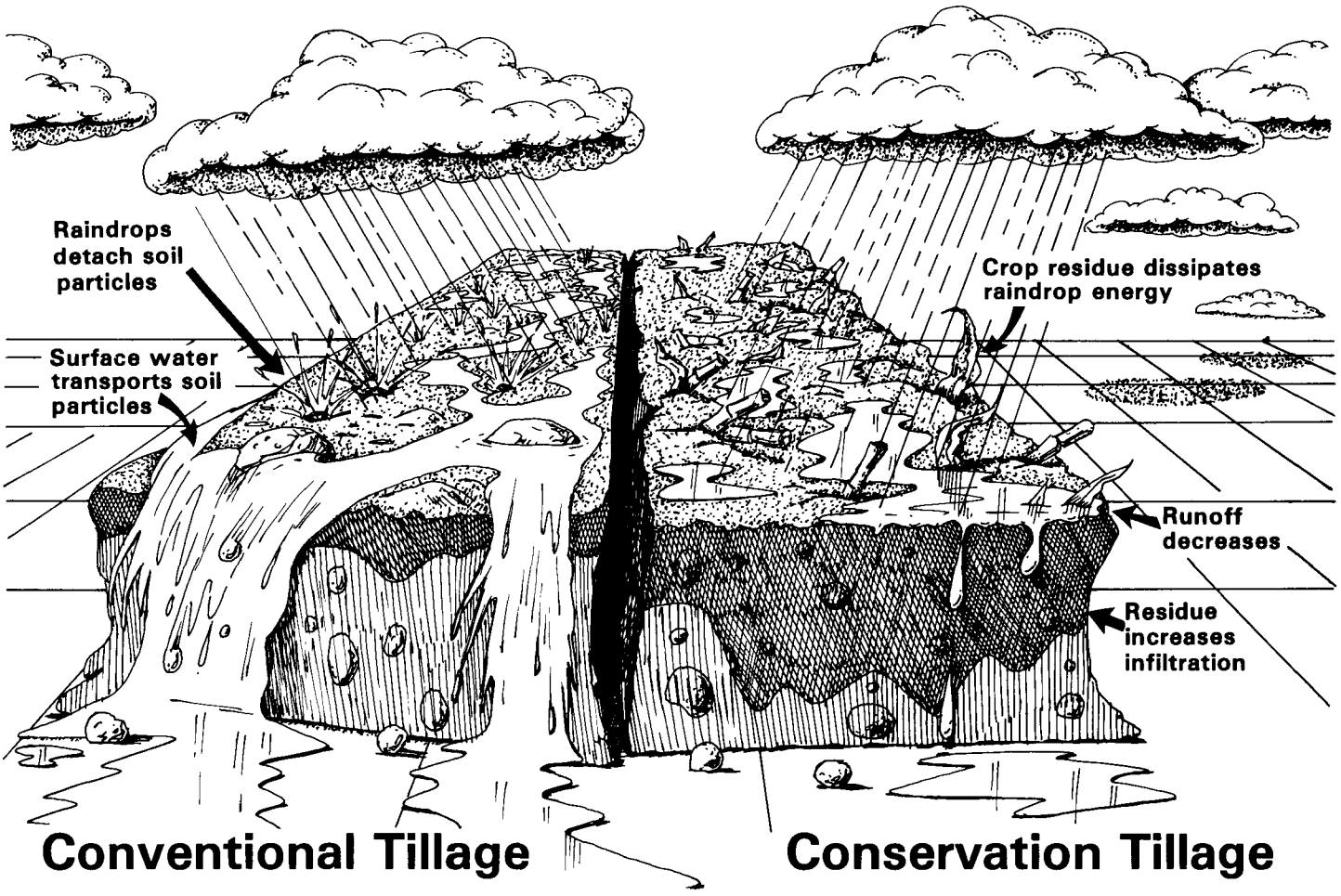
Farmers are interested in conservation tillage because it is "labor-saving, energy-saving, and timely," Julian said. "Farmers usually spend 2 or 3 years watching the guy across the fence before they make a commitment to switch to the new method. The basic intent is to let thes guys try it on their own farms so they can begin to feel comfortable with it. It's a lot more difficult than just drivin a new piece of equipment around the field."

"The Lake Erie project has shown that conservation farming can cut soil losses 75 to 90 percent," said Julian, noting that 80 percent of the land in the western part of the basin is agricultural. The crop yields are about the same with either farming method, but no-till proved especially valuable during the 1983 drought, when fields covered with crop residues from conservation farming held in the moisture and helped keep evaporatior loss down, said Julian.

Conservation tillage is only one method of controlling nonpoint-source pollution, although it is by far the mos common. In rural areas, other measures include controlling barnyarc runoff, building animal waste storage structures, and stablizing eroding streambanks.

Nonpoint-source pollution also comes from cities. Urban runoff is rainwater that drains from the surfaces of streets, lawns, and buildings into local waterways. This runoff typically contains heavy metals and certain organics (mostly of petroleum origin).

Two decades ago, the U.S. Public Health Service first identified pollutants in urban runoff. A study done in the late 1960's showed that most of the pollutants were washed b rainwater off impervious city surfaces



(such as sidewalks, streets, and buildings), or resulted from the erosion of drainage channels as the runoff flowed to nearby waterways.

Effective nonpoint control measures in cities include leaf collection and street cleaning at critical times, such as after snowmelt; controlling runoff from construction sites; and construction of detention-retention ponds, where rainwater can be collected and fed into runoff channels at an even rate.

However, there is uncertainty surrounding the effectiveness of urban runoff controls, and a 1983 EPA study found that "engineers, planners, public works personnel, and other decision makers are understandably reluctant to invest large amounts of time and money in controls which may not perform as hoped."

With the exception of the Lake Erie conservation tillage program, the States have been largely responsible for setting up and administering their own runoff control programs. Farming States typically have had various types of soil conservation programs in place for years in order to preserve valuable croplands.

The State of Wisconsin, though, has the most comprehensive nonpoint-source control program in Region 5. The State obligated $17 million in State funds through Fiscal 1983 to implement controls in 11 watersheds and has budgeted additional money for Fiscal 1984. Efforts in four additional watersheds were scheduled to begin this spring.

John Konrad, chief of the nonpoint-source section in the Wisconsin Department of Natural Resources, said the watershed project approach is "the only way that allows a comprehensive approach to management." The program is implemented by individual counties in the watersheds and targets key landowners. "What you really are after is participation by those landowners who control the most critical problem areas," said Konrad. If a landowner chooses to participate in the program, he gets two things: technical assistance and cost-sharing money to help defray the cost of implementing nonpoint-source control measures.

In return, said Konrad, the landowner must agree to install all needed water quality management items, not just the ones he wants. For instance, farmers usually prefer to install manure storage structures rather than to control the runoff from their barnyards. If necessary, Wisconsin makes them do both.

