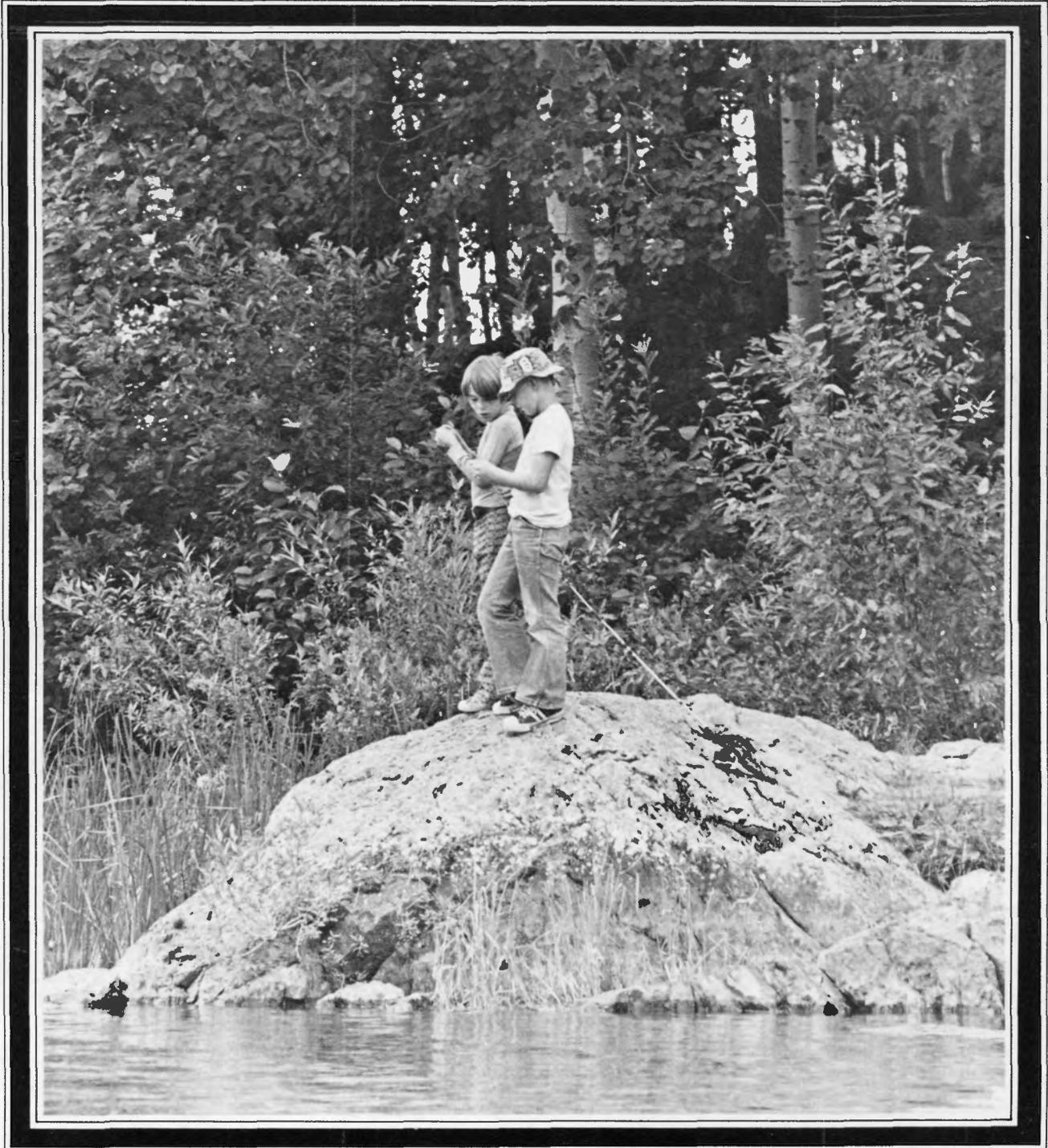


EPA JOURNAL

SEPTEMBER 1975

VOL. ONE, NO. EIGHT



BILLIONS FOR CLEAN WATER
RESCUING A LAKE



U.S. ENVIRONMENTAL PROTECTION AGENCY



BENEFITS OF CLEAN WATER

Floating down a scenic river you can drift with the current, watch a heron slowly beat its wings toward a distant shore and forget the hurly-burly of the urban world.

Swimming in a country lake you can see a turtle basking in the sun on a nearby rock and feel the cool current of an underwater spring.

Those are some of the delights of swimming in a natural setting that no millionaire can capture with the most fabulous artificial pool.

The opportunity to swim in rivers and lakes, and many other beneficial water uses, are being made more widely available because of EPA's construction grants program, one of the world's most massive pollution control efforts.

In this issue of EPA Journal, an article presents an overall view of the construction grants program which provides Federal financing to help build waste treatment plants in cities and towns all over America.

An example of what the construction grants program does is the huge new Detroit waste treatment plant, which was financed with the aid of EPA grants. The waste discharges from Detroit have long been the most serious source of contamination in the Detroit River and in Lake Erie, the most polluted of the Great Lakes.

To tell the story of the recovery of the Detroit River, we have reprinted an excellent article from

the Michigan Natural Resources Magazine. This story is a reminder that the building of waste treatment plants and correcting of water pollution problems are team efforts, involving local and State governments as well as EPA.

Then we have an article on Lake Shagawa (Shag-a-WAH) in Northern Minnesota, where an advanced waste treatment plant is helping to bring this lovely island-studded lake back to life.

A product of EPA's Research and Development Program, the advanced waste treatment plant at Shagawa shows what waste treatment technology can accomplish.

How EPA is giving Eskimos and other Alaskan villagers clean water and non-polluting sanitary facilities in a central location is the subject of another article.

Other items in this issue include:

A report on the dedication of EPA's new \$30 million research center at Cincinnati by President Ford.

A profile of Stanley W. Legro, the new Assistant Administrator for Enforcement.

An article about the proposed heating of a Minnesota greenhouse with warm water discharged by a power plant.

A progress report on the program of the United States and the Soviet Union to help each other solve pollution problems.

Sept '75

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U.S.
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COVER: Two youngsters are engrossed in baiting the hook as they fish in Minnesota's Lake Shagawa, a body of water which EPA is helping to restore.

PHOTO CREDITS

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EPA scientists are showing—for the first time anywhere in the United States—how to restore a body of water by removing phosphorus from wastewater flowing into a lake. By Charles D. Pierce.

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EPA is now funding one of the most massive pollution control efforts anywhere in the world—the multi-billion-dollar construction grants program.

This program involves the awarding of Federal funds to local government agencies to help build sewage treatment facilities to reduce pollution of the Nation's waterways.

EPA's funding for this program in fiscal year 1975 totalled \$3.6 billion, more than double the amount obligated in the previous fiscal year.

It is the Agency's goal to obligate the entire \$18 billion authorized by Congress for the construction grants program by September, 1977.

One of the largest public works efforts ever launched, the program now provides employment for about 125,000 people. This employment figure is expected to total about 200,000 by the end of fiscal 1977. The total would be even higher if the full impact of this employment on the economy were taken into consideration.

The recent action by the President in authorizing 300 additional EPA positions in fiscal 1976 for the construction grants program will raise the number of Agency employees working in this area to 1,007.

In the fiscal year that ended June 30, about 600 Agency employees worked primarily on construction grants. In that year EPA's budget authority for everything else—research and development, pollution abatement and control, enforcement, and management—was \$696 million.

Of course, our construction grants people do not actually spend these billions in the same sense in which our laboratories spend money for research or Regional Offices spend money for enforcement. We award the money in the form of grants to cities or other local government agencies, and the local agencies use it to pay for planning, design, and construction. The whole process of building a sewage treatment plant—from preliminary planning to completion—may take from two to six years.

It is hard work to control the spending of billions of dollars, to assure that the funds are allocated fairly and used wisely and effectively. The task is complicated by the need to handle different kinds of payments under different laws. Before 1972, the Federal share of a project's cost ranged from 30 to 55 percent. The Federal Water Pollution Control Act Amendments of 1972 raised this to 75 percent and expanded the activities that qualify for Federal assistance.

BILLIONS FOR CLEAN WATER

By John T. Rhett

Thus, while hundreds of projects are still being financed under the old law (because of the long lead time involved) and while reimbursements to States and cities are still being made for funds advanced in anticipation of Federal funding, EPA has had to gear up to administer construction grants under the new law, on a vastly greater scale and at an accelerated pace.

In the 1972 Act Congress authorized \$18 billion over the following three years. Half that amount was held in reserve by White House action, and EPA was authorized to allot \$2 billion in fiscal 1973, \$3 billion in fiscal 1974, and \$4 billion in fiscal 1975. Last spring, after the U.S. Supreme Court ruled that the Executive Branch could not withhold congressionally authorized funds,

the additional \$9 billion was made available.

This has meant a tremendous increase in the work load of the construction grants program. As the new-law projects got under way at the same time that old-law projects were still in process, there was at first some slowing down of the total program while the two types of Federal assistance, with differing levels of aid and differing procedural requirements, were integrated. These lags have been overcome and the over-all program is accelerating as it should. States and municipalities now generally understand the new regulations, and they have adapted their planning and procedures to conform to the new law. The pace of construction grants is increasing, and we are beginning to see evidence of measurable progress in improving the water quality of our rivers.

More than 6,000 projects are currently active, and they have an estimated cost of \$16 billion when finished. They include both old-law projects, most of which are far into the construction stage, and new-law projects, most of which are in the planning and design stages. As of June 30, more than 4,000 individual new-law projects had been awarded for almost \$6.6 billion.

The long lead time between initial planning and project completion, the need for careful engineering review and auditing, and a shortage of manpower both in EPA and in many States are all factors which slowed down the program prior to this past fiscal year. We in the construction grants program are determined to minimize these delays and to drive ahead toward reducing water pollution as much as we can with the funds available.

The great paradox of the construction grants program is that the entire \$18 billion is nowhere near enough to clean the Nation's waterways from pollution by sewage. What seemed like a generous authorization by the 92nd Congress three years ago is now seen to be far too



John T. Rhett is Deputy Assistant Administrator, Office of Water Program Operations, and EPA's National Manager for the Construction Grants Program.

little to achieve the objectives of the Act: nationwide secondary sewage treatment by July, 1977, and no harmful discharges by 1985.

According to our long-term Survey of State Needs, made last year, meeting the goals of the Act will require \$350 billion in municipal sewerage works. Assuming a 75 percent Federal share, this is far too great a sum for the Federal budget to handle in the manner now prescribed. EPA has proposed and held hearings on revising the law to ease the burden on the Federal budget and still achieve the most important water quality objectives of the Act.

But our work is laid out for us in this fiscal year and for several years to come, trying to assure that the balance of the \$18 billion already authorized is well spent. Let's briefly review the process.

HOW GRANTS ARE AWARDED

In the past EPA awarded a single grant for the Federal share of each sewage treatment project. Now we pay the larger Federal share (75 percent) for a three-step process: preliminary planning, engineering design and specifications, and actual construction. Payments are made early in the first two steps, and as often as monthly as phases of construction are completed.

Before an application can be submit-

ted, the project must be approved by the State, an architect-engineering consultant chosen, and conferences held with EPA and State officials.

After construction is finished there are inspections by EPA and the State and a financial audit before the final payment can be made. Periodic checkups on operation and maintenance ensue throughout the "lifetime" of the plant, 25 to 30 years.

WHO MAY APPLY, AND FOR WHAT?

Cities, towns, districts, States, combinations of these, or Indian tribes may apply for construction grants. The first hurdle for any applicant is State approval; the application must be on a priority list established by the State.

Eligible projects include new treatment plants, improvement or expansion of old plants, interceptor lines to collect sewage for treatment, outfall lines to dispose of treated effluent, and necessary power and pumping equipment. Under certain conditions, projects to control pollution from combined storm and sanitary sewer systems may qualify for Federal aid.

The law also authorizes aid for new treatment technologies such as the application of wastewater directly on land.

