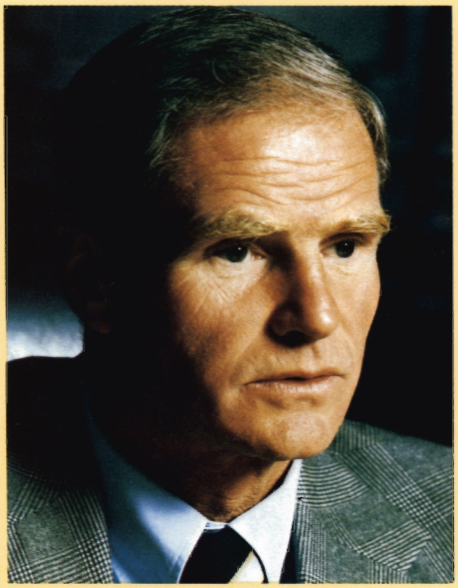
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

10TH ANNUAL REPORT 1980



Brendan Byrne, Governor

Jerry Fitzgerald English, Commissioner

The New Jersey Pinelands, a near-wilderness area covering almost one fifth of the State, is being preserved for future generations thanks to aggressive programs established over the past decade to restrict development in this unique and environmentally sensitive area.

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
JERRY FITZGERALD ENGLISH, COMMISSIONER
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Earth Day, April 22, 1980

To the Honorable Brendan Byrne,
Governor of the State of New Jersey,
and the Members of the Legislature

Today, on the tenth anniversary of the Department of Environmental Protection, I respectfully submit this combined report of the Department's accomplishments during its ten year life and a summary of its activities during fiscal year 1979.

The contents of this publication reflect the results of a decade of work and struggle by a dedicated and highly qualified staff whose expertise covers many disciplines, in both the physical and social sciences, from archaeology to zoology.

The improvements in New Jersey's environment have been impressive and we are proud of the progress made during the decade of the 1970's. Yet, as we enter the Second Environmental Decade we know the challenge is intensified here in New Jersey by the diversity of the state and the often-conflicting directions chosen for growth and preservation. We welcome that challenge as we continue with existing programs and initiate new ones in this increasingly complex field of environmental protection.

At the beginning, the threats we dealt with were, in the main, visible. Now we are learning that there are more subtle dangers, such as toxic contaminants. We pledge to move ahead in the spirit which established this Department to safeguard and improve the quality of life for New Jersey's 7.3 million residents.

JERRY FITZGERALD ENGLISH
Commissioner

A DECADE OF PROGRESS

The '70s — The Decade of Preparation
The '80s — The Decade of Progress

The Department of Environmental Protection was established in 1970 to unite all state government operations under a mandate for conservation, restoration and enhancement of the physical environment. Its responsibilities include the protection of human health through management of water, air, land, forests, shore, wildlife and shellfish resources and the provision for outdoor recreation opportunities.

Our concerns affect every resident's health, safety and quality of life through the monitoring and control of toxic substances in our air and water and by guaranteeing open space for recreation and peace of mind. A network of 40 state parks, forests and natural resources provide year-round opportunities for recreation within convenient reach of every New Jersey resident.

To summarize the decade just ended, we'll tour the DEP, its divisions and activities. We have moved ahead each year in our quest for environmental excellence. As we enter the eighties, we know that our existing programs will continue to grow while we face up to new issues and initiate new protective measures.

This has been a decade of building foundations. Progress is already visible. Important advances have come in the areas of air and water pollution monitoring and control, waste management, conservation and recreation.

The foundations we build now will support bridges to a better future, in which DEP will be eager and ready to meet the challenges presented. We are launching ambitious new efforts in every area of our responsibility to assure the best possible environment for our citizens. And we look forward to the support of all citizens, for all of us share the environment and the responsibility of protecting it.