Each watershed project typically takes 8 years. Landowners are given as many as 3 years to decide to participate and then as many as 5 years to implement management practices.

Wisconsin cost-sharing money will pay for up to 70 percent of the cost of building terraces on cropland and stabilizing stream banks and will provide up to $6,000 for the construction of manure storage pits or tanks.

Experience so far has shown that water quality can be measurably improved by targeting, and then managing, critical land areas and activities that are responsible for nonpoint-source pollution.

EPA feel that State management of non-point source programs is critical because it is at the State level that comprehensive control strategies can be adopted and implemented.

Safe Drinking Water Act Protects Public Health

The 1974 Federal Safe Drinking Water Act was the first legislation to provide for nationally enforceable drinking water standards to protect the health of all Americans.

Regulations issued in 1975 set limits on bacteriological, chemical, and physical contaminants in drinking water. Schedules were established for routinely detecting and treating those contaminants in all water systems regularly serving 25 or more people.

The Safe Drinking Water Act established two types of regulations: primary and secondary. Primary regulations apply to contaminants that the EPA feels may have any adverse effect on public health. These regulations specify the maximum allowable contaminant levels in drinking water.

Secondary regulations are designed to protect public welfare and deal with the taste, odor, and appearance of drinking water.

EPA has established standards, or maximum contaminant levels, for 10 inorganic chemicals, six pesticides, bacteria, radioactivity and turbidity (cloudiness).

The law requires the Agency to review these regulations at least once every 3 years and to change them when necessary. As part of that process, EPA has proposed new standards to more adequately safeguard public health from the threat of toxic compounds. If the proposed changes are adopted, public water systems will have to expand their detection and treatment programs to include volatile organic chemicals and other hazardous substances, such as asbestos and PCB's.

The Safe Drinking Water Act allows EPA to delegate responsibility for supervising public water systems to States with regulations as stringent as the Agency's. All states in Region 5, except Indiana, have been delegated authority for safe drinking water programs. These delegated States are responsible for ensuring that the public is provided with safe drinking water that meets all Federal standards. If a State fails to do this, the EPA can step in and take whatever emergency action is necessary to protect public health.

The Safe Drinking Water Act specifically requires owners and operators of public water systems to notify their customers anytime the water does not meet applicable drinking water standards. The law also specifies that the news media should be informed of any violations of the standards "as soon as practicable after the discovery of the violation."

Other significant parts of the Act provide for:

- Protection of underground sources of drinking water.
- Research into the causes, diagnosis, treatment, control, a prevention of physical and ment diseases and other impairment resulting from contaminants in water.
- Research into the development new methods to identify and measure contaminants, to treat raw water for drinking, and to protect underground water sources from contamination.
- A survey of waste disposal practices that may endanger underground water supplies, ar the means of controlling those practices.
- Grants for research specified in the Act.
- A report on the availability of ar adequate and dependable suppl of safe drinking water to meet present and future need.
- Grants to States to carry out public water system supervisior programs.
- Appropriate recordkeeping and monitoring.
- A National Drinking Water Advisory Council consisting of 1 members to advise, consult, an make recommendations on matters relating to the Safe Drinking Water Act.
- Adequate supplies of treatment chemicals for public water systems.
- Regulation of bottled water so that it conforms to the primary standards specified by EPA.

DRINKING WATER CONTAMINANTS REGULATED BY EPA

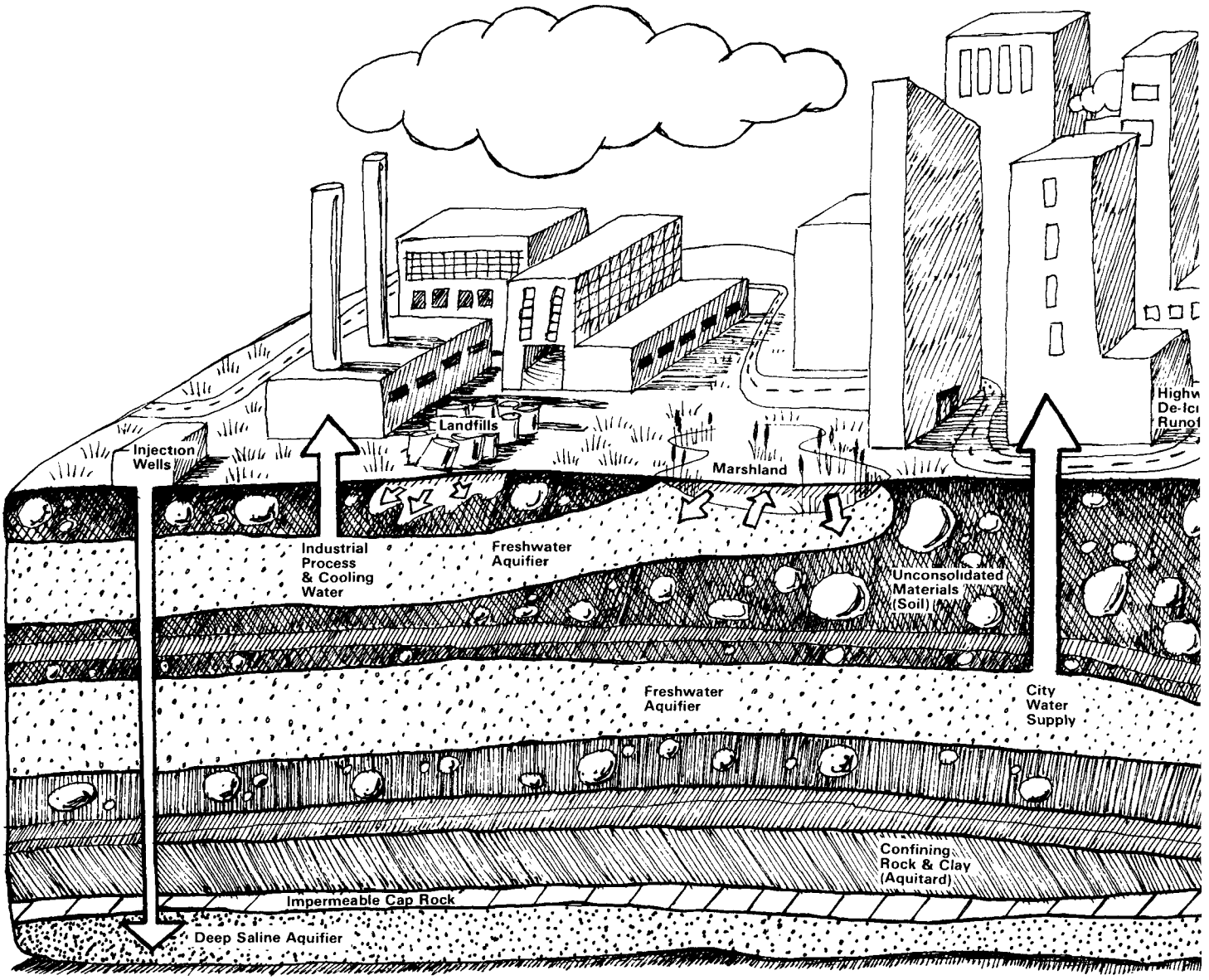
ARSENIC	Occurs naturally in the environment, but also an ingredient in pesticides. Highly toxic in large doses
BARIUM	A naturally-occurring element that can also enter water supplies through industrial waste discharges. Dangerous when consumed in large quantities. Can induce increased blood pressure, nerve damage and even death.
CADMIUM	Can be highly toxic Typically enters drinking water through galvanized pipes and fixtures, although it can be found in discharges from the electroplating, photography, insecticide and metallurgy industries.
CHROMIUM	A metal used in the metal plating industry and a potential carcinogen.
LEAD	Comes from lead and galvanized pipes, auto exhaust and other sources. Excessive amounts can cause nervous system disorders or brain or kidney damage.
MERCURY	Also known as quicksilver. Highly toxic, but the greatest health risk from mercury comes from eating fish, where the metal concentrates in tissues.
NITRATE	This nitrogen and oxygen compound is dangerous to infants less than 3 months old because it can prevent their blood from carrying oxygen. Water with excessive amounts of nitrates should not be given to infants. Boiling only increases the nitrate concentration.
SELENIUM	A mineral found in soil and plants of the western United States Excessive amounts may be toxic.
SILVER	Sometimes used to disinfect water, this metal should not be consumed in amounts greater than 05 milligrams per liter of water
PESTICIDES	Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, and 2,4,5-TP/Silvex are all covered under drinking water regulations Pesticides drain into surface water or seep into groundwater supplies and can pose both short- and long-term health problems if ingested in amounts greater than allowed.
TRIHALOMETHANES	These compounds form when organic material in water is chlorinated. Many water treatment plants have switched to alternate substances for disinfection in order to reduce the amount of trihalomethanes in finished drinking water. Trihalomethanes are thought to cause cancer.
RADIOACTIVITY	Radium 226 and 228, Gross Alpha and Gross Beta activity are monitored. Alpha particles and radium occur naturally in groundwater in parts of the West, Midwest and Northeast. Possible sources of radiation in drinking water include nuclear power plants, nuclear fuel processing plants and uranium mines.
TURBIDITY	The cloudiness of water caused by the suspension of minute particles. These particles can interfere with disinfection and bacteria testing.
COLIFORM BACTERIA	These bacteria come from human and animal excretement and can cause disease. They are primarily used as indicator of the presence of other harmful organisms