Each applicant municipality and its architect-engineering consultant must answer some tough questions, for

example: What alternative wastewater management schemes are possible and have they been evaluated? Is the design cost-effective, that is, does it provide required pollution control at minimum cost? Is the project's design acceptable environmentally? Has a wastewater discharge permit been issued by the State or EPA? Will the project attain the required degree of treatment? How will sewage sludge be disposed of? What are the plans for effective operation and maintenance? Does the project conform to the waste management plan(s) in its area? Has a user charge system been worked out? (The law requires all users of a treatment system to pay proportional shares of plant operation and maintenance; industrial users of new plants must also pay fair shares of the initial, capital cost.)

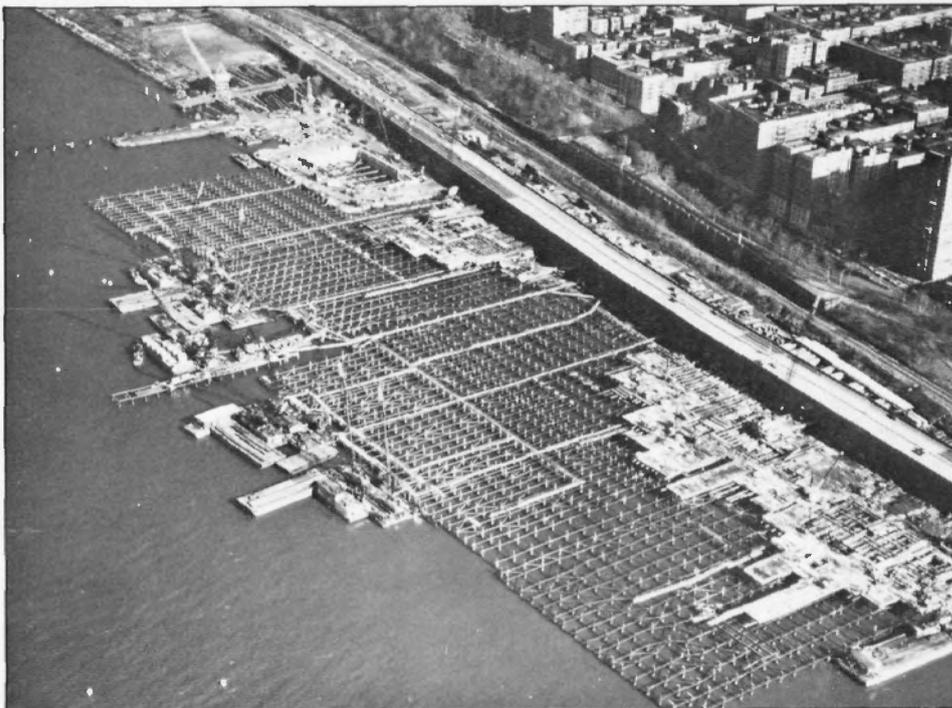
SPREADING OURSELVES THIN

The law that multiplied the construction grants work load did not provide for a proportionate increase in EPA employees to do the work. Each Regional Office has interpreted the program's guidelines in ways best suited to its situation. Each has tried valiantly with limited resources, and the result is 10 programs functioning well but spread thin. In many cases all required program reviews have not been adequately covered.

The number of applicants has increased sharply, as States have adjusted to the higher Federal funding levels. On July 1 there were 784 applications in the Regional Offices, compared to 502 one year before. Since the new-law projects are more complex than the old-law ones, the task of processing construction grants has increased more than the project numbers would indicate.

To meet the rising work load action is necessary on two fronts. The first is to assign more people to work on construction grants to assure that all tasks are performed satisfactorily and in full compliance with our regulations. This problem has been addressed by the addition of the 300 new positions for the construction grants program.

The second major avenue is to rely more on the States. So far 28 States have been certified to review plans and specifications and 32 States have the authority to review operation and maintenance manuals. We expect to increase delegations of responsibility to the States in the future. However, legislative changes will be necessary to provide States with additional funds to meet this increased workload.



This is the unique \$845 million North River Water Pollution Control Plant being built in New York City with the aid of approximately \$321 million in EPA grants. The facility is being built on a 30-acre platform over the Hudson River between 135th and 145th Streets. When finished in the early 1980s, the windowless plant, which will have a tremendous forced air ventilation system, will have a State park on its roof and will have the capacity to treat 220 million gallons of sewage a day.

Continued on Page 20

RESCUING A LAKE

By Charles Pierce



ELY, Minn.—The haunting cry of a loon broke the stillness as dawn arrived over Lake Shagawa at this gateway to one of America's vast wilderness areas.

Shortly after the call of the loon, an aquatic bird known as the voice of the Northland, a faint splash could be heard as an eager fisherman launched his canoe from a distant shore.

Otherwise, only a song bird chorus and the rustling of birch and aspen leaves in a slight breeze broke the early morning silence on this peaceful lake which is beginning to attract national attention.

For here at Shagawa, Environmental Protection Agency scientists believe they are showing how to restore a lake suffering from excessive algae, the plant cancer of water pollution, by removing phosphorus, a fertilizer, from wastewater flowing to the lake. They state this will be the first time this has been done anywhere in the country.

As a result of EPA's efforts, a sick lake is being nursed back to health. While significant progress has been made, minor algae problems can still occur in hot weather.

Construction and operation of an advanced sewage treatment plant at Ely has slashed dramatically the amount of phosphorus in the approximately one million gallons of waste water dis-

charged daily into the lake.

An important reason for the selection of Shagawa for this major experimental project which started nine years ago is that this 2,500-acre lake, 80 miles north of Duluth, drains into the famed Boundary Waters Canoe Area.

Stretching approximately 200 miles along the Canadian border, this boundary wilderness area has some 1,200 miles of canoe routes snaking through more than one million acres of land and water in the northern part of the Superior National Forest.

Lake Shagawa, which used to be blighted by huge floating masses of dead, putrifying and malodorous algae, also drains into Canadian waters.

Flying in a seaplane over Lake Shagawa and the southern part of the boundary waters, one sees a huge waterland in all directions broken up by jigsaw links of green forest land. This is the lake country, a legacy of ancient glaciers.

This is also the territory that the French fur traders, the Voyageurs, made famous in the 1700s as they paddled their birch bark canoes over these waterways.

Charles Pierce is Editor of EPA Journal.

In a deliberate attempt to maintain the primitive character of this area, few roads have been built.

As a result, the United States Forest Service maintains a seaplane base on Lake Shagawa and sends daily flights to check for forest fires and campers in trouble.

William "Chick" Beel, chief pilot at this base, said in an interview that he has lived near Lake Shagawa all his life.

"The lake used to get so filthy with algae that it really sickened me. Scum was everywhere. But now in the past two or three years there has been a real improvement in the condition of the lake, no question about it.

"There are over 1,000 lakes you can land on in Superior National Forest, but I don't know one that is more important than Shagawa with its location here in Ely."

Dr. J.P. Grahek, mayor of Ely, said that the swimming beach on Lake Shagawa will be open for a full season this year for the first time in many years.

A visitor to Ely is immediately impressed with the importance of outdoor camping and the canoeing industry to this small community.

The main street is lined with stores with such names as "Wilderness Outfitters" and "Canadian Waters." Canoes are displayed much as new and used cars are shown in other cities.

Sun-bronzed young men and women carrying back packs and wearing hiking boots are seen all over this city. A large sign in the middle of Ely announces "Welcome to Ely—Canoe Capital of the World."

In the winter when Shagawa Lake freezes over, the All American Championship Sled Dog Races are held on the lake.

An ardent outdoorsman and former long-time guide, Karl Rukavina, who is now employed as a bio-lab technician at the EPA Ely project office, recalled that "at one time this lake was so bad you could almost walk over it. The Shagawa River which drains the lake was so green with algae you could take a bucket of it and paint your house with it. The odor from the dead algae was terrible."

Discussing the Shagawa as a center for outdoor recreation, Mr. Rukavina said that it's an excellent lake for walleye, bass and other fish. "There are also all kinds of wildlife around it such as mink, beaver, muskrat, timber wolves, bald eagles and ospreys," he added.

"You can hear the wolves howling sometimes at night, especially in winter. I've seen the remains of deer left on

the Shagawa ice by attacking wolves. You could tell they were wolves from the tracks in the snow."

While other lakes and waterways have been restored by diverting the flow of wastewater to other areas, the improvement of Shagawa has been achieved by cleaning the waste rather than sending it somewhere else.

Robert Brice, director of EPA's Shagawa Lake Eutrophication Project, reports that the tertiary treatment plant has reduced the amount of phosphorus in the wastewater discharge from 15,000 pounds to 150 pounds annually.

A.F. Bartsch, Director of EPA's Corvallis Environmental Research Laboratory which has provided direction for this project, said that the technique demonstrated at Ely has potential application for restoring hundreds of other lakes.

All lakes have a life span, extending in some cases for thousands of years.

However, the rapid growth of algae fertilized by phosphorus in sewage effluent is hastening the death of thousands of lakes all over the world. These lakes die when they gradually are filled up with dead algae and other vegetation and debris.

Shagawa's problems began in the late 19th century when iron mining and logging activities made Ely on the lake's southeast shore a boom town.

Although the mining industry is still important to Ely, tourism is an increasingly important source of income. The Ely Chamber of Commerce reports that on summer weekends Ely's normal population of 5,000 people balloons to as much as 15,000 as outdoor enthusiasts arrive to enter the Boundary Waters Canoe Area.

Since the turn of the century, Ely had been discharging phosphorus-loaded wastewater into the lake. The resulting heavy algae infestation made the lake unfit for drinking or recreation uses.

In 1912 townspeople built a primary treatment plant to remove solids from wastewater, but by 1932 the contamination in the lake was so serious that a pipeline was installed to bring drinking water from a neighboring lake, a few miles upstream from Shagawa.

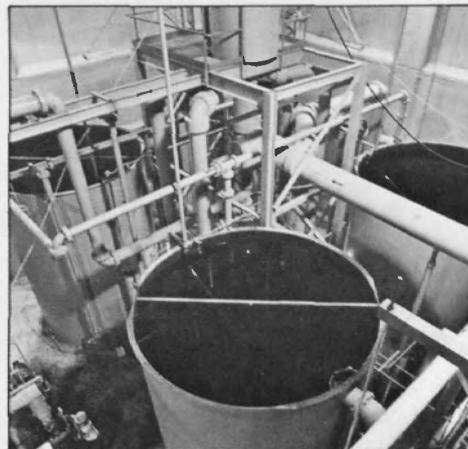
A secondary treatment plant was built in 1954, but neither plant removed significant amounts of nutrients.

To find out just how much phosphorus was coming into the lake from wastewater and learn how it affected algae growth, researchers began monitoring and analyzing the effluent from the secondary treatment plant in 1967. They found that the wastewater accounted for



EPA scuba divers prepare to take samples at bottom of Shagawa Lake.

View of interior of advanced waste treatment plant at Shagawa Lake.



Aerial view of advanced waste treatment plant at Shagawa Lake.



The Wastewater Research Division of EPA's Municipal Environmental Research Laboratory in Cincinnati provides assistance for the operation of this plant.

Now after two years of experience, EPA scientists feel confident that the plant is working successfully. Phosphorus levels in water leaving the new plant have been consistently less than .05 milligrams per liter (a level that will restrict algae growth after it is mixed with water entering the lake from natural sources).

EPA has several university scientists studying and analyzing all nutrient sources in the lake and the impact on plant and aquatic life of the reduction in phosphorus.

Some scientists use special equipment to pump out the stomachs of fish to determine the impact on the food chain of the phosphorus reduction. A team of EPA scuba divers descend to the bottom of the lake several times a week to check conditions there.

Meanwhile, children splash happily at the newly opened public beach and enjoy fishing from some of the heavily forested islands which dot this lake.