New Jersey a Leader in Environmental Controls

We are proud of the many "firsts" in environmental protection in New Jersey. Here are some ways in which our state has been a leader:

- First in statewide mandatory auto emissions testing and enforcement. New Jersey is the only state that tests every car to assure clean exhausts and better fuel economy.
- One of the first with a statewide air monitoring network to assess progress of our air pollution control efforts.
- An established Radiation Emergency Plan, the first step in providing protective action to deal with the potential for accidental radiation releases from nuclear power plants.
- In 1974, New Jersey was one of the states to undertake performance testing of new certified X-ray systems under provisions of the Federal Radiation Control and Safety Act of 1968.
- 1969 citation of nine major airlines at Newark airport for excessive smoke emissions which led to major cleanup of aircraft in interstate traffic.
- New Jersey was the first state in the United States to have a statewide air pollution control law (1954), and one of the first to have a law protecting against water pollution. New Jersey stream pollution control regulations date back to 1899.
- New Jersey water and air programs have served as models for regulations in other states.
- New Jersey's cancer and toxic substances control program, possibly the most advanced in the nation, is serving as a model in the development of programs in other states.
- With the creation of the Water Supply Master Plan, New Jersey has become one of the few states to look at its water supply needs for the future.
- New Jersey stands virtually alone in this country in the strength of public support for acquisition and preservation of lands for recreation and conservation. In terms of our dollar commitment per capita, there is no comparison.
- DEP's innovative state parks program was the first in the United States to waive the admission charge for any passenger vehicle with five or more people.
- New Jersey has one of the most progressive fish and wildlife programs in the country. The Hacketstown Fish Hatchery, established in the early part of the century, was the first state hatchery in the United States.
- Planning was completed in 1979 for the Pequest Hatchery and Nature Education Center, to be the most modern facility of its type. Construction of this facility will move forward in 1980.
- New Jersey was one of the first states to use a "manifest system" to track hazardous wastes from origin to disposal.
- A hazardous waste strike force was organized to apprehend and prosecute illegal dumpers.
- DEP was one of the first states certifying pesticide applicators to assure wise use of such materials, a total of 25,387 tests were administered from 1976 to 1979.
- New Jersey was the first state to adopt a Statewide regulation controlling the sulfur content in fuel oil and in bituminous and anthracite coal.
- A statewide Solid Waste Master Plan created 22 districts to coordinate and oversee disposal and to foster resource recovery.
- Extensive water quality surveys pinpoint pollution spots and help determine origins of pollution.

AIR

One of over 200,000 field investigations conducted by DEP during the 1970's in order to ensure compliance with New Jersey's stringent air pollution control standards.

In the ten years since 1970, there has been a dramatic reduction in contamination of New Jersey's air. With the nation's most dense concentration of population and industry, the state needed an aggressive program. Progress in this decade has been impressive. New Jersey's air pollution is recognized as one of the finest in the country and was rated first in a General Accounting Office audit in 1974.

The emphasis has been on activities that will lead to reducing human and environmental exposure to pollutants linked to respiratory and heart disease.

DEP's sophisticated, continuous monitoring system acquires data from 161 sensors in every area of the state. Cleaner air in New Jersey has been accomplished during the decade as a result of 200,000 field investigations.

Specifically, inspections resulted in 13,600 administrative actions, 11,000 orders to cease violations and 2,600 notices of prosecution. Cases referred to the Attorney General for prosecution numbered 350. Settlements collected for violations came to $2.8 million. Of New Jersey's 1,186 major potential sources of air contaminants, 99 per cent are in compliance. Only companies installing acceptable control equipment now receive construction permits.