EPA Sues Carefree Homes

U.S.EPA recently sued the operators of the Carefree Homes mobile home park in Pendleton, Ind. for repeated violations of the Safe Drinking Water Act. The suit, the first of its kind in Region 5, charges that Carefree Homes failed on many occasions to sample its drinking water for bacterial quality.

The suit also charges that Carefree Homes provided water contaminated with coliform bacteria—an organism found in the intestinal tracts of humans and animals. The bacteria are used by health agencies as indicators of the possible presence of disease-bearing bacteria.

U.S.EPA is seeking a legally-binding consent decree that would force Carefree Homes to comply with the requirements of the Safe Drinking Water Act. The penalty for noncompliance is as high as $5,000 a day.



GROUND WATER CONTAMINATIO

Hidden beneath the Earth's surface is one of its most precious jewels—ground water. Stored away in geologic formations called aquifers, this resource is squeezed in between particles of sand or in the cracks of bedrock. While the extent of this resource is not precisely known, it is thought that the volume of water within a ½-mile of the Earth's surface is more than four times that of the Great Lakes.

Until recently, ground water was thought to be protected from chemical contamination because of the filtering abilities of soil. But a 1981 study showed that 235 out of 945 ground-water systems sampled were contaminated by one or more volatile synthetic organic chemicals.

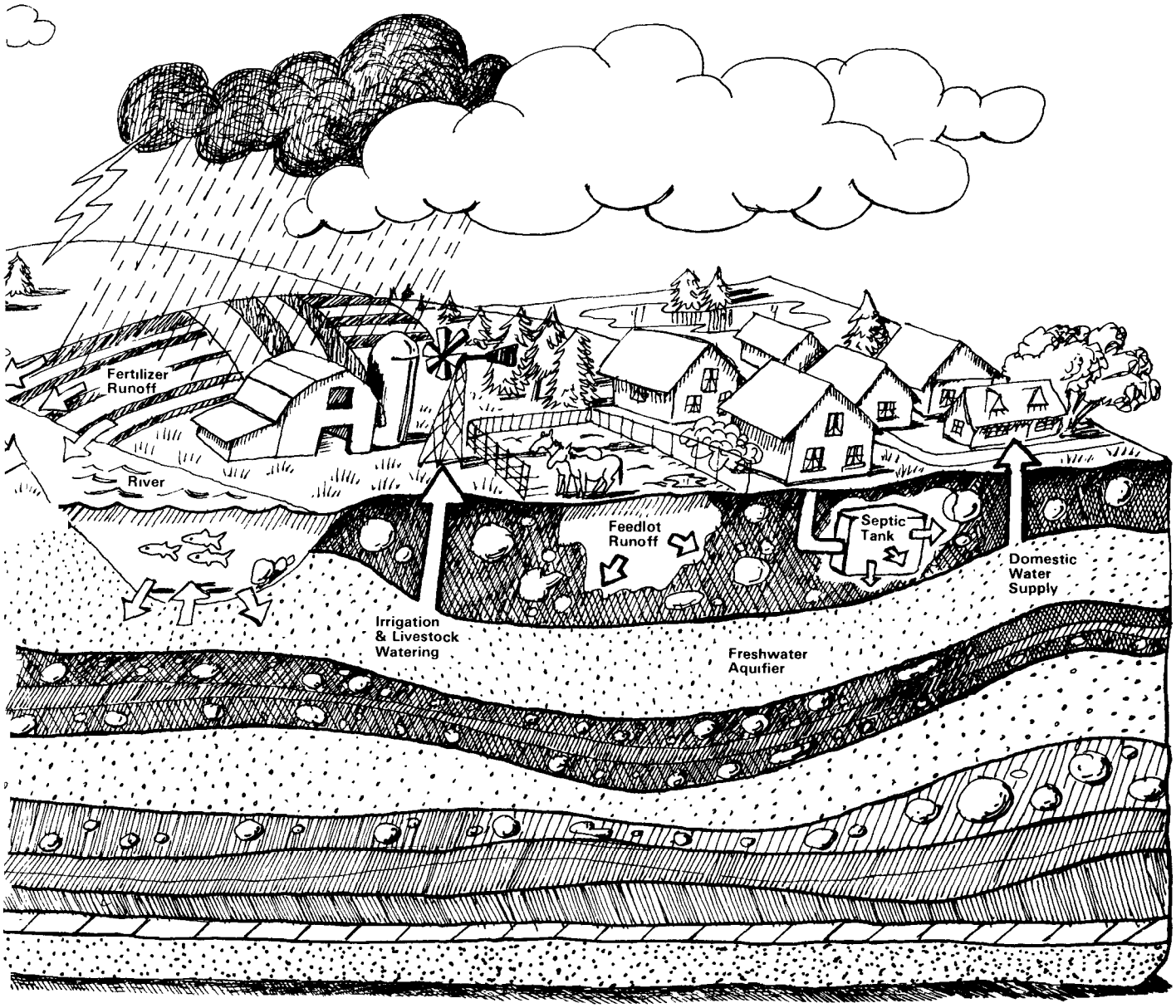
The true extent of the problem remains undocumented, but several things are known. One is that soil is not an effective filter for several widely used classes of chemicals, including low molecular weight organic solvents such as benzene, a cancer-causing chemical found in gasoline and industrial solvents.