As evening falls, the voice of the loon is heard once again sending its lonely call across the 10,000-year-old lake. □

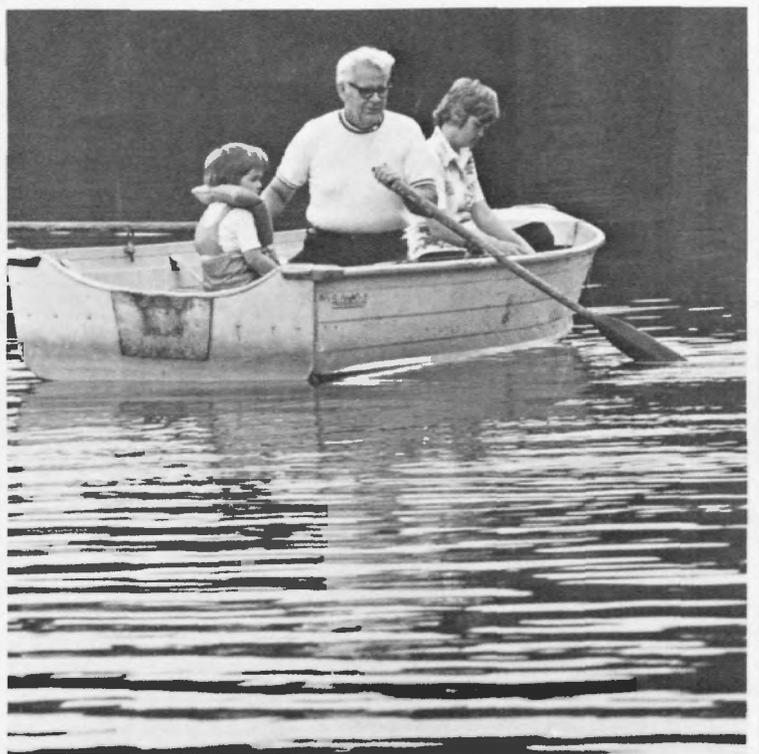
about 80 percent of the phosphorus entering Shagawa Lake.

The Federal Water Pollution Control Administration, one of EPA's predecessor agencies, set up a pilot tertiary treatment system at Ely to remove phosphorus and show that the treated wastewater, when diluted by the river water flowing into the lake, would not support significant algae growth.

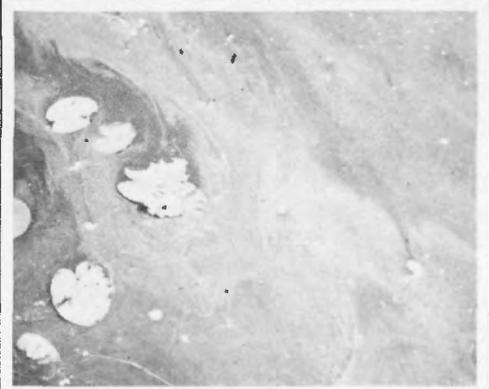
As a result of the pilot plant success, EPA in 1972 awarded a \$2.3 million grant for the design and construction of a tertiary wastewater treatment plant and its full-scale operation until 1976. This covers about 93 percent of the cost, with the city of Ely providing the remaining funds.

High jinks at the lake.

Family out for a row.



SHAGAWA

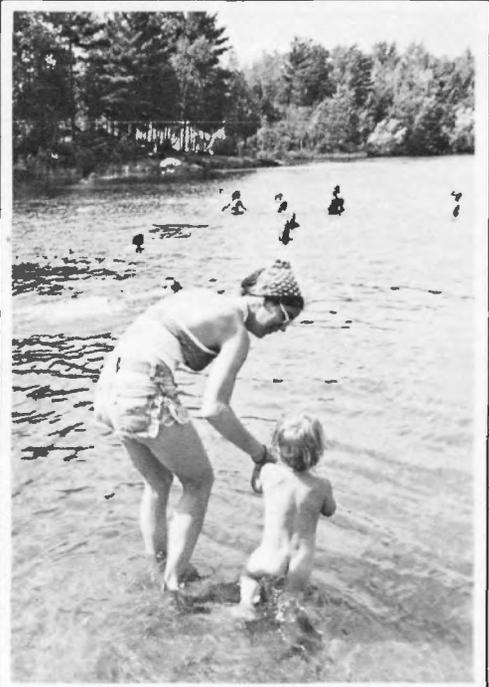


Street scene in downtown Ely, Minn.

Sea plane lands in a spray of water.

Mother coaxes bare bottomed child into water.

About five years ago, algae scum frequently marred Lake Shagawa.



KEEPING CLEAN IN A LAND OF SNOW AND ICE

How can a village in northern Alaska be assured of clean, safe water for drinking and washing and a sanitary method of collecting and disposing of human wastes, garbage, and other burnable trash?

EPA scientists and engineers at the College, Alaska, field station of the Environmental Research Laboratory, Corvallis, Oregon, have been working on this problem for four years. They believe they have found an answer in the "integrated utility system," a central, prefabricated building with: Drinking water treatment and storage, bathing facilities, Laundry machines and dryers, Treatment and reuse of bath and laundry water, Airplane-type toilets that use little water, and Sewage treatment and incineration of sludge, garbage, and trash.

All these services are designed to make the most of scarce supplies of potable water and costly oil for heating and electric power. Both water and heat are reused wherever possible in the building's complicated plumbing and processing equipment.

Two such units have already been built, H. J. Coutts, Chemical Engineer, reported at the Second National Conference on Water Re-use, held recently in Chicago by EPA and the American In-

stitute of Chemical Engineers. Co-authors of the report were Barry H. Reid, Sanitary Engineer, and Merritt A. Mitchell, Chief of Technological Research. Bertold Puchtler is head of the demonstration project.

The first unit was built at Wainwright, on Alaska's North Slope, but was destroyed by fire in November, 1973. The second, in the village of Emmonak, on the Yukon River delta, is now in full use. A replacement for the Wainwright system—with new design improvements—is being built. If Congress approves the additional funds needed, it will be completed in April 1976.

The Emmonak system serves about 450 permanent residents, a Federal Indian School, and transients that double the village population during the summer fishing season.

It is operated jointly by EPA and by the village government and is heavily used, according to Mr. Puchtler. "Although the people are very poor, they are willing to pay substantial fees to help defray operating costs. Fees range from 7 cents for a gallon of drinking water to \$1.75 for the bathing facilities. Washing machines, extractors, and dryers are paid for at rates comparable to those in laundromats in Fairbanks and Anchorage."

The system replaces the most primitive of sanitation conditions. Most rural Alaskans obtain water from melted snow or ice during most of the year and from streams and ponds of doubtful quality during the brief summer. Good groundwater is seldom obtainable. Human wastes are collected in "honey buckets" and either dumped somewhere on low ground or left on river ice to be washed away when the ice breaks up in the spring. Wastes that would decompose in warmer climates are preserved by the Alaskan cold, posing a long-term health hazard.

In regard to public health, Mr. Coutts told the Chicago conference, "conditions in rural Alaska are as poor as any in the western hemisphere . . . Much of Alaska's soil is permafrost . . . frozen except for the first foot or so which becomes mud in the short, intense summer of one or two months.

"Putting water or sewerage lines in the permafrost is more expensive than trying to dig into and bury them in reinforced concrete."

All processing and treatment are contained within the central community facility, both to conserve heat and to simplify operations. The only external pipes are raw water intakes, heavily insulated "utiliducts" that convey all services to the nearby Indian schools, and wastewater outlets.

Wainwright's raw water is pumped from a shallow lake via ordinary irrigation pipe during the short summer into a million-gallon storage tank. The tank, which was not destroyed in the fire, has to serve the village's potable water needs for about 11 months of the year since the lake freezes to the bottom in winter. At Emmonak there is a year-round intake from the Yukon River below the greatest ice depth, supplemented by a small storage tank for high-demand periods.

Drinking water is treated and purified to Public Health Service standards and supplied to villagers by tank truck or self-service.

At Wainwright, where water is scarce, the water that has been used for showers and laundry—called graywater—is treated and reused for all purposes but drinking and showers.

The chemical toilets, similar to those in aircraft and buses, use little water.

Continued on Page 10



Ambrose Shorty and Donald Redfox from Emmonak with Dr. Ronald Gordon at the Arctic Environmental Research Laboratory in Fairbanks, learning drinking water coliform testing.

David Bodfish Jr. getting ready for the day's round of water deliveries at Wainwright. Vehicle was furnished by the Indian Health Service.



RETURN OF A RIVER

(This article on the recovery of the Detroit River is reprinted from the January-February issue of Michigan Natural Resources Magazine. Wastes in this river have long been the main source of pollution of Lake Erie, the most contaminated of the Great Lakes. Now strict curbs on industrial wastes

and construction by the city of Detroit of an enormous municipal secondary sewage treatment plant, with the aid of \$452 million in EPA construction grants, has helped make a significant improvement in the water quality of this waterway.)



One of the largest water pollution plants in the country is the Detroit Metropolitan Water Department's Sewage Treatment Plant shown above. The estimated total cost of this plant when it is finished in 1977 is about \$714 million, of which EPA's construction grants program will pay about \$452 million. The plant is now nearing completion and serves 3.2 million people. When it is completed, it will serve over four million people.

By Gay Cowels
"This river . . . is scattered over, from one lake to the other, both on the mainland and on the islands . . . with large clusters of trees surrounded by charming meadows . . . on the banks and round about the clusters of timber there is an infinite number of fruit trees, chiefly plums and apples. They are so well laid out that they might be taken for orchards planted by the hand of a gardener . . . Game is very common . . . as are wild geese and all kinds of wild ducks . . . There are swans everywhere; there are quails, woodcocks, pheasants, rabbits. There are so many turkeys that 20 or 30 could be killed at one shot . . . there are partridges, hazelhens, and a stupendous number of turtle doves. We have fishing in great abundance. This country is so temperate, so fertile, and so beautiful that it may justly be called the earthly paradise of North America."

That was the Detroit River Cadillac wrote about in 1702, the year after he founded the city of Detroit. Other, later, writers saw the same abundance of wildlife, handsome meadows, and forests of fruit trees. A series of small creeks emptied into the river where the city grew and early residents used these for fishing or for bathing and drinking water. The power of those streams turned water wheels and ground grain. In Cadillac's time, the river was marked by sandy shoals, but deep rapid currents sliced along its length, loaded with fish. In 1824, in fact, long after Cadillac's little fort settlement had become a thriving city, a commercial fisherman reported that "in the early part of the week ending October 23, 1824, at the fishery on Grosse Ile, 30,000 whitefish were caught in a single day." Another fisherman three years later commented that he had taken 15,000 whitefish with a single seine in five hauls.

The river was still in excellent condition later in the 19th Century. "Those who never saw the Detroit River in the 1880's cannot realize how beautiful it was," wrote historian Walter Griffith. "There were no large mills and factories pouring wastewater into the river. Detroit had only a small amount of sewage. So the water of the upper Great Lakes came down through the Straits of Detroit almost pure. . .

"In the spring and early summer we used to catch long strings of yellow perch, pickerel, bass, and even that peer of all freshwater fish, the whitefish. Many sturgeon six and seven feet long were taken in the river above Belle Isle."

Even as recently as 1896, the Detroit Sunday News Tribune called the river

"beautiful, warm, and clean," and went on to lament the lack of beaches where "ladies and children can enjoy a river bath."

But soon after that was written, the river began to suffer from pollution, and for the next half century a mounting tide of sewage, foul chemicals, waste oils, acids, garbage, paper sludge, and general trash began to pour into the river. In 1914, Henry Ford announced that pay for an eight-hour shift in his Highland Park auto plant would be \$8 per day. This drew a crowd of 10,000 that had to be dispersed with fire hoses. Through those early efforts by Ford, GM, Chrysler, and dozens of small auto companies now gone, the Detroit area soon became a huge industrial center. In World War I, Detroit industries built enormous amounts of war machinery. No one seemed to care about pollution; jobs and growth were the aim of the city, and it wasn't until the mid-1920's that a few public health workers became concerned over water quality.

In 1929, this concern for public health resulted in passage of Public Act 245 which created the Stream Control Commission, whose task it would be to stop the dumping of raw sewage into waters of the state. A field crew of two was assigned this monumental task, and they spent most of the 1930's traveling around the state trying to get sewage treatment plants built. Detroit's first primary treatment plant was completed in 1940—only 35 years ago.

