

1996 Annual Report Northeast Ohio Regional Sewer District

Director and Board President Message

his year, we adopted a new mission statement, "Protecting your Clean Water Investment." This statement conveys our role as a protector of the Greater Cleveland waterways. It is increasingly important for us to think of clean water as a major investment, since the cost of federally mandated environmental requirements continue to escalate. In 1996, we implemented a rate increase to offset the increasing costs of improvements. Because we believe that clean water is an integral part of everyone's well being, we must make large expenditures for capital improvements so we can continue to improve water quality in Greater Cleveland. Our goal is to protect this public investment while minimizing operating costs to provide cost-effective wastewater treatment.

This year we completed the refurbishment of the Westerly Wastewater Treatment Plant. Westerly now operates as a biological plant and is meeting all National Pollutant Discharge Elimination System permit limits. With a switch to Cleveland Public Power, the District also anticipates a decrease in Westerly's operating costs.

The District received approximately \$23.5 million in low interest loans from the Ohio Environmental Protection
Agency (EPA) for the Heights Interceptor and the State Road Intercommunity
Relief Sewer projects. Ohio EPA
considered major revisions of this low interest loan program in 1996, however with support from our communities, we onvinced EPA of the importance of keeping this financial assistance in place

for capital sewer improvements. Another important victory included securing a special \$2 million U.S. EPA grant to study water quality issues in the Doan Brook Watershed. This Lake Erie tributary runs through University Circle and receives flow from major communities on Cleveland's east side. The District will begin building a new tunnel along Mill Creek in 1997 as part of a major effort to control combined sewer overflows and improve water quality. This endeavor implements the recommendation of a two-year planning study the District completed in the Mill Creek Area.

In December, after a long, drawn-out battle, we settled a suit against Advanced Medical Systems for illegal discharge of radioactive contamination found at District facilities. The \$1.25 million settlement will cover many of the costs incurred for remediation of the problem.

Our wastewater industry peers recognized our efforts by awarding us with many honors this year. Two members of top management received Public Works Performance Awards for their excellence and dedication to clean water initiatives. We also received recognition for providing opportunities to minority and women-owned businesses. In addition, our wastewater treatment plants received awards for operating within permit limits.

In view of these milestones in 1996, and even as the costs of capital improvements, operations, and maintenance continue to rise, it is imperative that we continue to invest in new initiatives that will improve the condition of our waterways. The District is taking the first steps to provide overall direction and planning for storm water management. To do so, we are investing in water quality studies that we hope will yield new solutions to address storm flow, especially at area beaches. We continue our involvement with the regulatory process to ensure that new regulations balance benefits and costs.



The Executive Director Erwin J. Odeal and Board of Trustee President Michael L. Nelson.

We believe you will find this report informative and interesting and that you will see that we are, indeed, protecting your clean water investment and taking pride in our mission. As we move forward into the next millennium, we will continue our efforts to seek cost-effective solutions to improve water quality, so every person in Greater Cleveland will reap the benefits of clean water.

Finance — Stabilizing user rates



"An aggressive pursuit of low interest loans has enabled us to finance many of our recent construction projects at a considerable savings to our customers."

David A. DeMarco
Director of Finance

As a key component of the District, the finance department oversees the investments of the organization and provides comprehensive financial and managerial information to our stakeholders.

An increase in projected operating and capital costs, inflation, and a decrease of water consumption in Greater Cleveland led us to raise sewer user charges to provide additional revenues for the years 1996 through 2000. We implemented the first increase of \$1.20 per thousand cubic feet (mcf) of water on May 1, 1996. This amounted to an increase in 1996 of approximately \$10.00 for the average residential customer. The remaining four increases begin January 1 of each year from 1997 through the year 2000 and average \$1.35 per mcf. Sewer use charges are the District's only source of operating revenue.