Some of the substances most frequently found in contaminated aquifers are: gasoline, organic solvents, heavy metals, inorganic chemicals, pesticides, soil fumigants, pathogens, and nitrates. With 117 million Americans depending on ground water as their only source of drinking water, this chemical contamination is alarming.

The biggest source of ground-water contamination appears to be liquid and solid wastes that have been deposited in landfills, lagoons, or hazardous waste injection wells. Fewer than 10 States require any regular ground-water monitoring at the sites of those landfills, despite indications that the vast majority of them are major sources of ground-water pollution.

In addition, leaking underground chemical and gasoline storage tanks are thought to be major contributors t the problem. There are about 2 millio such tanks throughout the country, and as many as 100,000 are thought to be leaking.

Animal feedlots often present a ground-water problem when the concentration of animal wastes becomes too great. These wastes can seep through the soil, causing bacterial or nitrate pollution.



HREATS PROMPT EPA ACTION

Abandoned wells, especially those hat vertically connect two or more ıquifers, also pose a problem. In this ituation, water from a contaminated ıquifer can freely migrate to a pure ne. Another danger is that polluted urface water could find its way into he well shaft.

In areas of the country without ewer systems, septic tanks are the nost frequently reported source of ontamination. These same areas ften rely on private wells for their rinking water, and nearby septic ystems could pollute those wells with isease-bearing organisms and itrates. Sometimes organic cleaning olvents are present as well.

EPA has the authority, under everal Federal environmental laws, to rotect drinking water aquifers from pollution. Region 5 officials are working with the U.S. Geological Survey and the States of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin to assess the extent of the problem in this Region.

At the same time, the Agency is considering a regulatory program to control leaking underground storage tanks and is alerting the owners of these tanks to the ground-water problems caused, in large part, by gasoline.

During the past year, EPA has developed a proposed ground-water protection strategy to provide greater coordination among EPA programs aimed at protecting ground water and to deal with major remaining sources of uncontrolled contamination.

States, however, are encouraged to take their own ground-water protection measures. The State of Wisconsin, for example, has passed special legislation that mandates design standards and management practices for facilities that have the potential to contaminate ground water.

The legislation also provides for a ground-water coordinating council and new regulatory programs designed to control substances that may contaminate ground water. The law creates a fee schedule for activities that have the potential to pollute underground water supplies. The revenue generated from the fees will be used to finance ground water related activities in four State agencies.

Region's Wells To be Sampled For Chemicals

Because of the special threat that chemical contaminants pose to underground water supplies, Region 5 has initiated a testing program to detect volatile synthetic organic chemicals (VOC's) in drinking-water wells.

A 1981 nationwide survey showed that drinking water from 230 of 945 ground-water systems was contaminated by one or more VOC's. Industrial solvents and degreasing agents, which can pose serious health risks, were the most prevalent contaminants.

The concentrations of these substances in the ground water were found to be substantially higher than those generally found in surface water. This is especially alarming because well water is often used with little or no treatment.

Region 5 officials last year announced a 10-year program to test every underground community water supply in the Region for the presence of VOC's. Wells in urban industrial areas, near hazardous waste disposal sites, or in areas susceptible to contamination will receive first priority.

During Fiscal 1983, Region 5 staff sampled 250 wells in Indiana and received test results on 173. VOC's have been detected in 39 percent of the wells for which data are available. The other five States sampled more than 2,000 wells last year and determined that about 20 percent were contaminated by varying amounts of VOC's. While most of the contamination poses a negligible health risk, drinking water wells in 21 Region 5 communities had to be shut down or specially treated to reduce human exposure to carcinogens.

"In one year of VOC testing, we're finding more drinking water contaminants than in all the previous years of chemical testing required under the Safe Drinking Water Act," said Joseph F. Harrison, chief of Region 5's Drinking Water Section.

COMMON VOLATILE SYNTHETIC ORGANIC (VOC) CONTAMINANTS IN GROUND WATER

Benzene	A clear, colorless, highly flammable liquid with a characteristic "gasoline-like" odor A constituent in engine fuels, a solvent for fats, inks, oils, paints, plastics and rubber. Is used in the manufacture of explosives, detergents, pharmaceuticals, dyes and insecticides There is strong occupational evidence that benzene causes leukemia in humans, particularly at high occupational levels of exposure Most notably toxic to the bone marrow
Carbon Tetrachloride	A colorless liquid used in refrigerants, metal degreasing, agricultural fumigants and in the production of semiconductors. A known carcinogen.
1,2-Dichloroethane (EDC)	A colorless, flammable liquid. Used as a solvent for resins, rubber, asphalt, paints, etc and as a degreaser, dry-cleaning agent, fumigant, pickling agent and extraction agent for soybean oil and caffeine. Also used in photography, xerography, water softening and as an anti-knock compound in leaded gasoline. A suspected human carcinogen In acute doses it can cause unconsciousness, coma, circulatory collapse and death. At subacute doses, it can cause liver, kidney, lung, heart, adrenal and gastrointestinal abnormalities.
1,1-Dichloroethylene	A clear, colorless, volatile liquid used in cement latexes, film coating lacquers, paper coatings and in the production of certain fibers. A suspected human carcinogen; appears to be carcinogenic in mice and possibly rats. A central nervous system depressant that can cause liver and kidney damage in animals.
Tetrachloroethylene	A clear, colorless liquid used mainly in dry cleaning. It is also used in metal degreasing, textile processing (dyeing) and in various pesticides. A central nervous system depressant Long-term exposure in animals has produced liver and kidney damage in animals. A liver carcinogen in mice, but not in rats.
1,1,1-Trichloroethane (methyl chloroform)	A colorless liquid used in many household and industrial products. The principal solvent in septic tank degreasers, cutting oils, inks, shoe polishes and other products Also used in metal degreasing, leather tanning and drycleaning Considered to be non-carcinogenic in humans. High levels can be toxic to the heart. Liver damage is possible.
Trichloroethylene (TCE)	A colorless, nonflammable solvent used mainly for degreasing metal parts Also used in dry cleaning, as a disinfectant in veterinary surgery and in spot removers, rug cleaners and air fresheners A suspected human carcinogen, it can be toxic to the liver and kidneys in very high doses.
Vinyl Chloride	An easily liquified compressed gas Highly flammable. It is readily absorbed via the gastrointestinal tract, accumulates in the liver, and is known to be a human and animal carcinogen.