During World War II, wide-open pollution took over again. Detroit became the "free world's arsenal," and the nation centered all its energies on arms production. The SCC staff, all two of them, joined the army and efforts to control industrial pollution came to a halt. Nobody, it seems, had time to worry about the river, and that state of mind continued for several years after the war ended.

But then a wintering flock of waterfowl changed everything. "January, 1948, was the toughest month of a tough winter," says Francis B. "Jack" Frost, retired chief engineer of the DNR's Bureau of Water Management. "The river froze over, leaving only a few openings in the ice. Ducks wintering on the river headed for the openings, which were of course all full of oil. A few days later we counted 20,000 dead ducks. You might say that was the point where people decided they'd had enough. Angry downriver sportsmen collected truckloads of the dead ducks, drove them to Lansing, and dumped them on the Capitol lawn. During the following

year, the legislature revised the water pollution control statute."

That amendment established the Water Resources Commission, expanded the definition of pollution, and set up a system of controls by requiring State approval of all new uses of state waters.

By that date, the quality of the Detroit River was at its worst. The Rouge River, its most heavily industrialized tributary, flowed a rich orange color from the discharge of thousands of gallons of "pickle liquor," an acid used in steel processing. But the oil on the river's surface was so deep that the orange water showed only momentarily in the wake of passing boats!

Two early staff members of the old Water Resources Commission, Frost and Blanchard Mills, set out to measure the amount of oil—just oil—entering the Detroit River from manufacturing plants. Their equipment included a small boat and a homemade contraption composed of two small pontoons, a boom, and a oil scoop—a gadget of their own design. Simple as it was, however, the little mechanism soon brought forth plenty of discussion in company board rooms. Frost and Mills showed, for example, that 10,000 gallons of oil were being lost each day from one steel plant. Another 10,000 gallons were being lost from one automobile plant, while another 15,000 gallons were coming from smaller industries and the Detroit city sewers. Those amounts astounded everyone, and the attitude toward pollution control began to change suddenly—as the realization of all those lost dollars began to sink in.

One company losing \$500 worth of ammonia into the river each day decided it was time to search for the leak in the system.

Another company was losing three million pounds of fish oil a year, at a time when fish oil cost 23 cents a pound. "We pointed this out to them on a Friday," said Frost, "and by the following Tuesday they had started construction of waste recovery facilities."

The ducks, meantime, decided to continue their efforts to help with the clean-up. With the river so oily, they had to go somewhere, so they began to zero in on waste-holding ponds where industries were trying to control other pollutants. Employees of one chemical company tried to scare the birds away from a phosphorus pond by running an empty motorboat round and round, tethered to a post in the middle, a sort of revolving scare-duck.

"After a short time," says Robert

Parker, another staff member who was there, "the ducks took to riding around on the boat." A company employe was then dispatched with a shotgun and orders to shoot into the air whenever ducks began to settle on the pond. Unfortunately, no one notified the local conservation officer, who arrived soon after to arrest the employe for hunting waterfowl out of season.

By 1960, some dents had been made, but Detroit River pollution was still so severe that it had become an international scandal. In fact, Lake Erie, which receives all the Detroit River water, became known nationally as the American Dead Sea, and the river was an embarrassment to both Michigan and Ontario. More and more calls for action arose, both here and across the continent, and by the mid-1960's, a series of tough new State and Federal laws passed, covering all waters that travel across interstate lines. By 1968, water quality standards in Michigan conformed to Federal standards, and pollution abatement orders were being set up for every industry in the State—with high priority being given to those heavy polluters along the Detroit River. In 1970, a unique "Truth in Pollution" law was passed in Michigan which requires all industrial and commercial users of State waters to report amounts and types of "critical materials" used in their work. The list is long, and includes virtually every substance that can reduce the quality of a stream's water. In addition to reporting on such use, each industry must pay an annual surveillance fee, money that's used by the State to watch over all use of State waters. Anyone discharging water into the Detroit River, for example, can do so only under terms of a wastewater permit. Each permit is keyed into the "National Pollutant Discharge Elimination System," and the tough requirements of this system will be even tougher in the years ahead.

Today, all oil formerly dumped into the Detroit River is gone. Only occasional accidental losses occur. The more than 60 industries lining the shore of the river have installed millions of dollars worth of in-plant, pretreatment facilities. All treatment plants must be manned by trained operators certified by the State. Monthly operating reports are submitted to the State. Chlorides (salts) in the river have been cut in half since 1966, and phosphorus has been cut even more, and will soon be only about a third what it was ten years ago.

Continued on Page 16

SNOW/ICE Continued from Page 9
Eight gallons of water with deodorant chemicals added, provide about 150 flushes. At Emmonak, the human waste is incinerated. Villagers also bring buckets of waste, together with garbage and burnable trash, to be disposed of by incineration. Blackwater extracted from the toilet and "honey bucket" wastes are treated and disinfected in the gray-water plant and then returned to the river.

At Wainwright, where treated graywater must be reused, blackwater and graywater components are kept strictly separate throughout treatment before final disposal in the ocean.

Congress authorized construction of these prototype facilities in direct response to the strongly-voiced need by Alaskan native leaders for improved utility services in villages. "Getting acceptance and support from the villagers who will use the facilities has been no problem at all," Mr. Puchtler reports. At an early stage of planning, Plant Managers were appointed by the Village Councils. These men have successfully completed a challenging program of formal and on-the-job training. "In fact, our association with Donald Redfox and Charles Nayakik, who run the Emmonak and Wainwright operations, and with the leaders of those communities, has probably been the most positive and productive aspect of this whole venture," Mr. Puchtler said.

So far the residents have welcomed the improved services and worked them smoothly into their Eskimo-Indian cultural heritage.

And there is no objection to coming to a central facility to do the laundry and to bathe. Improvements on the honey bucket system in the homes are also under way. In cooperation with the Indian Health Service, Department of Health, Education & Welfare, low water-use toilets with holding tanks are being installed in some of the homes.

A major consideration of the EPA engineers and sanitation experts is the cost of the system. The prototype demonstration systems have been built with Federal funds, but the operating costs must soon be borne entirely by the villages. Other villages would have to bear both capital and operating costs, though the initial installations might well cost less than the prototypes, since the basic design work and debugging has been accomplished.

The village councils of Emmonak and Wainwright "will probably accept ownership of the facilities whenever it is offered," said Mr. Puchtler, "but unfortunately, they can ill afford it.

"Given the small size and low income level of Alaska bush communities," Mr. Puchtler said, "Federal and State aid will be needed if these communities are to comply with discharge regulations. Such aid will be needed not only for construction of water and waste disposal facilities, but also for their operation and maintenance.

"But any cultural barrier that may have existed has been overcome. The idea of coming to a community center to wash clothes and bathe has been welcomed by the people of Wainwright and Emmonak." □

PRESIDENT SEEKS COST REDUCTION

President Ford has launched a special campaign to encourage employee participation in cost reduction with the Federal Government.

The campaign is part of the Administration's over-all effort to reduce spending in order to combat the problems of inflation and recession. In an appeal to all personnel, civilian and military, the President called upon every employee to become actively involved. He said: "Each of you can make a personal contribution by submitting constructive ideas and working cooperatively to eliminate waste, improve equipment, streamline operations or make more productive use of time, facilities, and energy resources."

During the past 20 years of the incentive awards program the Federal Government has saved more than \$4 billion as the result of suggestions from Federal employees.

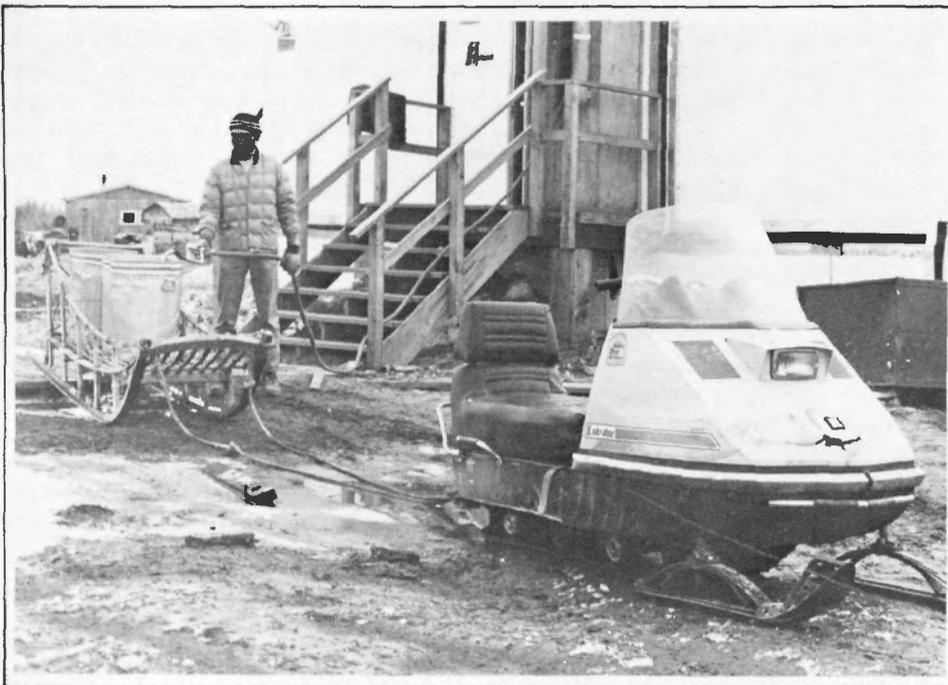
During the balance of 1975 EPA employees whose suggestions, inventions, or scientific or other contributions result in first-year measurable benefits to the Government of \$5,000 or more will receive a personal letter of appreciation and congratulation from President Ford as well as any monetary or honorary recognition that may be awarded under EPA's existing Awards Program.

The EPA Awards Manual, issued in February 1975, describes the types of awards that can qualify for a Presidential Letter of Recognition. Normally, these are Special Achievement Awards for a special act or service, or Suggestion Awards.

These are given for employee contributions which are beyond job requirements and which result in first-year tangible benefits to the Government of \$5,000 or more. The contribution may be from one individual or several persons working together.

Administrator Train has urged his Assistant Administrators, Regional Administrators and all heads of offices and installations to strongly support this cost reduction program and to promote participation at all staff levels. All employees are encouraged to submit ideas that will improve Agency productivity, save money and facilitate the accomplishment of EPA's programs and mission.

Suggestions should be submitted to local personnel offices. □



Water hauling improvisation at Emmonak.

Southern California's San Bernardino National Forest, which is visited by nine million persons each year, may be dying a slow death from Los Angeles smog, according to a three-year study sponsored by EPA.

High levels of oxidant air pollution turn pine needles in the forest yellow and then brown (dead), weakening the trees' resistance to fungus and insect pests. Most of the damaged trees are ponderosa and Jeffrey pines, but other species are also affected. Dead and dying trees are promptly removed by the U.S. Forest Service to salvage the wood and reduce the risk of exposing neighboring trees to elevated insect populations.

Oxidant levels exceeding .20 parts per million have been increasingly frequent in recent years. This level is regarded as hazardous to both the forest ecosystem and human health. The worst year on record was 1974, according to the latest interim report on an EPA study which is being conducted on contract by the University of California at Riverside. Data for 1975 are not yet available.

smog long suspected

Needle damage to ponderosa pines was first noticed about 20 years ago, and smog from the Los Angeles basin has long been suspected as the principal cause. Smog-laden air and the temperature inversions that keep the polluted air close to the ground often move eastward into the San Bernardino mountains, especially during the summer months. The study estimates that 1.3 million trees have been affected in the last five years, and in the surveyed areas totalling 161,000 acres, about 100,000 ponderosa and Jeffrey pines suffered moderate to heavy smog damage.

The EPA study is concerned with more than just damage to trees and methods of arresting it. The entire ecosystem of a conifer forest—trees, other plants, animals, birds, insects, soil, bacteria, and fungi—is being studied by teams of scientists representing many specialties. All parts of the ecosystem are being scrutinized to learn their complex reactions to oxidant air pollution, said Dr. Raymond G. Wilhour, plant pathologist at the Corvallis Environmental Research Laboratory, and EPA project officer for the study. Dr. O. Clifton Taylor, associate director of the Statewide Air Pollution Research Center, is in charge of the study.