We took this necessary action after an independent expert completed a rate study which reviewed our projected financial obligations and five-year

capital improvement plan. The District adopted the final rate schedule after considerable internal review, and input from District customers and community leaders in our service area. This rate increase will allow us to meet annual operation, maintenance and equipment replacement costs, to pay back borrowed funds and to finance our capital improvement program.

Water consumption serves as the billing basis for sewer charges and has been trending downward over the last few years. Based on our rate study, this trend is projected to continue through the year 2000. Although this reduction in water use by consumers would normally result in a slight drop in operating costs, the District treatment plants have been receiving an increasingly large volume of storm water. This creates a steady increase in the amount of wastewater flow we actually treat. The decrease in water consumption for billing purposes coupled with the increase in storm water treated is responsible for approximately 20 percent of the required increase in rates. As we continue to deal with wet weather pollution problems, we expect

to see additional increases of wastewater flow at our plants, thus increasing our operating costs.

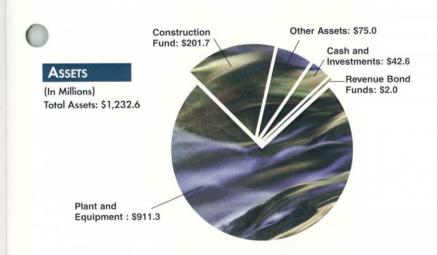
Increases in our operating costs are projected for a number of reasons. To moderate those increases, we are constantly striving to uncover methods within our control that will result in more efficient operations and reduced costs. We also actively investigate alternative sources of utilities, goods and services.

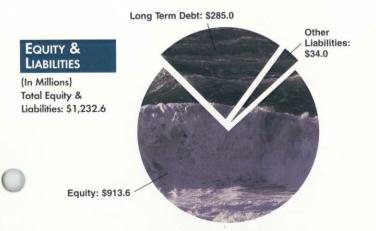
Because federal grant assistance to finance capital improvements is no longer available, the District must borrow large amounts of money. As a result, the District's debt and interest payments will double within the next five years. To help fund capital improvements, the District will sell revenue bonds when necessary and continue to borrow as much as possible from the Ohio Environmental Protection Agency's Water Pollution Control Loan Fund program. This program provides loans at below market interest rates.

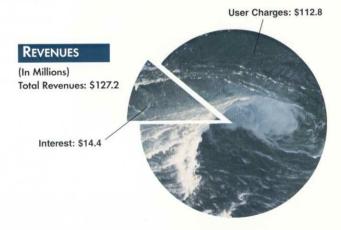
This year, the District secured \$23.5 million in these low interest loans to finance two major capital improvement projects. One loan for \$21.2 million paid for the third construction contract

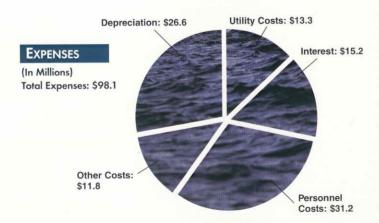
of the Heights portion of the Heights/Hilltop Interceptor. Another loan, in the amount of \$2.3 million, paid for the construction of the State Road Intercommunity Relief Sewer.

As a part of our continuous effort to educate and inform customers, the public information department developed "The Clean Water Connection." This publication will appear semi-annually with customer bills. "The Clean Water Connection" provides valuable information about sewer rates, capital improvement projects and discount programs.









A copy of the detailed financial statement is available by writing to the Director of Finance, Northeast Ohio Regional Sewer District, 3826 Euclid Avenue, Cleveland, Ohio 44115-2504.

Operations – Minimizing costs, winning recognition



"The renovation of
Westerly now allows
us to meet all NPDES
permit limits. The new
biological process
improves the water
quality of effluent
discharged to Lake Erie."