Because EPA has not yet set drinking-water standards for most VOC's, "chemicals that are causing the most problems right now are not regulated," Harrison said.

The Regional office uses health advisories from the EPA Office of Drinking Water in Washington to help State health officials assess and reduce the threat posed by the contaminated wells.

If EPA data indicate that one person in 10,000 is likely to develop cancer as a result of drinking the water, EPA advises that the water must not be used for cooking or drinking. This has happened in 21 Region 5 communities. In cases where the possible cancer threat is less, EPA may recommend treating or diluting the water so that it is acceptable for human consumption, said Harrison.

The VOC testing program is a voluntary one. However, all Region 5 States have agreed to participate and all, except Indiana, are doing the actual sampling and testing with EPA technical assistance and funds. EPA is running the VOC testing program in Indiana because the Agency has not yet given Indiana the authority to administer Safe Drinking Water Act programs.

Underground Injection Control

he disposal of wastes and other uids in underground injection wells ⁄ill be closely controlled under a new .S.EPA program designed to protect rinking water aquifers.

Recent EPA studies indicate ıat, in terms of volume, more than alf of the liquid hazardous waste enerated in this country ıs disposed f in injection wells. These wells are ⁄pically very deep—between 4,000 nd 6,000 feet below the surface—nd are designed to inject wastes and ther substances into strata far below quifers which are being or could be sed as drinking water supplies.

However, there are several ways in ⁄hich contamination of drinking water upplies can still occur. Faulty well ɔnstruction can allow fluids to leak ırough the well casing; the fluids ıay escape upwards through nearby ⁄ells into drinking water aquifers due ɔ underground pressure or fractures nd faults; wells may also exist which ıject into or above underground rinking water supplies; and fluid ·om injection wells may flow into ydrologically connected underground ɔurces of drinking water.

Congress, when it passed the Safe rinking Water Act in 1974, foresaw ıese possibilities. The Act required PA to establish a national rogram to prevent underground ıjections that endanger drinking ·ater sources. Congress intended in ıe Act to put no burden on EPA or ıe States to prove actual ɔntamination before establishing and nforcing regulations. Congress also learly envisioned the Underground jection Control (UIC) Program as a tate responsibility; EPA is to dminister it only where a State ıooses not to participate or fails to dminister its own program effectively.

Three Region 5 States—Illinois, hio, and Wisconsin—have received uthority from EPA to run their ⁄n injection-well programs. Region 5 aff members have developed ·ograms for Indiana, Michigan, and Minnesota and for the Indian Lands in the Region. The Agency estimates that there are at least 3,500 wells in the three States that must be regulated by EPA.

The main feature of EPA's Underground Injection Control (UIC) program is a permit system that authorizes injection-well operators to operate their facilities under the conditions and limitations of the permit.

However, permits will not be issued for operations that do not comply with EPA rules and regulations. "If a technical decision is made by the Agency that a well shall not receive a permit, then it will be closed," said Robert Hilton, chief of the Ground-Water Protection Section in Region 5.

The basic concept of the program is to prevent the contamination of drinking water by keeping injected fluids in the well and the intended injection zone.

There are five types of wells that will be regulated:

Class I—Wells used to inject municipal, industrial, and commercial hazardous and nonhazardous wastes beneath the lowermost formation containing an underground drinking water source. Class II—Wells used to inject fluids which are brought to the surface in connection with conventional oil or natural gas production, to inject fluids for the enhanced recovery of oil or natural gas, or to store hydrocarbons which are liquid at standard temperature and pressure. Class III—Wells used to inject fluids for extraction of minerals. Class IV—Wells used to inject hazardous or radioactive wastes into or above an underground drinking water source. These wells are illegal. Class V—Injection wells not included in classes I-IV. Typical of such wells are recharge wells, air conditioning return flow wells, and aquifer recharge wells.

Region 5 personnel will be meeting in August with oil and gas industry representatives in Indiana and Michigan to explain the new Federal UIC requirements. The UIC regulations in Indiana, Michigan, and Minnesota took effect on June 22, 1984. Because of the critical nature of Class I well operations (hazardous waste injection), EPA staffers will meet individually during the next 6 months with the owners and operators of those wells.

Public hearings and, in some cases, public meetings, will be held before any permits are issued or denied, Hilton said. Anyone wishing to be added to a EPA mailing list for the Underground Injection Control program should write to:

Robert Hilton
Chief, Ground-Water Section
U.S.EPA Region 5
5WD-12
230 S. Dearborn St.
Chicago, IL 60604

EPA'S LEGISLATIVE AUTHORITY TO PROTECT UNDERGROUND DRINKING WATER SUPPLIES

Safe Drinking Water Act	Regulates public drinking water supplies that rely on ground water. Requires States to regulate waste injection wells so that aquifers are not contaminated. A sole-source aquifer program protects aquifers that are the primary source of a community's water supply.
Resource Conservation and Recovery Act	Specifies design and performance standards for hazardous waste facilities that have the potential to harm underground water supplies.
Toxic Substances Control Act	Prohibits the release of PCB's into ground water. Specifies design and location standards for PCB disposal.
Clean Water Act (Construction Grants Program)	Requires ground-water monitoring in areas where sewage sludge is applied to land.
Federal Insecticide, Fungicide and Rodenticide Act	Controls or prohibits the use of specific pesticides that may affect ground water.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund)	Requires ground-water monitoring at specific hazardous waste sites. Helps pay for cleanup of tainted drinking water supplies.

EPA and Army Corps Work to Protect Wetlands

In a prototype national program, Region 5 water quality specialists are working with the U.S. Army Corps of Engineers and the States to identify and protect the Region's most sensitive wetlands.

Wetlands are low-lying swamp and marsh areas that nurture young fish and animals and are nature's way of controlling erosion and floods. These areas have been filled in and developed to such an extent that only about 30 percent remain. An estimated 300,000 acres are lost each year to farming and development.

The goal of Region 5's wetlands protection effort is to develop a series of maps that will show which wetlands are considered environmentally sensitive and therefore unsuited for development and which wetlands might be less affected by dredge and fill operations.

These maps will help the Corps of Engineers decide whether to issue dredge and fill permits under Section 404 of the Clean Water Act. If an ar is environmentally sensitive, it is unlikely that the Corps will issue a permit for dredge and fill activities there.