Support is also being provided by the

Chris West is Director of Public Affairs for EPA's Corvallis Environmental Research Laboratory.

SMOG MAY KILL FOREST

By Chris West

U.S. Forest Service, which is making available the resources of its Pacific Southwest Forest Range and Experiment Station.

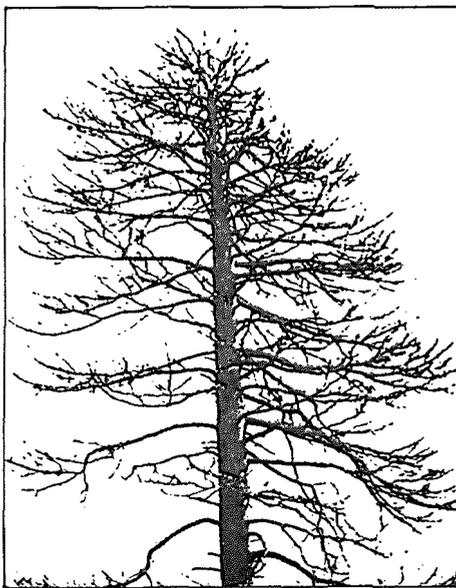
The study is expected to continue through 1979 and cost approximately \$1.6 million. EPA has invested about \$528,800 in the project during the first two years, and the contract is expected to be renewed this year for \$248,150.

pollutants in smog

Dr. Wilhour says the most damaging pollutants in the complex smog mixture from Los Angeles are ozone (a pungent, colorless, toxic gas) and PAN (peroxyacetyl nitrate). Both of these photochemical pollutants are formed in the atmosphere when nitrogen dioxide and unsaturated hydrocarbons, both emitted into the atmosphere principally by automobiles, react in the presence of sunlight.

While the production of photochemical pollutants is common-place in many large cities, such factors as climate and geography determine the degree of pollutant build-up and thus, the severity of effects.

"Green vegetation," Dr. Wilhour



Oxidant air pollution weakened this Ponderosa pine tree in the San Bernardino National Forest and led to its eventual death from disease and insect attack.

said, "performs the primary producer function in an ecosystem, capturing and storing solar energy in the form of synthesized biochemical compounds. The remaining biota of the forest community, from large mammals down to the micro-organisms, are completely dependent on green vegetation.

"When the vegetation declines, the delicate balance between competing organisms is upset. There's a certain amount of natural change in all forest ecosystems, but the influence of man and civilization often interfere in one way or another. The result can be extremely undesirable."

damage possible elsewhere

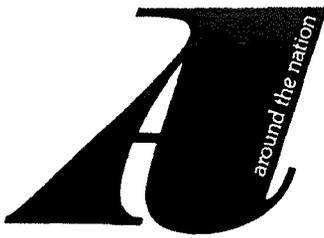
Although the current study is in southern California where there is already a problem, Dr. Wilhour said similar ecological damage could occur in other parts of the United States where emissions of photochemically active substances are increasing and where suitable geographical and meteorological conditions exist.

These include such places as Oregon's Willamette Valley and the San Joaquin-Sacramento Valley in Central California—areas which lie in natural bowls, retain air masses, and experience temperature inversion patterns that potentially lead to smog formation and build-up of atmospheric pollutants.

Primary objectives in the San Bernardino study include:

- Identification and measurement of the chronic or long-term effects of oxidant air pollutants on plants. Initially, attention is focused on dominant species, such as ponderosa and Jeffrey pines, incense cedar, and white fir.
- Determination of the impact of oxidant pollutants on the stability of a forest ecosystem.
- Identifying possible "bio-indicators"—plant or animal species that react early to smog—for use as natural warning systems in the future.
- Developing techniques, including mathematical models, for predicting long-term effects of air pollutants.
- Setting up criteria for analyzing the benefits and costs of various strategies for reducing pollutant impact on the forest.

Although the Agency's main concern in establishing national standards for air pollutants is protection of human health, man's general welfare is an important secondary goal. Both kinds of standards depend on reliable research, Dr. Wilhour said. If workable models can be constructed for the ecological study at the San Bernardino Forest, they may prove valuable for land use decisions in other areas. □



test tank award

The New Jersey Chapter of the American Concrete Institute recognized EPA's Oil and Hazardous Materials Simulation Environmental Test Tank in Leonardo, N.J. as an outstanding example of a concrete structure. The tank is longer than two football fields and is used to test new ways of controlling spills of oil and other hazardous materials by simulating actual ocean and stream conditions.



environmental quality

Region I has completed the first Regional Administrator's Annual Report on Environmental Quality in New England. The Report compares existing environmental quality in air, surface water, drinking water and solid waste management with the officially adopted standards in these four areas. It is based on analyses of both Federal and State agency developed data.

The study presents good news and bad. The most notable success is attainment of the national air quality standard for sulfur oxides at 159 of the 160 monitoring stations throughout the Region. However, there is evidence that over half of the major river mileage is in violation of the 1983 water quality goals for fishable-swimmable water; that the national standard for photochemical oxidants was exceeded at all monitoring stations during 1974; that only 30 percent of solid waste disposal facilities meet State standards; and that lead contamination, poor bacteriological quality, and high chlorides concentrations in some water supplies pose a threat to public health.



plant dedication

Deputy Regional Administrator Eric B. Outwater participated in the dedication ceremony for the 26th Ward Water Pollution Control Plant in Brooklyn. The plant is the first major upgrading of a sewage treatment facility to be completed with Federal funding; EPA provided 40 percent of the money for the \$50 million project.

pesticide penalties

Six pesticide companies in Region II were assessed a total of \$31,250 in civil penalties for violation of the Federal Pesticides Act. Violations included failure to register the product with EPA and failure to state ingredients or display cautionary warnings on the label.



workshops

Region III, in cooperation with the American Water Works Association and State water supply agencies, has held a series of regional workshops on the new Safe Drinking Water Act this past summer. The sessions were designed to provide briefing on the Act's provisions to all those concerned with drinking water.

construction award cut

Federal funding for construction of a 200,000 gallon-per-day tertiary wastewater treatment plant plus interceptor and collection sewers for Washington Township, Erie County, Pa. has been reduced by \$408,750 from its original figure of \$1,398,300.

Funds were cut when Region III investigators discovered that the collection system was being constructed to serve new subdivisions with very limited development, and therefore was not in compliance with EPA regulations, which: 1) prohibit Federal participation in construction of a sewage collection system serving an area of low population density; 2) require that the major part of the designed flow through the collection system come from settlements existing before Oct. 1972; 3) prohibit Federal funding on construction begun prior to approval of the grant application. The Regional Office also has ordered the grantee to prepare a study to determine the environmental impact of construction in the area for which Federal money was denied.

the canal, again

The U.S. Corps of Engineers recently completed a series of public hearings on resumption of construction of the Cross Florida Barge Canal. Hearings were held in Palatka, Miami and Tampa.

The canal, controversial from the start, was authorized by Congress in 1942 but work did not begin until 1964. In January, 1971, however, President Nixon, by Executive Order ended the project, when work was about two-thirds complete and roughly \$50 million had been spent. Environmental groups consistently opposed construction of the canal, and the President cited potentially serious environmental damage as a reason for cancelling the project.

Both opponents and supporters of the Cross Florida Barge Canal say that they will accept the findings of the new environmental impact study, provided that they are "fair and impartial."



new reclamation plant

Region V has issued a final environmental impact statement recommending the construction of the proposed Des Plaines-O'Hare Water Reclamation Plant and Conveyance System of the Metropolitan Sanitary District of Greater Chicago. If all grants are approved this will mean over 153 million construction dollars for the area.

Among other recommendations, the impact statement requires the sanitary district to install facilities to suppress aerosols coming from aeration tanks at the plant. This reflects the concern of the Illinois EPA about the risk to public health from aerosol transmission of bacteria and viruses.

83-city survey

Preliminary results of a study of organic pollutants in the drinking water supplies of 83 cities in Illinois, Indiana, Michi-

gan, Minnesota, Ohio, and Wisconsin have been released by the Regional Office. Cities surveyed represent a variety of drinking water systems. Findings include:

— Highest amounts of chloroform were found in systems with river water sources. Fremont, Ohio, and Ramsey, Mich., showed chloroform levels of about 300 ppb; the mean for all the cities tested was around 22 ppb.

— Raw water such as that from the Great Lakes and groundwater produced finished water with lesser amounts of chloroform and related halo organics. Although there are no established health standards for chloroform, Joseph Harrison, EPA Regional Water Supply Director, said that the concentration of chloroform found in the study could not be considered abnormal. He said that the full significance of the findings cannot be judged until a national risk assessment is completed.



oxidant control

An oxidant control strategy for the control of hydrocarbon emissions in seven Texas cities is in process of being drafted. Speaking of the measures to be applied to stationary and mobile sources, Regional Administrator John C. White said:

"We believe that we have a responsibility to protect the public health. We will propose a plan that will be designed to achieve the goals of clean air and the protection of public health and that also will be socially and economically reasonable."

Measures being considered for Dallas, Houston, San Antonio and the other cities include carpooling incentives, exclusive bus and carpool lanes on major roads, and inspection and maintenance schedules.



planning grant

A \$2,243,000 grant to cover planning costs of solving the complex water pollution control problems in the St. Louis area was announced to the East-West

Gateway Coordinating Council by Chuck Wright, Deputy Regional Administrator. Mr. Wright said:

"Plans will be developed for controlling such sources of pollution as municipal and industrial sewage discharges, as well as runoff from construction activities and stormwater sewers—all with the design of eliciting participation by local governments and the public throughout the planning process."

The grant is made under Section 208 of the 1972 Water Pollution Control Act Amendments.

Jessee retires

It was a bittersweet day for Randall S. Jessee, Region VII's Public Affairs Director, when he received official notification of approval of his disability retirement request from the Civil Service Commission on June 20.

Jessee, a widely respected EPA official, began his career in environmental control in 1968 when he became Public Affairs Director for the Federal Water Pollution Control Administration's regional office in Kansas City. A veteran of broadcast journalism, he entered the radio field in 1936 at KCKN in Kansas City, Mo., and in 1949 he became the first news director for the first TV station in the metropolitan Kansas City area. Consulting work and tinkering on his 30-acre farm at Roosterville, Mo. will more than occupy Randall's time.



stauffer chemical fined

Stauffer Chemical Company was recently fined \$5,500 after the firm admitted discharging pollutants without a permit from their Leefe, Wyoming, facility into Twin Creek. The civil court action came as the result of a \$20,000 complaint filed against the phosphate rock mining company by EPA. The company states that it has now stopped the unlawful discharge. Under the Federal Water Pollution Control Act Amendments of 1972, permits are required for anyone discharging wastes into the nation's waters from a point source (i.e., a ditch, pipe, conduit, etc.). Once a discharger has applied for a permit, EPA and State pollution control officials decide on effluent limits and conditions after soliciting and considering public comments. In addition to meeting effluent limitations, dischargers are also required to monitor and analyze their discharge continuously and report the results to the State Agency and EPA.



water programs

A regional task force has been formed to handle the details involved in delegating the construction grants program to the State of California. Another task force, one to implement the Safe Drinking Water Act, has been set up in Region IX's Water Division.

state enforcement

The State of Hawaii has assumed the pesticide enforcement activities that were formerly handled under an EPA grant. Seven positions were authorized by the Legislature in 1975 to enable the State's Agriculture Department to carry out enforcement responsibilities and the pesticides strategy plans initiated by an earlier EPA grant.



logging roads

Region X has prepared a report, "Logging Roads and the Protection of Water Quality" that represents the latest state-of-the-art technical reference on methods, procedures, and practices for the planning, design construction and maintenance of logging roads. It was published as part of EPA's national strategy for tackling problems of non-point sources of water pollution. There are an estimated 250,000 miles of logging roads in Washington, Oregon, Idaho, and Alaska and some 12,000 of these are built or rebuilt each year. According to Regional Administrator Clifford V. Smith, these are a principal source of sediment in the Northwest, and "without good planning, there exists a high potential for damaging the quality of our rivers, lakes and streams."