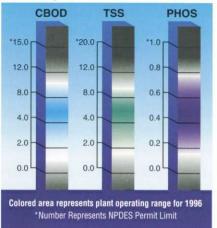
Will R. Baylis
Director of Plant
Operation & Maintenance

In 1996, our three wastewater treatment plants underwent improvement projects to help increase efficiency and cut costs. These plants serve more than 1.1 million customers and treat nearly 120 billion gallons of wastewater annually. To continue to protect the clean water investment of Greater Cleveland, we must keep these plants running efficiently and effectively by continually updating our treatment process.

Westerly rededicated

On September 5, 1996, following years of renovation, we rededicated the Westerly Wastewater Treatment Plant. This event marked a monumental accomplishment for the District. Prior to the rededication, Westerly underwent construction to convert its wastewater treatment process from a physical/chemical process to a biological process.





Treated 13.1 billion gallons of wastewater, Processed 22,921 wet tons of centrifuge cake, Incinerated 22,657 wet tons of biosolids, Hauled 264 wet tons of biosolids

A \$60 million special appropriations grant, awarded to the District by U.S. EPA in 1995, provided 75 percent of the funding for the Westerly renovation. Sewer users will finance the remaining 25 percent of the project, which includes a \$20 million final phase improvement project.

Westerly recognized, receives first Gold Award

The transformation now enables
Westerly to meet all discharge limits set

by the Ohio Environmental Protection Agency (EPA) via our National Pollutant Elimination Discharge System (NPDES) Permit. In 1996, Westerly received its first gold award from the Association of Metropolitan Sewerage Agencies (AMSA) for meeting these permit limits.

Electrical costs reduced

The District saved more than \$847,000 in 1996 by reevaluating and altering Westerly's use of major utilities. By witching to Cleveland Public Power for electrical service, we reduced electrical costs by 43 percent. This resulted in a 25 percent decrease in electrical usage and savings of \$643,000. To reduce the usage of natural gas, we installed new solids handling process equipment and refurbished the sludge incinerators. This decreased natural gas usage by 23 percent, reflecting \$155,000 in savings. We also reduced Westerly's water consumption 43 percent by recycling the plant's effluent. This resulted in approximately a \$49,000 savings.

Key for Plant Performance Graphs

CBOD Carbonaceous Biochemical Oxygen Demand

TSS Total Suspended Solids

PHOS Phosphorus

NPDES National Pollutant Discharge Elimination System

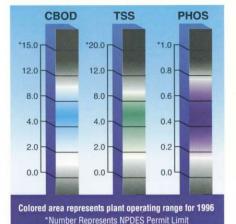
Southerly's sludge dewatering facility revamped

The District made progress with its construction projects to revamp the

Southerly Wastewater Treatment Plant's thermal conditioning and sludge dewatering facilities. The projects involved seven improvement phases and cost the District approximately \$14 million. The new thermal conditioning equipment will extend

the useful life of the aging equipment for an additional 10-15 years. We replaced a 30-year-old vacuum filtration process with centrifuges in the sludge dewatering facilities. This provides a more efficient way to treat biosolids and should dramatically reduce the odors emitted through the old process.

Southerly Plant Performance



Treated 54.2 billion gallons of wastewater, Processed 98,904 wet tons of centrifuge cake, Incinerated 91,366 wet tons of biosolids, Hauled 7.538 wet tons of biosolids

Options reviewed to conserve energy

Electricity is a major expense at all our treatment plants. At Southerly, we spend approximately \$6.8 million annually for electricity. Since electricity is necessary for operation, it is pertinent that we review any options to save money. In 1996, Southerly worked with Centerior Energy to complete an energy



A Southerly Wastewater Treatment Plant employee utilizes recycled plant effluent.



Visitors to Cleveland's lake front enjoy a day at the beach.

conservation study. By reviewing various ways to decrease electrical usage in the plant, Southerly will reduce its electrical consumption. We also continued to incinerate 92 percent of our biosolids since incineration is considered the most cost-effective, environmentally sound and efficient method of disposal.