The advance identification of thes sensitive areas should be a helpful tool for landowners, said Barry DeGraff, assistant to Region 5's Wat Quality Branch chief. "We want to provide information that property owners can use ahead of time," he said. "People appreciate it when yo sit down and tell them what to expe in the future."

EPA is often forced into a reactive posture on wetlands permit said DeGraff, because the Agency doesn't review proposals until they have been formally submitted to the Corps. Under the new program, EPA will have early input and may be able to accelerate the permit process while reducing the number environmentally unacceptable proposals.

This wetlands protection program known as AIDS—Advanced Identification of Disposal Sites. Although it has been part of Clean Water Act guidelines for years, it is being tried for the first time in Regic 5. Areas in Kenosha County, Wisc., have already been designated as environmentally sensitive—that is, they fall into one or more of several categories: highly productive waters waters beneficial for flood control, important fish and wildlife habitats, and areas where ground water migh be adversely affected if developmen were to occur.

Region 5 water quality staffers ar now beginning to work with plannir commissions and natural resources departments in all six states to deve a comprehensive AIDS program for the Region.

EPA and Indians Work Together for Safe Drinking Water

egion 5 serves a very special group of ɔnstituents—the Indians who live on ɔ reservations in Wisconsin, linnesota, and Michigan. There are 3 community drinking water systems n these reservations that must ɔmply with EPA sampling and ɛporting requirements. Until recently, owever, many tribes were unaware the requirements or were irregular ɔout complying with them.

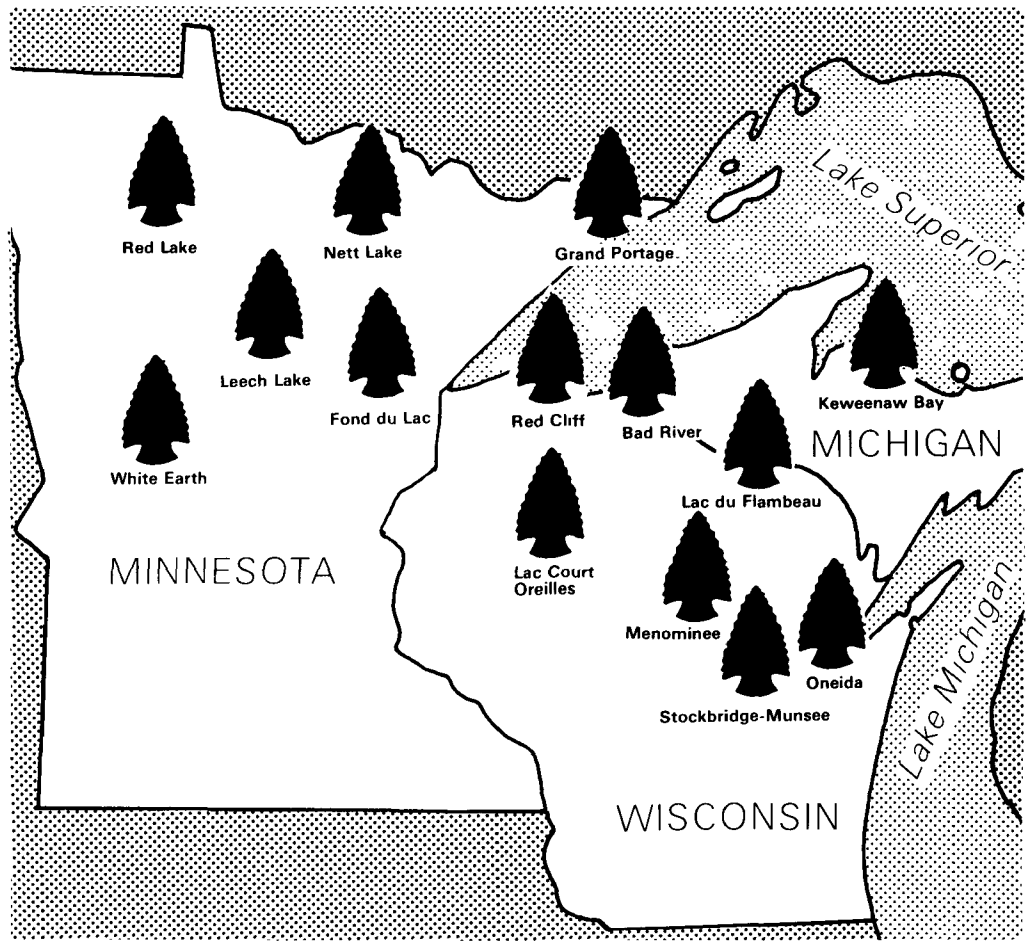
Many of these problems stemmed om a lack of communication between PA, the Indian Health Service, ıd the tribes, said Ron Kolzow, an nvironmental protection specialist in egion 5's Drinking Water Section. In ıe past, EPA depended on the ibes to report on drinking water uality to the Indian Health Service, ıt the tribes now are reporting irectly to EPA.

During Fiscal 1982, only 11 percent Indian water systems were ɔmplying with the drinking water ɛgulations, said Kolzow. Most of the olations were for failing to sample nd report water quality rather than ɔr ımpure water, he explained. Most ıdian water systems in Region 5 rely n high-quality underground aquifers.

By Fiscal 1983, however, the ɔmpliance rate for Indian water ystems was up to 49 percent. In the rst quarter of Fiscal 1984, the ɔmpliance rate was 84 percent. The ramatic improvement, according to olzow, was due to EPA and ıdian Health Service cooperative forts to educate tribal sanitarians nd maintenance personnel. An mphasis on personal contact and ɔmmunication was especially helpful, aid Kolzow.

"It's really been a success story," aid Edith Tebo, chief of the Drinking Vater/Ground-Water Branch in egion 5. "We've really turned this round, but now we must work to eep the compliance levels so onsistently high."

INDIAN RESERVATIONS IN REGION 5



To keep Indians in Region 5 informed about safe drinking water and well maintenance, EPA has given $16,400 to the nonprofit Minnesota Rural Water Association. That group has held several workshops for Indians, has visited reservations to offer specialized help, and is publishing a quarterly newsletter for Indians.

Sam Wade, the water association's program manager, said the Indians' problems are not unique. "The problems on the reservations aren't really that different from those in small municipalities." Wade said his workshops focus on the proper use and maintenance of a drinking water system. "Our whole association is based on the old saying that 'an ounce of prevention is worth a pound of cure,'" he said. "We're not engineers, but what we offer is a common-sense operational perspective."

One of the biggest problems facing the tribes, Wade noted, is their failure to look at a water system as a utility. "It has to be self-supporting and it has to be paid for," he said.