PROFILE

EPA's new Assistant Administrator for Enforcement is "highly optimistic" about the possibilities of protecting the environment and correcting pollution problems.

Stanley Legro said in an interview that his confidence is based on what he believes is a growing recognition by the American people of "the benefits of environmental quality" and an ever-increasing "willingness" to join in the effort to preserve it.

The 39-year-old attorney from San Diego, Calif., said that he was interested in the top enforcement post at EPA not only because of the importance of the environmental problem today but because of its increasing significance for "our children and subsequent generations."

"Because of the long lead times in many instances required to effect corrections and because of the difficulty of foreseeing all the adverse consequences of certain types of activities detrimental to the environment, it is critical that we plan now for future maintenance of environmental quality rather than reacting, often with limited options, to environmental crises as they occur."

Discussing the approach he plans to take in directing the Agency's enforcement program, Mr. Legro said that he hopes "we can enforce the environmental laws and regulations with fairness and sound judgment.

"Within the latitude given to us by law, we will deal reasonably with those who are proceeding in good faith with best efforts to comply.

"With those who knowingly flout the laws, who act in bad faith or do not deal with us truthfully, we will not hesitate to seek vigorously the maximum civil and criminal penalties provided by law."

Asked what he expects from his employees in the enforcement program, Mr. Legro replied:

"I want them to be highly dedicated to achieving the intent of the environmen-

tal acts, to work hard, to be candid with me, to exercise good judgment and to have a tolerance for the viewpoints of others."

A graduate of the United States Naval Academy in 1959, Mr. Legro finished first in his class of 800 and received a B.S. in Engineering with distinction. He then served four years as an officer in the United States Marine Corps. Mr. Legro attended Harvard Law School, where he received his J.D. cum laude in 1966. He then went into private law practice in California.

Active in civic activities, Mr. Legro served as a member, Board of Directors, Legal Aid Society of San Diego; member, Board of Trustees, First United Methodist Church of San Diego; member, Board of Directors, Big Brothers of San Diego County and member, Select Committee to Review



STANLEY LEGRO

California Higher Education, which made recommendations on the entire system of public and private post-secondary education in California. He was named San Diego's Outstanding Young Man of 1971.

His teaching experience has included serving as a member of the faculty for the California Bar Review Course, University of California and University of San Diego School of Law.

Mr. Legro is the author of a movie script and printed materials which are now used in elementary and secondary schools to teach students about the judicial system and court procedures. He was awarded the 1971 Certificate of Merit of the American Bar Association for "a distinguished contribution to public understanding of the American system of law and justice."

A former member of the San Diego City Planning Commission, Mr. Legro was awarded in 1973 the City of San Diego's Certificate of Appreciation for "exceptional service as a member of the San Diego City Planning Commission."

At the time of his EPA appointment, offices held by Mr. Legro included: member, Board of Directors and Chairman of Committee on Continuing Education, Associated Harvard Alumni; member, Board of Directors, San Diego Chamber of Commerce; and member, Board of Visitors, University of San Diego School of Law.

Married to the former Marcia Louise West of San Diego, Mr. Legro and his wife have two children.

Asked about his hobbies, Mr. Legro replied:

"I have a daughter, Susan, who just became seven, and a son Wayne, who is five and a half. I have tried to spend virtually all of my time that wasn't spent in work or civic activities with my wife, Marcia, and my children. Anyone who has had children in this age bracket will surely understand the way our family spends our time." □

The science of earthquake prediction, techniques for building pipelines in areas where the ground is always frozen, measuring the effects of pollutants on life in the ocean, and methods for protecting such endangered species as the peregrine falcon and the musk ox.

These are some of the subjects which will be reviewed at the fourth annual meeting of the U.S.-Soviet Joint Committee on Cooperation in the Field of Environmental Protection, which will be held at EPA headquarters October 28-31.

Administrator Russell E. Train, as Chairman of the U.S. side of the Joint Committee, will host the meeting. Mr. Train's Soviet counterpart and Chairman of the Soviet side is Dr. Yuri A. Izrael, Chief of the Hydrometeorological Service of the U.S.S.R.

The Joint Committee will meet to review progress made in implementing the 1972 agreement establishing a program of cooperation between the two countries in environmental research and technology development. They will also plan project activities for the coming year.

The two Co-chairmen preside over each meeting during which the Committee prepares two documents: A Report outlining the activities of the preceding year and a Memorandum of Implementation which sets forth the approved work plan for each project during the next year.

pollution knows no boundaries

In stressing the need for cooperation in finding common solutions to environmental problems afflicting both countries, Mr. Train has stated that "the facts tell us that pollution knows no boundary, physical or ideological, and that no country has a monopoly on solutions to our common environmental problems."

"EPA's part in the Soviet bilateral program is unique among our fifty or so cooperative agreements overseas," said EPA Associate Administrator Fitzhugh Green, who directs the Agency's international activities. "This is demonstrated by the number of personnel involved and the sense of immediacy and popular concern raised by the issues, as well as by the variety and scope of the individual projects."

EPA is involved in most of the 11 program areas outlined in the 1972 agreement. Many other American governmental agencies and industrial

Peter A. Acly is an EPA press officer.

U.S.-SOVIET ENVIRONMENTAL MEETING SET

By Peter A. Acly



Administrator Russell E. Train and Dr. Yuri A. Izrael aboard a Soviet plane last June on their way from Moscow to Central Asia. The two co-chairmen of the U.S.-Soviet Joint Committee on Cooperation in the Field of Environmental Protection were engaged in their mid-year review of the joint program.

organizations are also taking part in specific projects.

"The participation of private industry is essential to the program's overall success," said EPA's Richard E. Harrington, chairman of an air pollution Working Group. "Both sides hope to expand and strengthen their commercial relationships by developing markets for certain cleaner or more efficient processes."

study each others technology

There are now 39 individual projects under way, each designed to stimulate joint research and the exchange of scientific information and personnel. The program to be adopted in October will call for work in the following environmental areas, among others.

Prevention of Air Pollution: Projects include joint research on the technology of measuring pollutants and calculating allowable emission levels. Work on reducing the emission of gases centers on the sulfur dioxide problem—two full-scale multi-million-dollar flue-gas desulfurization facilities will be built by the Soviets, and U.S. experts will evaluate a new limestone scrubbing method developed in the Soviet Union. Evaluation of these facilities will benefit U.S. specialists now working on similar problems in the United States.

Other projects concern evaluating and improving particulate removal equipment, structuring a mathematical model for electrostatic precipitators for use in both countries, and improving processes for crude oil desulfurization and coal gasification. U.S. scientists also will study a Soviet dry coke quenching process; Soviet specialists will, in turn, observe U.S. air pollution control methods used in the production of coke and steel. Attention is also being given to auto emission controls: joint research is scheduled on catalytic control equipment, automobile pollutants, and improved fuel combustion.

Prevention of Water Pollution: Projects in this area include evaluating the use of mathematical models to improve water quality management, with emphasis on river basins, lakes and estuaries. Studies will also be made of the effects of pollutants on aquatic ecosystems and of maximum allowable levels for a variety of waterborne pollutants.

Controlling water pollution from municipal and industrial discharges is receiving joint attention—teams from each country are observing the other's control methods for the pulp and paper, chemical and petrochemical, petroleum refining, and metallurgy industries. A joint symposium on sewage sludge disposal was also recently held in the Soviet Union.

Continued on Page 16

A key goal of the joint research is to develop effective techniques for managing large water bodies. "We have had the opportunity to visit and observe Soviet management practices at Lake Baikal in southern Siberia," said former EPA Working Group Chairman John L. Buckley. "This lake contains about one-fifth of the earth's supply of fresh surface water, reaching depths of up to 7000 feet. The Soviets' experience there may help us to improve our own techniques, which could then be applied to solving problems in water bodies such as the Great Lakes." Dr. Buckley added that Lake Baikal is the habitat of many unique species, including the freshwater seal and large freshwater sponges.

Protection of Nature and the Organization of Preserves: Methods to protect certain endangered species such as the wolf and the peregrine falcon are being studied. A U.S. team will study the Siberian polecat in its natural habitat, and a team from the Soviet Union will study U.S. methods for breeding beavers in captivity.

musk ox propagation

One of the projects dealing with ecological problems peculiar to northern regions centers on the musk ox, which was thought to be extinct from over-hunting until the species was rediscovered in northern Greenland early in the 20th Century. Several pairs of the oxen were then shipped to an island off the Alaskan coast, where the herd increased to over 600 head.

Under the present agreement, 41 musk oxen were flown from Alaska to a new protected habitat in the Soviet Union. Scientists hope that a new herd will develop there, thus helping to insure the survival of the species.

Two U.S. scientists recently participated in a research cruise in the South Pacific to study marine mammals, including whales. The United States is currently working through the International Whaling Commission to place quotas on the taking of whales, some species of which are in danger from over-hunting.

Biological and Genetic Effects of Pollution: Two projects are under way in this area—one evaluates the role of pollutants in causing mutations, disease and psychophysiological effects in humans; the other involves a comprehensive analysis of environmental pollutants to determine accurately their sources, dose/response relationships

and maximum permissible levels, as well as their effects on human health and the economy.

"Health effects form the basis for regulating many pollutants in both countries," said EPA's John Knelson, Acting Director of the Agency's Health Effects Laboratory in Research Triangle Park. "In some cases, the Soviets have more stringent standards than we do. It will be helpful for us to review the research they conducted incident to setting those standards."

Earthquake Prediction: The United States and Soviet Union are exchanging teams to study the physics of earthquake sources and methods of predicting quakes by measuring geophysical phenomena. U.S. scientists will continue to participate in studies of the quake-prone region of Tadjikistan in the south-central Soviet Union; California's San Andreas Fault is the subject of similar inquiries conducted by Soviet specialists. Joint research is also being launched into the origins of *tsunamis*, which are popularly known as tidal waves.

Protection of the Marine Environment: Projects in this area will explore the issues of pollution from waste water discharged from ships, treatment of vessel sewage, prevention of spills of oil and chemical cargoes and the improvement of methods to deal with such spills wherever they occur.

Teams are also conducting joint studies on the effect of pollutants on marine organisms. Recently the Soviet oceanographic vessel *Moscow University* conducted a joint research cruise in the Gulf Stream. Dr. Sue Cheer of EPA's oceanographic laboratory in Narragansett, R. I., was aboard to participate in studies of microscopic marine life, which is of basic importance in the ocean food web.

Other environmental areas in which work will be continued are: prevention of pollution from pesticides and fertilizers; protection of arctic and subarctic ecological systems; the urban environment; the influence of environmental changes on climate; and legal and administrative measures for environmental protection.

Air and water pollution, endangered species, agricultural and marine pollution, earthquakes—although the list is long, the projects address real problems plaguing the Soviet Union, the United States and a great many other countries. Finding joint solutions to these problems will cause the two countries to grow closer—as well as cleaner—and will make a positive contribution to protecting and enhancing the global environment. □

State crews monitor the river by boat and helicopter on a secret weekly schedule, and are quick to report any accidental losses of pollution fluids. The possibility of stiff fines helps keep everyone alert, but happily the reason for the change runs deeper.

"Most of the big companies along the river are really cooperative today," says DNR engineer Wayne Denniston, based on the river south of Detroit. "They're concerned about their public image, and they know that any pollution accidents will cost them both money and bad publicity. Besides, they've installed expensive wastewater and recovery systems, and they want the things to work. One company, for example, installed a recycling program that saves about \$5,000 per month in plant operating costs. You can bet they keep a close watch on how that system works."

The city of Detroit, meantime, has constructed an enormous municipal sewage treatment plant, and has led the way in development of a regional sewage control plan. A number of Detroit area communities are tied into the system, which has received high priority for Federal funding as a model that other metropolitan areas should adopt. Former general manager of the Metropolitan Detroit Water Department Gerald J. Remus, now retired, is credited with much of the development of this sensible system. He also pioneered the use of one pollutant to combat another, after finding that pickle liquors left over from steel processing could reduce the levels of phosphorus in sewage effluent. He also introduced the use of liquid oxygen to eliminate organic material from wastewater, a practice that has now been adopted by about 100 other sewage plants nationwide.