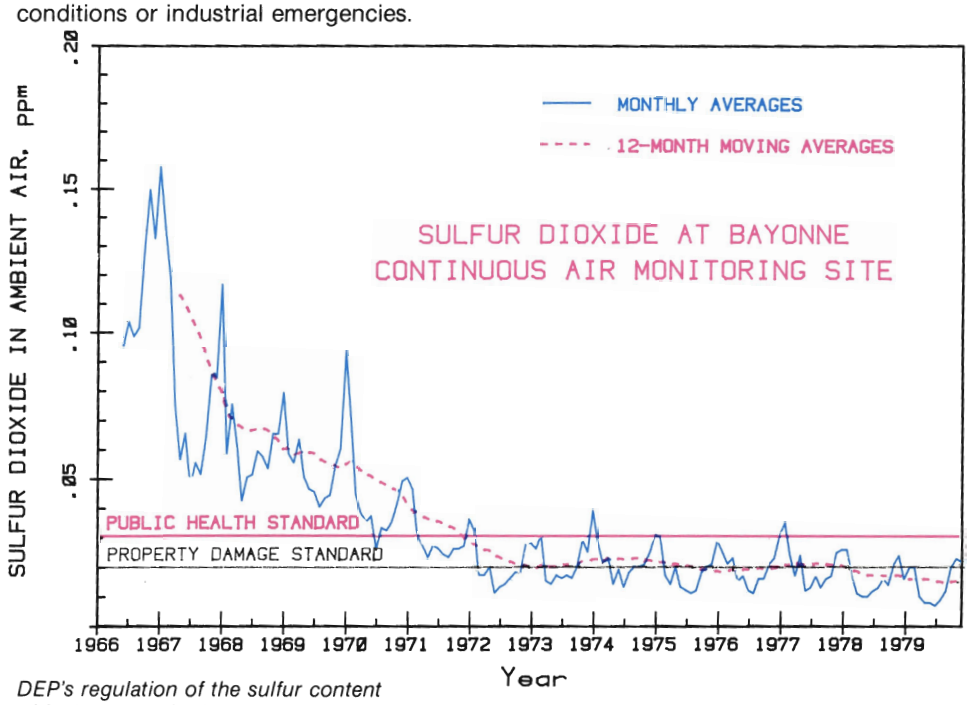
The decade saw 38,772 permits approved for installation of $307 million worth of air pollution control equipment. This equipment reduced potential pollutant emissions by: 99.3 percent, particulate matter; 83.2 percent, sulfur dioxide; 92.4 percent, solvents, acids and other chemicals.

This decade has seen a 10-20 percent reduction in suspended particulate matter, and that means less smoke, fewer visibility problems and less lung disease. The State's progress in reducing carbon monoxide in the air by 40-50 percent, double the national average, can be traced to New Jersey's mandatory auto emission inspections — the only statewide program of its kind in the nation. A side benefit of this testing is that hundreds of millions of gallons of gasoline have been saved by our more properly-tuned vehicles. For sulphur dioxide a 70-80 percent reduction has been achieved and maintained for most of the decade. More rigid standards for emissions of organic materials aimed at curbing smog were adopted in 1979.

Even though gasoline consumption has increased, ambient carbon monoxide levels have decreased due to air pollution controls on automobiles and New Jersey's inspection of automobiles for air pollutant emissions.

Unfortunately, New Jersey is not self-contained. While New Jerseyans are cleaning up their own air, the predominant winds are bringing in pollutants from other states. New Jersey receives air pollution not only from neighboring states but from far beyond. Ten years ago, DEP didn't have the techniques to analyze this phenomena but now the department is able to tell with some precision how much comes from other states, how much is generated here and how much is transmitted to other states downwind from us. The last three years of the '70s saw Governor Byrne initiate action to deal with pollution from other states and achieve results in the form of curbed emissions.

Additional protection for New Jersey residents is assured by the Air Pollution Emergency Response team, established in January 1978, which is equipped and trained to deal with life-endangering situations caused by unusual weather conditions or industrial emergencies.



DEP's regulation of the sulfur content of fuel resulted in dramatic reductions in the ambient levels of the air pollutant sulfur dioxide.

WATER

Water is one of life's essentials which many take for granted. But assuring that water from the tap is both safe and pure-tasting grows ever more complex. It is becoming increasingly apparent to DEP that what was thought to be clean water isn't always what it seems to be.

The quality of recreational waters must be maintained, too; flood waters need to be controlled; wastewater monitored and fishing waters kept pure.

The Statewide Water Supply Master Plan is a unique and comprehensive study undertaken by the Department of Environmental Protection to assure that the State as a whole will be able to meet its future water supply needs in a timely manner. The study covers both technical and institutional aspects of water supply.

The entire state was delineated under the private groundwater law requiring permits for water diversions in excess of 100,000 gallons per day, and approximately 70 percent of the total surface drainage area was delineated. The most significant allocation was the decision by the Water Policy and Supply Council approving diversions from the Ramapo and Passaic Rivers at Two Bridges for the North Jersey District Water Supply Commission and the Hackensack Water Company.