ROY PORTEOUS:

Retiree Builds New Career In Environmental Ed

Visiting teacher Roy Porteous had just finished a unit about Lake Michigan, and he was delighted when several of his third-grade pupils offered to help carry his materials to his car. But he wasn't prepared for what came next.

"Why don't you kidnap us?" whispered one of the schoolgirls.

"Why, what would I do with you?"

"Take us to McDonald's for dinner," she suggested.

Porteous, speaking in the melodeous British accent he has retained since moving to the United States from Trinidad 63 years ago, recounts that incident as one of the highlights of his career. His volunteer career, that is. The one he built since retiring in 1969.

A former CBS sales executive, Porteous said he found his new vocation after hearing reports that Lake Erie was dying. Woried that the same thing could happen to Lake Michigan, the Winnetka, Ill., resident set out to get a crash course in ecology. "I said this is where I'm going to put whatever energy and time is left to me."

After 2 years as a volunteer at the Lake Michigan Federation and at Business and Professional People for the Public Interest in Chicago, Porteous was invited to speak to some Winnetka sixth-graders about what he had learned. He's been roving around Chicago's North Shore ever since, teaching a six-week unit about Lake Michigan.

In January, he was working at the Sacred Heart School in Hubbard Woods, Ill., teaching Jean Howlett's third-grade class. Howlett said the children eagerly await Porteous' weekly visits. "That's what they talk about all year. They can't wait until they reach third grade so they can have Mr. Porteous."

As he pulled props and illustrations out of his sack with the ease of a magician pulling a rabbit out of a hat, it wasn't hard to see why. "This is what happens to water when no one cares," he said, displaying a jar full of muck from the Skokie Lagoons. A chorus of vehement "yuks" rose from the classroom. "When you pollute the water, the water's in trouble, but you are too," he said somberly, draping a black cloth over the jar of muck and pointing a toy gun at his head. "The only solution is to stop putting the pollution in the water."

"Every year, more teachers in different schools want him to come and talk," said Lee Botts, former director of the Lake Michigan Federation and a friend of Porteous'. "He keeps learning; he keeps getting excited about finding out new things about Lake Michigan. That must be a big part of the reason he continues to expand his audience. His own enthusiasm is probably the most important thing he teaches them."

If nothing else, Porteous is an enthusiast. "If you reduce ecology t living, real terms, you're talking abo damn exciting things," he said. "Environment isn't just a word—it's condition, a state—it decides wheth you live or die."

Porteous said the secret to his rapport with children is keeping everything simple. "I don't burden t children with statistics," he says, "I careful not to use any scientific jargon." Keeping his words to a minimum, Porteous relies heavily o pictures and maps to tell his story. "I've been known to buy a $30 book just to cut out one picture, or take a encyclopedia and gut it. I'm a scavenger. My wife doesn't know h much money I've spent." He displa huge book he bought for one strikin picture. "I wanted to make the point that if you take a soil sample at the of Mt. Everest, you'll find a sea shel

Porteous' dedication seems to be inspired by two beliefs: one, displa on a sign over his desk at home, sa "Man's mind, stretched to a new id never goes back to its original dimension." The other, often quoted Porteous himself, is "You can go wit hunting for just so long, but that doesn't clean the environment. You have to proceed from there and tea tomorrow's chairman of the board."

SPOTLIGHT: ELGIN

Illinois Town Innovates to Ensure Safe Water Supply

or years, the City of Elgin, Ill., relied n the Ironton-Galesville aquifer for its rinking water. But the aquifer was everely overdrawn, the city was rowing, and it became apparent in he mid-1970's that an alternate ource was needed.

The logical choice was the Fox River, vhich has an average flow of 543 nillion gallons a day. But the city, vhich once drew its drinking water rom the Fox, had abandoned the River n 1920 because of pollution roblems.

Ron Zegers, director of water for the ity of Elgin, said the debate raged for bout 2 years. The aquifer was fine for he time being, but "it didn't seem to e a realistic source to bank on," said egers. Population projections were howing that Elgin, with 64,000 eople, could have a population of 00,000 by 1995 and a daily water emand that could reach as high as 24 nillion gallons during the summer.

The city decided to blend the old and he new—literally. In an innovative ıove, it decided to mix water from the ɔx River and the aquifer to meet the rowing demand. That decision would uarantee a safe drinking water upply, even during a pollution mergency on the Fox.

A new treatment plant completed in 982 and an expanded existing facility an provide 24 million gallons of water day, if needed. Water is blended at he new plant and is treated along airly conventional water treatment ines. But Elgin water has three basic roblems that require special ttention, said Zegers.

The first problem is that the aquifer ater contains relatively high levels of arium, radium, and hydrogen sulfide.

A line softening process is used to irtually eliminate barium and radium, ut the high levels of foul-smelling ydrogen sulfide require aeration and erric sulfate treatment.

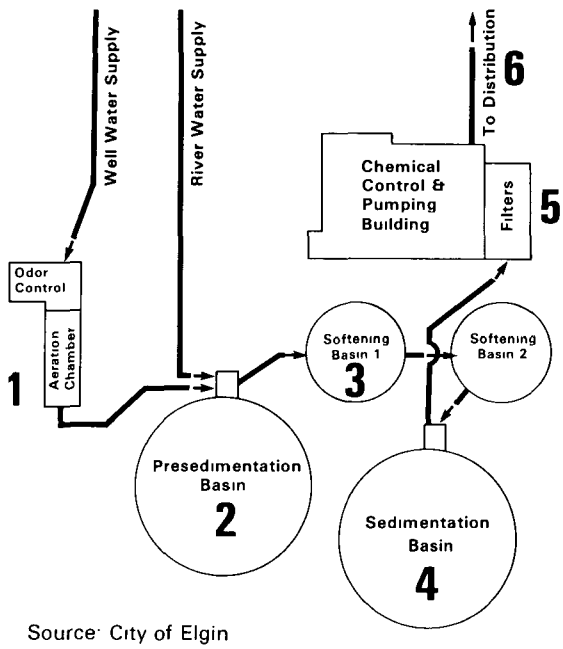
Well water entering the plant is sent to the odor control building and aeration chamber, where the hydrogen sulfide is removed. It is then blended with the river water in the 2-million-gallon presedimentation basin. Coagulants, powdered carbon, and potassium permanganate are added to remove sediment and destroy algae, bacteria, and virus.

The water is then piped to a 600,000 gallon softening basin, where minerals are removed by lime softening. The waste lime is sent in slurry form by pipeline to a 60-acre disposal site several miles away, and the softened water is then sent to the secondary sedimentation basin, where it is chlorinated. Once this is done, the water is filtered through coal, sand and gravel in indoor filtering basins. It is then pumped into the 1-million-gallon finished water reservoir and into the distribution system for human consumption.

On an average day, the plant treats 8.6 million gallons of water—a figure that shoots up as high as 13 million gallons a day during the summer.