Southerly recognized

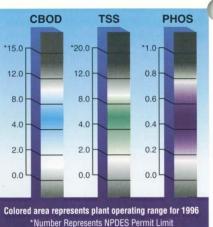
In 1996, Southerly continued to operate within discharge limits set by the Ohio EPA and received a gold award from AMSA for meeting these limits. This is the 10th year Southerly received an award for operating within permit limits.

Easterly construction continues

Construction projects at the Easterly Wastewater Treatment Plant continued in 1996. We installed twelve new primary sludge pumps to remove biosolids from the final settling tanks before the effluent discharges to Lake Erie. The biosolids are then pumped to Southerly for treatment.

Plant personnel continued to install new piping to replace potable water, used for cleaning purposes, with process water (plant effluent). The process water is chlorinated before use to prevent algae growth and ensure maximum operating efficiency of plant equipment. The use of process water as a replacement should save the District in excess of \$30,000 in water costs annually.

Easterly Plant Performance

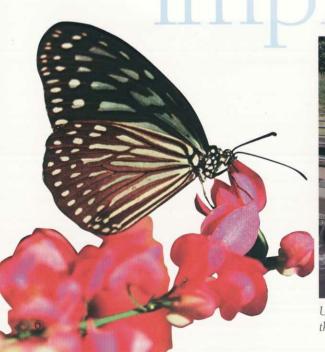


Treated 54.6 billion gallons of wastewater, Pumped 597.73 million gallons of biosolids to Southerly.

Easterly recognized

These construction projects and continued improvements to the plant enabled Easterly to meet all NPDES Permit limits in 1996. Easterly also met these limits in each of the previous four years and AMSA recognized the plant each year for operating within permit limits.

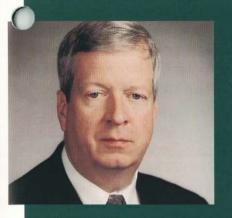
\$30,000 in water costs annually.





Unit Process Manager Alan Nemecek provides visitors with information about the wastewater treatment process.

Legal - Protecting investments and resources



"The Legal Department's lobbying for reasonable provisions and regulations results in the savings of thousands of dollars every year. By representing the organizations' best interests, we protect the investment that residents have placed in our hands. This allows us to continue protecting our resources while maintaining the responsibility of improving water quality."

William B. Schatz General Counse

The Legal Department is a necessary branch to the District since they review all claims and regulatory issues to avoid financial costs to the organization.

Legal's handling of property acquisition assures timely easement and site cquisitions which helps us avoid construction delays. Legal also

aggressively pursues pre-treatment enforcement against industrial dischargers.

The Water Quality and Industrial Surveillance (WQIS) staff monitors

1000 businesses and industries per year and refers companies in noncompliance to the Legal Department for enforcement action. In 1996, the District brought charges against 11 industries for illegal discharges discovered by WQIS. This aggressive pursuit assures that high levels of metals and

acids do not harm the wastewater treatment plants or interfere with the solids handling process.

Legal also defends the District against contract, labor, and personal injury claims. Legal reviews all claims to determine justification and defends the District against all inappropriate claims.

Additional costs the District can incur include billing disputes. In 1996, we reviewed and processed 20 billing disputes.

District recovers \$1.25 million

The recovery of \$1.25 million from AMS and affiliated groups in the Cobalt-60 litigation is a demonstration of the legal department's ability to recover District funds.

We commenced suit against Advanced Medical Services (AMS) in Cleveland, Ohio following the discovery of radioactive Cobalt-60 contamination at our Southerly plant in 1991. AMS repairs radioactive sources for cancer

therapy machines using Cobalt-60. To eliminate illegal discharges to the sewer system, we obtained a court order to terminate sewer service to their Cleveland facility in 1994 by physically plugging their sewer connection.

In addition to paying \$1.25 million to the District, AMS must meet specific conditions in order to reconnect to the sewer system.