New Jersey accepted primary responsibility from the Federal Environmental Protection Agency for enforcement of the Federal Safe Drinking Water Act. Currently, about 620 public community water systems are under State control, and jurisdiction is being extended to over 6,000 non-community systems.

During the decade almost 4,000 inspections of community water systems were conducted, and 3,000 special investigations made in response to consumer complaints and emergencies. Eleven hundred permits were issued for public water supply construction and improvement projects, representing total estimated construction costs of $337 million. These include new major water treatment plants for the Monmouth Consolidated Water Company, Atlantic City, Jersey City, North Jersey District Water Supply Commission, and Newark.

New Jersey's ocean dumpers of sewage sludge decreased from 30 to nine, in compliance with federal regulations and with help from guidelines prepared by DEP. In Camden, DEP and Rutgers University are cooperating in research into composting sludge from the city's wastewater treatment plant.

Among the most significant water supply projects completed during the 1970s was the 3.5 mile Round Valley outlet pipe installed at the north dam in 1977. This provides an outlet for the 55 billion gallons of water in the reservoir to meet the needs of much of northern New Jersey.

With the cooperation of industry New Jersey has made significant progress in solving the problem of decreasing water quality in highly industrialized communities. Another significant area of accomplishment is the adoption of the Spill Compensation and Control Act which pays cleanup costs and compensates for financial losses in the case of spills of oil and other hazardous substances. During the 70s DEP administered $2.5 billion in federal funds for new, expanded and upgraded wastewater treatment plants to abate water pollution. The establishment of new regional sewage treatment plants in many areas of the state and the upgrading of existing plants contributed to the abatement of water pollution during the past decade and has resulted in an estimated 103,000 construction and related jobs in New Jersey. As an added benefit, the sanitized end products of these plants are used to improve soil.

The highest level of treatment in the state is achieved at the Parsippany-Troy Hills plant which is equipped for nitrification-denitrification, a process which removes the nitrates which could otherwise overfertilize the receiving waters. Nutrients are removed in a final "polishing" step from the effluent of the East Windsor plant and sprayed over fields on which grass if grown as animal fodder. The semi-solid residuals from this plant are turned into the soil in another section of the site where cattle corn is grown. In Camden County where sludge was dumped into the ocean until 1978, these residuals are now composted, biologically sanitized and used as a soil conditioner. Progress is being made toward helping other sewerage authorities accomplish similar modernizations.

To help assure purity of bodies of water within the state, biological and chemical parameters of streams are monitored at 217 sites. Another 900 bodies of water are surveyed under the Lakes Program which examines public and private lakes and ponds for ecological changes (eutrophication) which would damage recreational value and usefulness. Forty New Jersey lakes have been subject to detailed investigation as part of a national study.

A specially equipped mobile laboratory permits the direct, continuous testing of industrial discharges for toxicity to fish.

Marine monitoring for occurrence of red tide is performed seasonally, and a separate shellfish control unit which regularly performs sanitary surveys of all shellfish waters has resulted in the opening of 50,000 new acres to this important industry during the latter part of the decade.

In addition to these "standing" investigations, the department responds to individual water quality-related incidents such as spills of toxic chemicals, and private well contamination from industrial and domestic sources of waste.

Several programs adopted in the '70s aim at minimizing flooding within the state and assist municipalities in obtaining federal flood protection insurance. 540 municipalities have benefited from this program over the past 10 years. Specifics include the delineation of 1,130 miles of flood plains along streams and rivers, controlling the use of land adjacent to streams and rivers and preventing practices such as filling in channels and flood plain areas which tend to increase the potential harm caused to human life and property as a result of flooding.

In 1977, New Jersey was one of the first states to enter a coopertive dam inspection program with the federal government. Under this federally funded project, all public and private dams are being inspected and when necessary, repairs are ordered to insure public safety.

In addition to these ongoing programs, the department responds to individual situations which may endanger the state's supply of safe water for present and future needs. The recent Pinelands legislation, for example, addresses both quality and supply issues related to an irreplacable water resource for the people of New Jersey.