The result of all this Federal, State, city, and individual action is a river that has come back from the depths of oily, foul despair to a river in which the Department of Natural Resources can now plant trout and salmon—as it has done during each of the last two years. Catches of these fish have startled some oldtime anglers who daily line the river's shores, and the good word is now making the rounds—fishing is getting better on the Detroit River! And by the end of next year, when even tougher restrictions against pollution go into effect, what's better now will change to best. The Detroit River is on its way back to being a clean stream once again, and that's a story the people of this State can be proud of. □

BOOSTING BICYCLING



Administrator Russell E. Train tries out a bicycle at ceremony marking the installation of 30 new completely enclosed bicycle lockers EPA has installed at its headquarters parking lot. Watching him is Nina Rowe, president of Bike-Commuters of EPA, who is standing in the doorway of one of the lockers. The lockers were provided to help encourage EPA employees to bike to work. The Administrator has said that he hopes more Americans will help reduce pollution by commuting by bicycling.

HOW DO YOU GET TO WORK?

Robert Simmons, Supervisor of Noise Control Program, Region VIII, Denver: "Daily I cycle from Coal Creek Canyon to Denver and back. This is a distance of about 21 miles, which starts at an altitude of 8,000 feet and rapidly descends to 5,000, and means fun coming in and a hard but good work-out coming home. The morning ride takes about 53 minutes and the return one about an hour and a half. Before moving to the Canyon I made the round trip from Boulder to Denver and back, and that was a journey of 30 miles each way. Because Denver has no safe lanes for cyclists, I leave my bike at a colleague's house on the outskirts of the city and join his carpool for the final lap to the office. Unfortunately, too, our office

lacks adequate shower and clean-up facilities for cyclists and there are no safe-lock ups for the bikes. This situation may improve soon."

Ted Towles, Chief, Strategic Studies Unit, Office of Pesticide Programs, Headquarters: "Since I live 75 miles from Washington in Shepherdstown in the eastern panhandle of West Virginia, I leave by car pool at 5:45 a.m. to catch the 6:13 train at Harper's Ferry, West Va. This arrives at Union Station at 7:35, where we have to make the best of bus schedules to try to get to Headquarters on time. The round trip, four-and-a-half-hour car, train, and bus commute is well worth it, however, because Shepherdstown is an entirely different world than Washington.

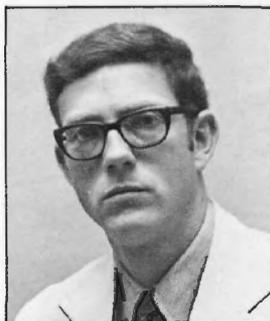
Anita Frankel, Chief of Air Planning Section, Air Programs Branch—Region X, Seattle: "I live on Bainbridge Island, due west of Seattle, in Puget Sound, and travel by car, ferry, and finally a short walk to reach my office. The ferry is boarded at 7:10 a.m. and a 30' minute ride to the Seattle landing is 51 cents. The boat is comfortable, with restaurant and sun deck, and entertainments that fit the seasons; carol singing at Christmas time and a kite flying contest last July. "Our Regional Administrator Clifford V. Smith and other EPA people ride the ferry daily as well. I believe the ferry provides the nicest mass travel you can find, and it permits me to live on a pleasant island, largely agricultural and residential in nature, but work in a large city."

Doris Ruopp, Environmental Protection Specialist, Office of Toxic Substances, Headquarters: "I believe the best, and most convenient way to come to work is by motorbike. I commute from the Clarendon, Va. area to Headquarters, Waterside Mall in Southwest Washington, a distance of about 6 miles, and travel-time is only 10-15 minutes; in comparison, the bus time is about 45 minutes. I bring in another EPA employee as well, Sigmund Ustaszewski, a Management Intern assigned to the Health and Ecological Effects Division of the Office of Research and Development.

Joe Logsdon, Health Physicist, Office of Radiation Programs, Headquarters: "A group of us used to ride a chartered bus to work from Rockville. However, this became too expensive and now I have a passenger van that seats about 14 people. I take a full load every day and we share expenses. I pick up practically all the passengers at Korvette's Department Store parking lot and the store allows the passengers to park their cars free at the location. We make it to work in about 40 minutes. It's cheaper than a bus and it makes a lot more sense than everyone driving his own car to work."



Robert Simmons



Ted Towles



Anita Frankel



Doris Ruopp

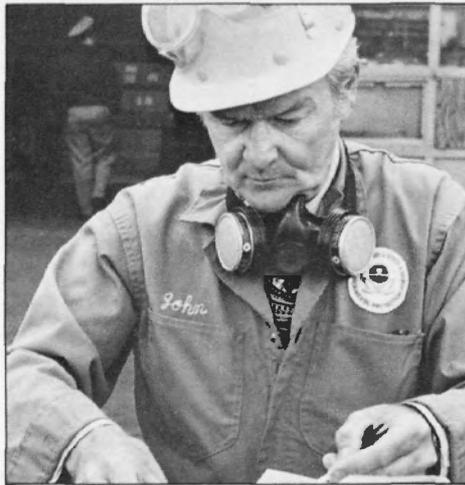


Joe Logsdon

PEOPLE



Dr. Roy E. Albert



John Hough

Mrs. Margrit C. Adams, a daughter of famed space pioneer Wernher Von Braun is the first woman engineer to be employed in Region IV's Water Enforcement Branch. Her decision to go into environmental work was the result of spending two undergraduate years at UCLA. "Living in Los Angeles," she says, "will make you an environmentalist. You either have to give up, or do something."

Her enforcement duties center around municipal and coal mine permits in Kentucky and Tennessee. Mrs. Adams is a member of the Audubon Society, the Sierra Club, and the National Wildlife Federation.

Dr. Roy E. Albert has joined EPA as Acting Deputy Assistant Administrator for Health and Ecological Effects in the Office of Research and Development. He is responsible for providing an integrated assessment of pollutant effects on the environment, as well as analyzing the way in which pollutants are carried and transformed in the environment.

To provide the scientific information necessary to support the issuance and enforcement of standards and regulations concerning pollutants, Dr. Albert is in charge of three technical divisions at headquarters: Health Effects, Ecological Effects and Criteria Development and Special Studies. He also directs the Health Effects Research Laboratories in Research Triangle Park, N.C., and in Cincinnati, Ohio, as well as the Environmental Research Laboratories in Corvallis, Ore., Duluth, Minn., Narragansett, R.I., and Gulf Breeze, Fla.

From 1966 to 1975, Dr. Albert was Professor of Environmental Medicine at the Institute of Environmental Medicine at New York University Medical Center, serving as Associate Director since 1968 and as Vice Chairman and Deputy Direc-

tor since 1973. As Director of the Laboratory of Experimental Medicine there, he was involved in epidemiological, carcinogenic and pulmonary research.

Dr. Albert was Associate Professor at New York University Medical Center from 1959 to 1966, and Assistant Clinical Professor of Medicine and Assistant Director of the Radioisotope Laboratory at George Washington University School of Medicine from 1956 to 1959. He served with the U.S. Atomic Energy Commission during the previous four years, first in the Health Safety Laboratory in the New York Operations Office and then in 1954 becoming Assistant Chief and then Chief of the Medical Branch of the Division of Biology and Medicine in Washington, D.C.

A member of a number of National Academy of Sciences—National Research Council advisory committees, Dr. Albert has also served on advisory groups for the Department of Health, Education and Welfare, the New York City Department of Health and the Atomic Energy Commission. He has authored or co-authored over sixty papers and articles on various medically related topics, such as

the effects of carcinogens and other contaminants on the respiratory system, lead detection and analysis, occupational illness, radioactive substances and cancer research, nervous system damage from environmental agents, and cardiological research.

Nathan Chandler, former Commissioner of Agriculture for Massachusetts, has been named as an EPA consultant for agriculture. In announcing the appointment, Administrator Train said, "We need to be increasingly concerned with maintaining America's food production capacity without sacrificing our long-term environmental goals. Mr. Chandler's services can be invaluable to the Agency and to the public in this capacity."

Mr. Chandler, a Massachusetts apple grower for many years, is completing a term as President of the International Apple Institute. He was also a Vice President of the National Association of State Departments of Agriculture and is currently a farm property consultant for Land/Vest Inc., a real estate planning company that specializes in rural properties.

Arsen J. Darnay, Jr., Assistant Administrator for Solid Waste Management, Office of Air and Waste Management, has resigned to join Carborundum, Inc., where he will be general manager of the Solid Waste Conversion Division. At EPA, Mr. Darnay directed the Federal program related to solid waste management and resource recovery, and is best known for a number of reports in the waste management and recycling field.

John Hough, Region II pesticides import inspector, who is wearing special equipment to protect himself from some of the more dangerous poisons, extracts a sample of Warfarin, a rodent killer, to be sent to EPA's Manhattan pesticide laboratory for verification. EPA can refuse entry to a pesticide shipment for mislabeled or improper product ingredients. A 13-year veteran with the Food and Drug Administration, Mr. Hough joined EPA over two years ago and has helped to set up an import control program for Region II. Sixty-five percent of all the pesticides entering the U.S. passes through the air and sea ports of New York.

Steffen W. Plehn has been appointed Executive Assistant to the Administrator to handle across-the-board, substantive issues dealing with every aspect of environmental control. Before joining EPA, he had been Assistant Staff Director for the President's Council on Environmental Quality, where his responsibilities in-



Steffen W. Plehn



Kenneth W. Smallwood



Edward T. Rhodes



Stanley R. Williams

cluded the coordination of Federal environmental policy and the review and evaluation of Federal activities which have a potential effect on the environment.

From 1968 to 1971, Mr. Plehn served with the New Jersey Department of Higher Education, first as Assistant to the Chancellor and subsequently as Assistant Chancellor for Planning and Development and then as Vice Chancellor. He also was a consultant to the New England Board of Higher Education during 1971 and 1972.

Working for the U.S. Bureau of the Budget from 1963 to 1968, Mr. Plehn held the position of Examiner, Staff Assistant to the Director, and Higher Education Examiner. In 1964 he received the Director's Professional Achievement Award.

A native of Reading, Penn., Mr. Plehn graduated cum laude from Harvard College in 1959, earned a Master's Degree in public administration from Harvard University in 1961, and spent the academic year 1971-72 at the University's Kennedy School. He lives in Washington, D.C., with his wife and two children.

Edward T. Rhodes has been named Deputy Assistant Administrator for Administration at EPA, replacing Howard M. Messner. Rhodes, 42, returns from the Department of Health, Education and Welfare where he had served as Deputy Assistant Secretary for Grants and Procedures Management since January.

Before joining HEW, Rhodes was Director of EPA's Contracts Management Division for four years. He was with the Federal Water Pollution Control Administration, one of EPA's predecessor agencies, as Chief of the Procurement Branch and then as Director of the Division of General Services.

In announcing the appointment, Administrator Train said, "We are fortunate to have Ed Rhodes back with us at EPA. His experience and excellent record make him well qualified to direct the Agency's administrative activities."

Rhodes will be responsible for personnel management, facilities and support services, management and organization, management information and data systems, contracts management, grants administration and the security and inspection staff.

Rhodes served as contracting officer at the Goddard Space Flight center in Greenbelt, Maryland from 1961 to 1966 and earlier was contract negotiator at Wright-Patterson Air Force Base, Ohio. He was on active duty with the U.S. Army from 1955 to 1957.

Kenneth W. Smallwood, Director, Civil Rights & Urban Affairs, Region II, was honored recently by Fight Back, a New York City civil rights group "which places black and Hispanic construction workers in jobs and unions," for his "dedicated service to the cause of equal employment opportunity."

At the testimonial dinner, Smallwood was presented with a plaque and a citation which read, "Ken Smallwood stands out as a dedicated civil servant who has seriously attempted to make contract compliance and the meaningful participation of minority workers in building trades a reality. Hence, Fight Back salutes him for his contribution to the cause of fair play for workers of color."