MBE/WBE program recognized

We received the 1996 Administrator's Award for Outstanding State/Local Government Performance. The award, presented annually by the U.S. Environmental Protection Agency, recognizes outstanding achievements in devising, implementing, and administering a Minority Business Enterprise Program (MBE) and a Women Business Enterprise Program (WBE) at a state or local level. The District has provided nearly \$20 million in contracts to MBE/WBE businesses over the past two years and has consistently exceeded the 15 percent MBE and 5 percent WBE participation goals for construction contracts.

Engineering – Managing massive projects



Heights/Hilltop Interceptor. The completion of the Hilltop leg provides a wastewater to the Easterly Plant from eastern parts of Cleveland and the east side suburban

> Charles J. Vasulka, P.E. Director of Engineering and Construction

The Engineering Department designs efficient wastewater treatment systems, and interceptor sewers, to best fulfill the current and future environmental needs of our communities.

Our Engineering Department has two main areas of responsibility: the design, construction and repair of District interceptors and the upgrading, renovation and repair of our wastewater treatment facilities. These tasks demand extra care to complete at the lowest cost while maintaining the highest quality. As part of our commitment to minimize costs, we adhere to a stringent bidding process and apply for as many low interest loans as possible to finance necessary projects.

Interceptors an integral part of environmental improvements

The Sewer Design group manages the design and repair of interceptors. These interceptors transport wastewater to our treatment plants from both the combined sewer and separate sewer service areas.

In 1996, we made further progress on a number of interceptor construction projects that have been underway for more than a decade. We finished the Hilltop portion of the Heights/Hilltop Interceptor, and at the same time, began work on an \$18 million portion of the Heights Interceptor extending from Forest Hills Boulevard to Fairmount Boulevard.

We also completed work on the \$12.4 million Bluestone Contract 1 Tunnel and two smaller open-cut intercommunity relief sewers that feed into the Heights/Hilltop Interceptor.

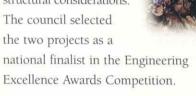
In April, we began constructing the State Road Intercommunity Relief Sewer (SRRS). When construction of this sewer is complete in August of 1997, it will help alleviate local basement flooding and reduce the incidence of overflows to the environment.

Additionally, we constructed odor control facilities at various sites along the Heights/Hilltop and West Leg Interceptors. The equipment will

reduce odors emitted by interceptors in the surrounding east and west side communities

Construction efforts pay off

In 1996, the American Engineers' Council recognized our Hilltop Interceptor (Contract G) and the Bluestone Tributary Relief Sewer for their complex hydraulic geotechnical structural considerations. The council selected the two projects as a



n-House Design alters facilities to improve efficiency

The In-House Design group is responsible for upgrading, renovating and repairing District treatment plants. Our treatment plants' heavy and constant use makes routine maintenance and performance evaluation a necessity. The In-House Design group reviews new technologies and available options for facility improvements so the wastewater treatment plants operate at peak efficiency. After reviewing current technologies, they select the most costeffective method of improvement to implement.

In 1996, Engineering completed the design for the renovations of Southerly's sludge dewatering facility and a secondary effluent conduit. Renovation Southerly's sludge dewatering facility includes the demolition of 12 existing vacuum filters, installation of temporary dewatering facilities, installation of six

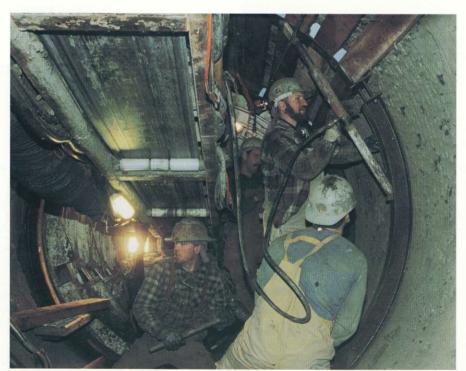
high-solids centrifuges, building enhancements, and electrical and instrumentation upgrades. The secondary

> effluent conduit will allow the plant to route flow around the effluent filter building allowing for maintenance. Since the chlorine contact tanks beneath the effluent building are normally submerged, isolating the building will allow employees to perform needed maintenance in areas currently inaccessible.

mechanisms move a bridge, to which the siphons are attached, back and forth over the clarifier tank.