The Trenton water treatment facility, where raw water supplies are treated for consumption. Over the past ten years, DEP has conducted thousands of inspections at facilities such as this one in order to protect the public.

Computerized analysis of air and water samples enables DEP to identify potential hazards in the environment.

SOLID WASTE

Every citizen generates about eight to ten pounds of garbage a day—and that's a fact which can't be ignored. DEP has made significant advances in the areas of enforcement and planning. The state now oversees landfill design and operation and has established regulations for collection and disposal of solid waste. Under machinery established in the '70s to deal with illegal dumping, DEP increased penalties for all solid waste violations from $3,000 to $25,000 a day.

Until the launching of a major effort in the mid-seventies there was no comprehensive statewide master plan for solid waste disposal. The Solid Waste Management Act (1970), dealt mainly with registration and control of garbage collectors and landfill operators. Each town bid out its own collection contracts and the low bidder could use any landfill. During this period, although the state was licensing landfills, DEP could not control their use in light of the objections raised by municipal and county governments which were trying to provide a legitimate service to their people. The result was cheap disposal, but a high cost in terms of environmental impact.

To improve the situation, the state set in motion in 1975 a program to bring the 21 counties into a comprehensive solid waste planning process. Money to implement this plan was appropriated in 1977. The plan set up each county and the Hackensack Meadowlands as a solid waste management district and directed them to develop a comprehensive program for collection and disposal that would lead to the highest level of resource recovery possible. Programs from all 22 districts have been submitted.

The solid waste planning process established during the 1970's will reduce the need for unsightly and environmentally unsound landfills as more and more garbage is eventually recycled.

Since 1970, the department has registered and brought under inspection and reporting requirements 579 solid waste disposal/processing facilities and 4,083 collector/haulers. Information on the amounts and types of waste generated and disposed of in each county are available in computerized form from 1975 to the present. This information has provided much of the data base for the district solid waste management planning efforts currently underway.

In May, 1978, DEP instituted one of the country's first hazardous waste manifest systems to record the movement of such material from point of origin to point of disposal. This system is being revised and plans are to share a regional manifest system, modeled on New Jersey's, from Maine to Maryland. DEP is providing technical expertise to other states for this plan.

ENVIRONMENTAL HEALTH AND SAFETY

High population density correlates with high rates of cancer, and large scale production of chemicals adds to the problem. New Jersey has both!

A study made for the 20-year period from 1950-1969 by the National Cancer Institute and released in 1976 placed New Jersey 17 percent higher than the national total in cancer incidences for white males, highest in the country, and second in the country for white females. Figures for non-whites were numerically too small to offer valid statistics. These figures led to Governor Byrne's Executive Order #40 in 1976, designed to step up the state's efforts to control environmental causes of cancer. The Order provided machinery to coordinate and develop effective programs to reduce human and environmental exposure to carcinogenic and otherwise toxic compounds.

Intensive efforts by the DEP launched in the last three years of the decade to control many of the hazardous substances in the environmental are expected to have a significant impact on the statistical picture in the future. In the ten years since the original study, New Jersey's position relative to the rest of the country has improved.

It is too early to determine what effect DEP's activities are producing, but the department has moved ahead of most states in environmental health and safety programs. New Jersey now has the machinery to identify cancer-causing and toxic chemicals and other agents in the air, water, sediment, and in fish consumed by people, and to pinpoint communities exposed to high levels of such substances. Early warning systems for emergency situations are being developed.

New Jersey's water and air programs are being used as models in other parts of the country. But, until two years ago, even in New Jersey, testing was not conducted for many dangerous substances.

In the first two-thirds of the decade, DEP focused on the classic problems of controlling bacteria and sewage. Today New Jersey is far beyond that — studying the toxics, how they build up in the food chain, and how this relates to humans.

The department's first step in the detection of problem situations in the state was the accumulation of data. A list was assembled of 80 toxic materials found in water, air and land. These materials were placed in three classes: *volatile organic substances,* i.e., benzene, trichlorethelyne, carbon tetrachloride and nitrobenzene; *heavy organic materials;* i.e. pesticides, herbicides, PCB's; and *heavy metals* such as lead which could be ingested.