The Elgin plant's treatment scheme is "one of the most advanced and innovative in the Midwest," said Joseph F. Harrison, chief of Region 5's Drinking Water Section. "We are pleased that the city has taken these steps to meet their water shortage and drinking water quality problems head-on."

WATER TREATMENT AT ELGIN, ILL



Source: City of Elgin

1. Air and ferric sulfate are added to well water to remove hydrogen sulfide from water.
2. River water is treated with chemicals to remove sediment, and to destroy algae, bacteria, and virus.
3. Minerals are removed from water by lime softening.
4. Softened water is treated again with chemicals to remove remaining suspended solids.
5. Treated water is filtered through a dual media filter as final treatment step.
6. Water is pumped to consumer or to a reservoir on the plant property.

Region 5 Enforces Environmental Laws

Region 5 referred more cases for prosecution during the second quarter of fiscal 1984 than any of EPA's nine other regions, Regional Administrator Valdas V. Adamkus announced recently.

In response to EPA Administrator William D. Ruckelshaus' emphasis on the enforcement of environmental laws, Region 5 referred 40 civil cases and 1 criminal case to EPA headquarters during January, February and March. Once the cases are reviewed by attorneys in Washington, they will be forwarded to the U.S. Department of Justice for prosecution. These cases constitute half of the cases referred to headquarters by the regions.

In addition, Region 5 issued 200 administrative orders—legally-binding documents that specify environmental remedies. Many of these orders were addressed to municipal sewage plants that have not yet developed industrial pretreatment programs as required by law.

In a memo to Region 5 staff, Adamkus said he was "extremely pleased with the effort you put forth to help maintain the excellent reputation we have earned in all of our enforcement programs. This type of effort provides an excellent foundation for strong programs in the future."

ENFORCEMENT DEFINITIONS

Notice of Violation (NOV): An administrative tool used to notify a pollution source that it is not complying with a particular portion of an environmental law. EPA typically issues NOV's to the polluting municipality or industry. Sometimes, however, NOV's are sent to States to draw their attention to a particular violation.

Administrative Order (AO): A legally enforceable administrative action used by the Agency to inform a polluter of violations of law and to require correction of the violations. Region 5 has issued 121 water-related AO's this fiscal year.

Civil Lawsuit: A lawsuit filed by the U.S. Department of Justice on behalf of EPA. Seeks immediate compliance with the law and usually asks for fines. Region 5 has referred 7 water-related civil cases to the Department of Justice since the fiscal year began last October.

Criminal Lawsuit: A lawsuit filed by the U.S. Department of Justice on behalf of EPA. Seeks criminal penalties, such as fines or jail terms, for a violation of environmental law.

EPA Helps Clean Up Hammond Area

One of EPA's most significant pollution control accomplishments in the Great Lakes occurred in Indiana. EPA sued the Hammond Sanitary District in 1980 after it was found to be the primary source of grease balls and fecal matter washing up on Chicago beaches. That problem, which resulted from an improper connection between the sewage system and a stormwater pumping station, was solved with the help of EPA construction grants money.

How You Can Help...

Public participation is required by some, and encouraged by most, laws and regulations governing this Agency. Here are the ways any citizen can participate in the various decision-making procedures of the Water Division:

CONSTRUCTION GRANTS: Public hearings are held before States determine the priority list for municipal sewage projects to be funded by construction grants.

ENVIRONMENTAL IMPACT STATEMENTS: They are drafted for major Federal actions with the potential to significantly affect the quality of the human environment. Public hearings are conducted before and after a draft impact statement is prepared.

NPDES PERMIT SYSTEM: Any owner or operator of a source that discharges waste into the waters of the United States must have a permit under the National Pollutant Discharge Elimination System (NPDES). The permits are issued by EPA or by States with EPA-approved programs for administering the system.

Public opportunities to participate in the NPDES program include: commenting on draft permits, appealing permit decisions in court, and bringing citizen suits against dischargers to enforce permit conditions.

UNDERGROUND INJECTION CONTROL: The Safe Drinking Water Act requires U.S.EPA or the States to set up a permit system to regulate waste injection wells. The purpose of the system is to prevent these wells from contaminating underground drinking water supplies. Draft permits must be presented for public comment.

DREDGE AND FILL PERMITS: Permits are issued by the U.S. Army Corps of Engineers for the disposal of dredged or fill material in the waters of the United States. EPA comments on the proposed permits after holding public hearings.

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For Further Information

If you would like additional information about specific EPA programs, please visit the Office of Public Affairs, U.S Environmental Protection Agency Region 5, 230 South Dearborn Street, Chicago, Illinois 60604, or call (312) 353-2072

This office maintains a supply of EPA publications, operates an informal speakers' bureau and coordinates regional distribution of environmental films. There is no charge to the public for these services

If you encounter an environmental problem, report it first to your local, and then your state, pollution control agency. Those numbers are listed below. For specific information about EPA programs call:

U.S.EPA Region 5 ..... (312) 353-2000
Air Pollution ..... (312) 353-2212
Automobile Problems
- Catalytic Converters .... (202) 382-2640
- Certifying a Car for Sale (313) 668-4277
- Fuel Economy ..... (313) 668-4329
- Fuel Switching ..... (312) 886-4577
- Imports ..... (312) 886-6082
- Tampering with Emission Controls ..... (202) 383-2640
- Warrnaty & After-Market Parts ..... (202) 382-2940

Great Lakes National Program Office ..... (312) 353-2117
Hazardous Waste, Super Fund ..... (312) 353-9733
Oil & Chemical Spills
- National Emergency Response Center ..... (800) 424-8802
- Region 5 Emergency Response Center ..... (312) 353-2318

Pesticides ..... (312) 353-2192
Radiation ..... (312) 886-6175
Toxic Substances ..... (312) 886-6006
Water Qaulity
- Wastewater Treatment . (312) 353-2121
- Drinking Water ..... (312) 353-2650
- Wetlands ..... (312) 886-6678

Region 5 ENVIRONMENTAL HOTLINE:

Illinois residents call: 800-572-2515
All other states: 800-621-8431

ILLINOIS
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706
(217) 782-5562
24-hour number (217) 782-3637

INDIANA
Indiana State Board of Health
1330 W Michigan Street
Indianapolis, IN 46206
(317) 633-0100
24-hour number:(317) 633-0144

MICHIGAN
Michigan Department of Natural Resources
Stevens T. Mason Building
Lansing, MI 48909
(517) 373-1220
24-hour numbers: (517) 373-7660
(800) 292-4706

MINNESOTA
Minnesota Pollution Control Agency
1935 W. County Rd. B-2
Roseville, MN 55113
(612) 296-7373
24-hour number: (612) 296-7373

OHIO
Ohio Environmental Protection Agency
361 E. Broad St.
Columbus, OH 43215
(615) 466-8508
24-hour number: (within Ohio only)
(800) 282-9378

WISCONSIN
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707
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