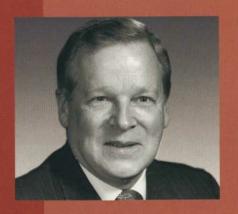
The original driver used a rack and pinion drive to move the bridge. This proved inefficient because it increased the stress on the surrounding mechanisms causing frequent breakdowns. This year, the In-House Design group identified alternative types of drivers to test which will reduce the down-time caused by frequent breakdowns. One of these drivers operates electronically and the other is based on a mechanical system that uses self-propelled traction motors. Engineering is currently evaluating these

In 1996, the In-House Design Group also supervised the testing of new drive mechanisms for the tunneling bridges that siphon sludge from the bottom of the final clarifier tanks. These



Miner erecting the primary support system of steel ribs and wood lagging for the Bluestone Intercommunity Relief Sewer.

Support Services - Harnessing Technology



"With new computerized technology, we can respond faster to emergencies, therefore reducing pollutants to the environment.

New technology provides us with the tools necessary to increase efficiency while improving water quality."

Kenneth A. Pew
Deputy Executive Director

Support Services contributes to the daily operation of the District by responding to constant changes in environmental regulations, employee administration laws, and community needs.

Departments encompassed by Support Services are responsible for sustaining District operations. These departments are the catalyst for the operation of the District and they enable us to plan future projects for the control of combined sewers, and provide cleaner waterways for future generations. Support Services recognizes water quality problems and responds to them in a timely manner so there is minimal harm to our waterways. Their efforts also provide instantaneous information to all employees via our electronic network.

One such effort focuses on controlling combined sewer overflows. In 1996, we initiated studies in areas of Greater Cleveland affected by combined sewers. We have stressed the value of using a watershed approach to remedy problems caused by combined sewer overflows which impact many older urban areas. We initiated the studies to evaluate short and long-term strategies to control combined sewer overflows.

Mill Creek Study proposes building new tunnel

In 1996, we concluded a 21-month sewer system study in the Mill Creek area. The study focused on pollution sources, reviewed pollution problems and provided recommendations for improvements. The study indicated three main sources of pollution in the area: combined sewer overflows (CSOs) in periods of rain; stormwater contaminated with sanitary flows due to damaged sewer lines; and pollutants from parking lots and streets which flow to the storm water system. The study recommended building a new tunnel to resolve water quality problems in the area.

Through the construction of the Mill Creek Tunnel, the District anticipates a dramatic reduction in the number of combined sewer overflow discharges to five per year from its current 40-60 annually. Also, as part of the effort to control CSOs, communities in the Mill Creek area will need to repair their current local sewer systems.

Construction of the first phase of the Mill Creek tunnel will begin in May, 1997 and will cost \$20 million. This section will link southeast Cleveland and Garfield Heights to the Southerly Wastewater Treatment Plant. The total estimated cost of the entire project is \$132.4 million. The District will spend an additional \$46 million on the construction of intercommunity relief sewers and the modification of combined sewers.

Grant provides funding for sewer study

A \$2 million demonstration grant awarded by the U. S. Environmental Protection Agency will enable us to study the combined, sanitary and storm sewer systems in the Doan Brook Vatershed. The District will contribute an additional 45 percent local funding to study significant flooding and water quality problems of the stream. The study will evaluate strategies to alleviate storm impacts to the stream, and review issues related to quantity of

storm flow. This stream runs through Cleveland's historic University Circle and the Rockefeller Gardens area. This area features cultural, medical and academic facilities as well as gardens, ponds and public picnic sites.