In the latter part of the decade, using that list, DEP went on to sample and analyze water, air, and land areas throughout the state. By this time, after thousands of samples, DEP knows what to expect. The department is constantly testing ground water and conducting air studies, and has initiated a study to seek out abandoned chemical dumps. DEP's efforts are integrated with the work of other state and federal agencies.

Some Notable Events of the Decade:

- Rutherford, 1978. Leukemia occurred in six youngsters from a single school, probability of one in one hundred million. DEP worked with citizen groups and the Department of Health. Although extensive environmental investigations were performed of air, soil, water, industry, even measurements of non-ionizing radiation, no conclusive evidence was gained about Rutherford itself. These studies led to further investigations of how topography and weather might be responsible for unusual concentrations of chemical industry waste in a comparatively small area. In the future, this information could help us to respond properly to unusual weather conditions so as to protect our people under potentially dangerous conditions. This situation also provided us with the framework for working cooperatively with citizens' groups in other parts of the state.
- The average patient dosage of radiation from medical and dental x-rays has dropped during the decade due to our regulation of technologists and equipment. Dose reduction programs for mammography procedures and dental procedures have been very successful. A 40 percent reduction in dental exposures as been achieved. Improvement of mammographic procedures alone reduces the level of exposure to x-rays experienced by 45,000 female patients annually. Regular inspections of the state's 13,000 x-ray machines helps ensure efficient operation and eliminate unnecessary radiation.
- After discovery of asbestos in the schools in Howell Township, the Department acted to avoid a recurrance by prohibiting any further spraying of asbestos materials in the state. Asbestos ceilings were removed from 60 schools and a program of inspecting public buildings for asbestos hazards was initiated. The program is shared with the Departments of Education and Community Affairs.
- Reduction of residues from restricted pesticides was effected through testing and registration of authorized dealers and initiation of programs of natural biological control. In Cape May, Atlantic and Ocean Counties, more than 30,000 acres are under such natural management programs which eliminate the need for spraying.
- In 1974, regulations were imposed to deal with the potential threat of excess industrial and commercial noise in our environment and to identify and apprehend violators. Local governments are being assisted in adopting and enforcing noise control ordinances.

HAZARDOUS WASTES

Before DEP clean-up crews moved into the Chemical Control Corporation site in Elizabeth, the facility was described as "a lethal bomb just waiting to go off."

Disposal of hazardous wastes is the most pervasive environmental problem facing society today. Our lifestyles revolve around products which, in their manufacture, generate hazardous wastes. For example, paint used in homes, autos and industry gives off 3 million gallons a year of spent acids; residues from textiles, plastics and the other consumer goods in our chemically-oriented society all contribute to the hazardous waste in the environment.

Before 1970, there was no regulation of hazardous waste; indeed the hazards were not recognized except in certain notable cases. In that year we began control with registration of landfills and of haulers for all forms of garbage. As we became aware in 1976 that the chemicals being dumped along with other wastes had severe implications for exposed humans and groundwater resources, we effected a separation of categories which excluded hazardous wastes from ordinary landfills.

The shutdown of the contaminated Kin-Buc landfill in Edison in 1976 led to the adoption of a manifest system to track hazardous wastes and to ensure that these materials were sent to appropriate treatment facilities.

A generator of hazardous waste must now file a manifest, with a copy going to the hauler and a copy to the end facility. Copies are sent to the state which then tracks shipment from generation to disposal. It sounds like a lot of paperwork, but it's the only way environmental officials can make certain that regulations are being followed and hazardous chemical wastes are being disposed of at environmentally sound facilities.

The loophole in the manifest system has been interstate traffic in hazardous wastes, because reliable record-keeping stops at the state line. But New Jersey started work with 12 northeastern states on a regional program being advanced by Governor Byrne, and the Federal Government is planning to impose a national manifest system.