Stanley R. Williams, a career civil servant, has been appointed as EPA's Director of Personnel.

In announcing the appointment, Alvin L. Alm, Assistant Administrator for Planning and Management, said:

"Stan has an excellent background for his new responsibilities, and I know that he will make a valuable contribution to the future development of EPA's personnel management program."

Mr. Alm said that Mr. Williams will carry out "his concept of providing maximum personnel services and staff assistance, reducing the amount of paperwork and encouraging the expeditious handling of personnel actions."

Mr. Williams entered the Federal service as a trainee in the field of personnel with the Department of the Army. He later transferred to the Federal Aviation Agency, serving in the personnel management evaluation and career development areas. He also served as the Deputy Director of the Division of Personnel Management in the Federal Water Pollution Control Administration, Department of the Interior, before coming to EPA.

With the formation of EPA, Mr. Williams became the Chief of the National Staffing Branch and, in 1973, the Assistant Director of Personnel for Executive Manpower and Personnel Evaluation. In this latter capacity he planned, developed and directed the first EPA Agency-wide evaluation system and executive management development program.

Mr. Williams succeeds Charles S. Barden Jr., who resigned to accept a position with the Congressional Budget Office. □

PRESIDENT DEDICATES CINCINNATI RESEARCH CENTER

President Gerald R. Ford joined EPA officials and members of Congress at the dedication July 3 of EPA's new seven-story research building in Cincinnati.

"The research facility we dedicate today," President Ford said, "is a major achievement in realizing an environment that will add to our life experience rather than subtract from our life span..."

"It is \$30 million worth of laboratories, research facilities, equipment and training capacity, saying to our children and their children: 'We care. We care about the air you will breathe, the water you will drink, the land you will need.'"

Administrator Russell E. Train said: "It is a great thrill for all of us to have the President join us on this occasion... an important day for EPA, for Ohio, and for the Nation."

"Cincinnati is a keystone of EPA's national research effort, and I can assure you it will retain a central role in the future." He cited the need for "continued strengthening of our research and de-

velopment effort, particularly in the area of health effects," to provide sound scientific data for the environmental standards on which EPA's enforcement policies are based.

The new facility near the University of Cincinnati was built on a 20-acre plot acquired by the City and presented to the Federal Government three years ago. It will house three major EPA laboratories: Municipal Environmental Research, Environmental Monitoring and Support, and Health Effects Research, plus the Agency's Cincinnati Training Center and Office of Administration.

Attending the ceremonies were Reps. Willis Gradison and Clarence Brown, whose Ohio districts include the Cincinnati area; Sen. Robert Taft; and Rep. Gene Snyder of Kentucky, who represents Covington and Boone County, across the Ohio River from Cincinnati.

Many of EPA's research programs in Cincinnati that have been carried on in leased facilities in various locations are being moved to the new building. □



Seats for several hundred persons for the dedication of EPA's new research building in Cincinnati were set up on the entrance plaza.



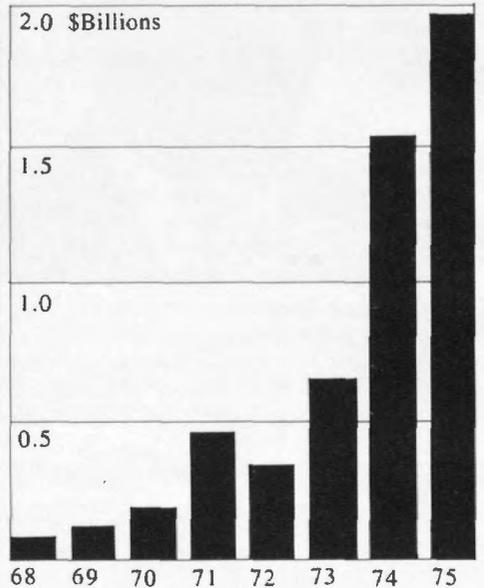
Administrator Train and President Ford unveil the nameplate stone.

BILLIONS Continued from Page 3

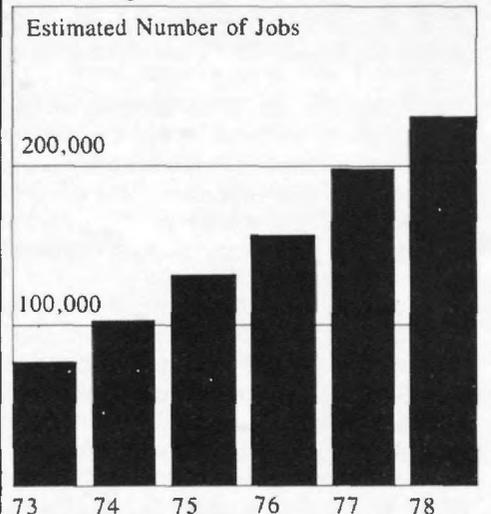
We are working in every way we can to increase our efficiency in handling construction grants. We have improved our procedures for assessing cost-effectiveness and for financial management and auditing. We are cooperating with the Office of Research and Development in innovative approaches to sewage system problems, especially new methods of disinfecting effluents and making beneficial use of sewage sludge, rather than simply disposing of it.

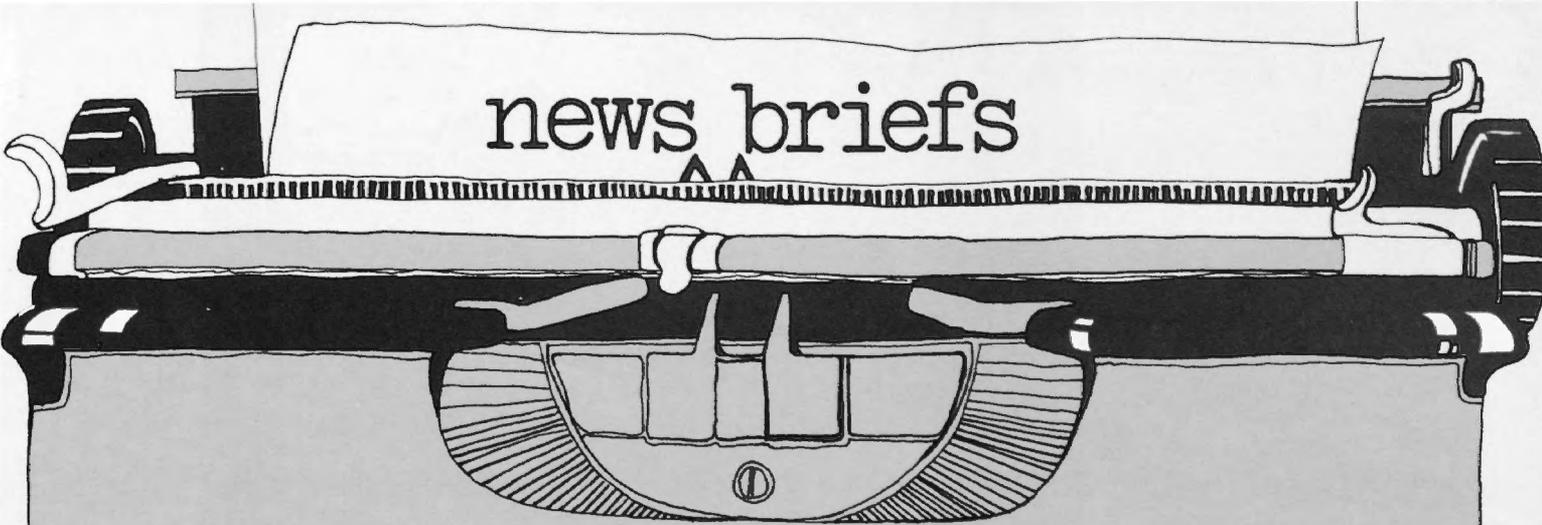
If progress creates new problems, maybe the number of our problems is an indication of our progress! But other progress indicators are more important to us and to the public: better water quality, advances in public health, employment opportunities to spur the economy, and wider recreational use of the Nation's waterways. □

Construction Grants Cash Disbursement History



Employment Generated By Construction Grants Program





news briefs

DDT RESIDUES ON DECLINE THREE YEARS AFTER BAN

Residues of the pesticide DDT are declining in the environment, in foodstuffs, and in human tissue, EPA reported recently to Congress. The decline was credited in large part to the Agency's 1972 ban on most uses of the hazardous, persistent chemical. Risks to human health and wildlife have been reduced by the use of alternate pesticides, the report said, and the economic impact has been nominal.

NEW FACILITY WILL MAKE OIL FROM SOLID WASTE

A demonstration plant to convert municipal garbage and trash into fuel oil is being built in San Diego County, Calif., with EPA funding. It will handle about 200 tons of waste and produce about 200 barrels of synthetic oil per day. At a ground breaking ceremony last month, Administrator Train said the new process, if widely applied, could help meet the Nation's need for new sources of energy.

EPA PROPOSES RADIOACTIVITY LIMITS FOR DRINKING WATER

Rules limiting the amount of radioactivity in public drinking water supplies were proposed last month by EPA. The regulations, which will apply to an estimated 40,000 community water supply systems, become effective 18 months after they are promulgated in final form. The interim regulations set maximum levels for both natural and man-made radioactive contaminants.

AGEE MOVES TO WEST COAST, BREIDENBACH REPLACES HIM

James L. Agee resigned as Assistant Administrator for Water and Hazardous Materials, effective Sept. 1, for personal and family reasons. He will become Planning Advisor on area-wide wastewater planning and non-point sources of water pollution. Mr. Agee will be based in San Francisco. Dr. Andrew W. Breidenbach has been named Acting Assistant Administrator to succeed Mr. Agee. Dr. Breidenbach was Director of EPA's Municipal Environmental Research Laboratory, Cincinnati, Ohio, and formerly headed the National Environmental Research Center in that city.



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WARM WASTE WATER TO HEAT GREENHOUSE

An experimental greenhouse which will be heated in winter by warm waste water from an electric power plant is being partially funded by EPA's Corvallis Environmental Research Laboratory.

The \$250,000 grant to the Northern States Power Co., Minneapolis, will be used to begin construction of a half-acre greenhouse at the company's Sherburne County plant in Becker, Minn.

The cost of the greenhouse project is expected to be about \$600,000, with Northern States Power and the University of Minnesota providing the rest of the funding.

Vegetables and flowers will be grown

in the greenhouse starting this fall, but its heating and cooling system will be powered by an auxiliary boiler system until the Sherburne plant starts operation in 1976.

Then part of the warm waste water from its boilers will be piped to the greenhouse at 85 degrees Fahrenheit and circulated through the heating system.

The greenhouse will be cooled in summer by a water-evaporation system which can use either warm waste water or cool water from another source.

Alden Christianson, an engineer at the Corvallis laboratory who is serving as

EPA's project officer for the two-year study, said that the study will focus on the economic feasibility of the system and the procedures that should be followed.

Success of the project, he said, will be gauged by crop production results, energy costs and other economic factors.

The University of Minnesota has been involved in preliminary studies leading up to this large-scale greenhouse demonstration.

EPA's thermal pollution research program is aimed at providing a sound scientific-engineering-economic base for controlling—and ultimately finding beneficial uses for—the Nation's waste heat.

Heating and cooling a half-acre greenhouse in Minnesota for a year normally consumes 25,000 gallons of oil or 3.5 million cubic feet of natural gas, according to David F. McElroy, Northern States Power Co. board chairman. If the half-acre experiment turns out to be an economic success, a commercially developed 100-acre greenhouse complex could be in operation by 1985, with savings of 5 million gallons of oil or 700 million cubic feet of gas.

This substituting of the warm waste water from the generating plant as fuel should yield "potential energy savings that are extremely significant in light of the growing scarcity of oil and gas," McElroy declared.

Besides saving fuel, "the project will provide a local supply of salad vegetables, such as tomatoes, during the non-growing season in Minnesota," points out Landis Boyd, assistant director of the University's Agricultural Experiment Station.

"The quality of these vine-ripened locally produced tomatoes would be far superior to those picked green and shipped in from out of the region." □