Study focuses on combined sewer overflows

We awarded a \$4 million contract, in November, to analyze water quality and study the impact of combined sewer overflows in portions of Lake Erie, the Cuyahoga River, Rocky River and Big Creek. The study will analyze wet-weather conditions

in the Westerly area and will feature a detailed computer model used to understand current sewer systems and how they respond to wet weather. The study should be complete by June of 1998, and will evaluate CSO volumes

and potential flood areas, and recommend strategies to control CSOs.

The District also initiated a detailed sewer system investigation in the Westerly service area during 1996. In July, we awarded a \$1.6 million contract for the inspection of all interceptor

sewers and CSO outfalls in the Westerly service area. This investigation entails the inspection of 44.5 miles of sewers and more than 700 manholes.

As part of the Westerly study, the District will encourage active public participation by supporting an

education program to provide community residents an understanding of the impact of combined sewers and the benefits of the project. The District has monitored the near-shore area of Lake Erie over the years and has noted a dramatic decline of pollutants. This study will provide recommendations to improve water quality after rainfall when bacteria levels can become elevated and detrimental to water quality. The Westerly service area is approximately 10,000 acres. Of this, 75 percent have combined sewers containing 26 combined sewer overflow outfalls.



Planning Engineer Betsy Yingling takes samples from the Mill Creek Stream.

New computer technology saves time and money

Recent technological upgrades will save Sewer Maintenance and Control (SM&C) employees time as well as money. Upgrades include the development of a computer graphic rain gage and flow monitoring system and the purchase and use of bar code and scanner software.

The computer graphic rain gage and flow monitoring system gives employees advanced warning of rainfall throughout Cuyahoga County, enabling operators to prepare in advance for appropriate treatment for stormwater flow. The system has a display unit that monitors the activity at all interceptors which feed into the wastewater treatment plants. Computerized displays track incoming flow, allowing personnel to reduce the number of CSOs by providing storage for the flow until the plant can provide treatment.

District employees perform approximately 1,800 combined sewer inspections each year, sometimes recording as many as 60 per day. Recording this information by hand can take as many as 1,400 hours per year. By installing bar codes at each regulator, inspection teams can more efficiently record data with scanner software. The information recorded through the scanner software is downloaded into a database and available to employees.

The bar coding system software cost approximately \$21,000, but the District estimates the equipment will decrease future labor costs. This software also provides a more uniform reporting system for data Bridges over the which employees can retrieve later and analyze as needed.



Bridges over the Cuyahoga River in Cleveland.

Electronic information streamlines work

The Electronic Information Services
Department (EIS) helps District
personnel create, store, disseminate and
manage information. They also provide,
manage and promote the use of
computer technology to increase
productivity and cut operating costs.

In 1996, after years of careful planning, EIS installed computers to create a network accessible by every employee. Employees can now send mail electronically and attach files to correspond with others within the organization. This network replaces the paper trail once left by written and typed correspondence.

To promote employees' involvement with new technology and to increase the use of District computer systems, EIS initiated participation from employees for two computer user groups. These groups meet monthly to discuss computer needs of their department, to disseminate information to others in the organization, and to

provide a means for assuring employees utilize the software.

The next step in our journey to full computer integration is to provide each employee with access to District databases and make routine connections with the Internet a reality. Eventually, a world of information will be at our fingertips.

Cross training an economic initiative

A self-imposed competitive assessment study outlined how the District could cut costs and become more efficient. This assessment showed that our staff is among the most knowledgeable in the wastewater treatment field in the United States. However, many of our experienced employees could retire in the next several years, taking with them years of industry experience.

Many employees will participate in cross-training over the next five years to effectively utilize their talents. This will increase the skills of our employees and reduce the need for hiring replacement personnel. In addition, cross-training will enable the remaining employees to take on more responsibility and will reduce labor costs.