The progress is notable:

- New Jersey has established a strike force, which includes the U.S. Attorney and the state Division of Criminal Justice, to deal with illegal dumping.
- Penalties for all solid waste violations, including those involving hazardous wastes have been increased to $25,000 a day. Fraudulent record keeping under the hazardous waste, rules is now a criminal violation.
- New Jersey has expanded the Spill Compensation and Control Act to allow DEP use of the Spill Compensation Fund to clean up abandoned hazardous waste sites.
- A major study has been commissioned, based on recommendations of the Governor's Hazardous Waste Advisory Commission, to identify appropriate sites for hazardous waste disposal and to plan for establishing new modern high-technology treatment facilities.

NATURAL RESOURCES

We need open space to maintain physical and mental well-being and emotional tranquility. We also need open space to preserve water resources, wildlife habitat and the aesthetic quality of our natural surroundings.

The emphasis in New Jersey has been on preserving open sapce and on bringing the parks to the people by providing opportunities for recreation in the more densely populated areas of the State. By making available a wide variety of recreational opportunities, we can satisfy a variety of interests from skiiing to surfing. And New Jersey has a lot to offer, especially when you consider its size. We have lakes . . . . streams . . . . shores . . . . forests . . . . mountains . . . . cultural facilities . . . . historic sites and a tremendous variety of wildlife and fish.

The people of New Jersey and the legislature have given outstanding support for recreation and the conservation of open space. They have voted for all four Green Acres Bond Acts since the first one in 1961. Under the Green Acres program, land is purchased for the State and matching grants are made to counties and municipalities for land purchases. The program also finances tennis and boccie courts, park benches, landscaping, playgrounds, swimming areas and other recreational improvements.

The 1977 Statewide Comprehensive Outdoor Recreation Plan (SCORP) recognizes recreation as a basic human need — not as a luxury. SCORP is a Master Plan to assure that needed open space and recreational opportunities will be available and accessible to all citizens including urban residents, the handicapped and those who must rely solely on mass transportation.

Environmental experts recommend that keeping 20 percent of New Jersey in perpetual open space would be ideal. With some 600,000 acres of public open space at this time, we are well on our way to meeting that goal.

Major developments in the parks of this state during the decade just past include acquisition of new facilities, heightened maintenance programs for existing ones, and initiation of creative programming for education and entertainment. The 190,000 acres of state-owned parkland in 1970 has increased to 260,000. This figure represents 40 parks, forests and natural areas plus 20 separate historic sites.

Liberty State Park — A Prototype of the Future

A highlight of the past decade has been the opening of Liberty State Park, New Jersey's first urban state park. The park's location is considered one of the most dramatic sites in the world by architectural experts and land planning specialists. The people seem to agree, for in its three-year history, Liberty State Park has attracted more people than any other New Jersey State Park. The park consists of some 800 acres on the waterfront in Jersey City — approximately the size of New York's Central Park.

The planning of this unique facility has respected the area's environment, its ecological features and the recreational and cultural preferences of the public. Its continuing development will offer a balance of land and water activities as well as historic preservation through the recycling of an existing, but currently unused, railroad terminal for an information center and for public events. A 17-acre salt marsh will be preserved as an environmental education center and a 15-acre cove will serve as a winter home for migratory waterfowl.

Appropriately located in the most heavily populated area of the state and accessible by public transportation, the park offers spectular views of the Manhattan skyline and ferry service to the Statue of Lberty and Ellis Island.

Recreation patterns have been changing for the last 10 years and DEP is altering its parks systems to meet the newly apparent needs of New Jersey's residents. At the beginning of the decade, 75 percent of park use occurred between Memorial Day and Labor Day. Now the busy period extends from March 15 to November 15. There has been a growth of winter activities including cross-country skiing, camping and snowmobiling, and the department is providing facilities such as marked trails and cabins to serve these interests.

Gasoline supply problems and price increases have been leading to rising park attendance because people are visiting attractions nearer home. But despite this, the parks have peak days and quiet days. To even this out, DEP has instituted reduced fees on weekdays and a model program of free admission for five or more passengers arriving in one vehicle.

Some Other Significant Events of the '70s

- The Wild and Scenic Rivers Program initiated in 1977 is designed to preserve the recreational, natural and scenic values of rivers throughout the state.

At the beginning of the 1970's, this area was abandoned and littered with debris and crumbling piers. Today, Liberty State Park, in the heart of New Jersey's most densely populated region, is widely acclaimed as a work of both architectural and artistic genius.

NATURAL RESOURCES *(Continued)*

- Creation of separate summer conservation programs for youths in two age groups. From one camp in 1974 with 40 people, the program has grown to 40 camps with more than 600 enrollees.
- Expansion of trail systems for hiking, horseback riding, canoeing and winter sports.
- Improvement of the quality of winter camping sites.
- A $5 million reconstruction program to upgrade existing facilities within the parks was initiated in the late '70s.
- The Tocks Island battle, dating back to the early 1960s is a saga of victory for conservation. Governor Byrne and DEP fought to preserve over 30 miles of the free-flowing Delaware River, despite arguments by interests who wanted to see the river dammed and the area flooded. Governor Byrne took the position that the dam was not needed to provide water supply for the State. DEP's Water Supply Master Plan supports the Governor's position.
- Coordination of funding by DEP through a federal program to municipalities for rehabilitation and improvement of old recreational facilities in urban centers has been a boon to places like New Brunswick, Elizabeth, Newark and Jersey City.
- A tax exemption program to conserve private lands made available to the public thousands of acres including properties owned by the Audubon Society and the Boy Scouts.

Forests

In an attempt to combat the arson problem (48 percent of forest fires), we have initiated an ongoing education program in the schools. Also, our forest fire service has been expanded and re-equiped. Helicopters and other aircraft are major means of attack during the fire season.

Timber management and reforestation programs have been growing substantially since 1974. Before that time DEP was not involved in marketing or in home owner programs. But today, the department has several programs designed to bolster the wood industry in the state by finding markets for scraps, sawdust and mill ends. DEP gets the buyer and seller together and the result is added dollars for New Jersey's economy.

Under a home firewood program we make wood available in specified areas for the public to cut at a very low cost — about $5 a cord, compared to the going market rate of $100. And in another area of service, we are advising the Shade Tree Commissions of urban areas about planting and maintenance.

Wildlife

In many ways, all of the activities of DEP are interconnected. Our varied fish and wildlife resources are positively affected by progress in pollution control, land planning, waste disposal and protection of coastal wetlands.

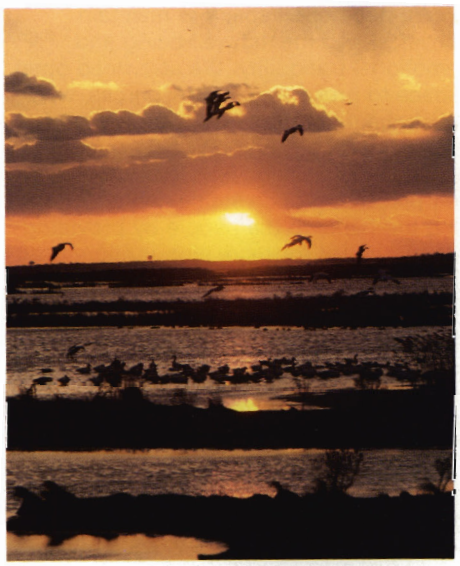
New Jersey is a leader in wildlife management. DEP programs include management, inventory, education, licensing, regulation and construction of facilities. Recent surveys show that it is not only hunters and fishermen who enjoy wildlife; other devotees are bird watchers or just observing citizens who like to know that we share our state with a variety of other species.

DEP has assumed responsibility to restore and maintain various species once indigenous to New Jersey. The department's activities in this area include a wild turkey program, fish stocking and breeding of the Peregrine falcon, the osprey and some amphibians and reptiles which are considered endangered.

Interrelated with pollution control in the '70s was the initiation of water management programs to eliminate spraying of dangerous pesticides. This biological control system consists of building ponds which connect to mosquito breeding areas so fish will move out and kill the mosquito larvae. In Cape May, Atlantic, and Ocean Counties, all spraying has been eliminated from the 30-40,000 acres which are involved.

DEP's fish studies which are indicators of water contaminants are another example of how the department's activities are interrelated. We have issued alerts when PCB's and other toxics were found in the fish tested.

In the past ten years, our shellfish program removed 40 million clams from polluted waters to approved areas where they cleansed themselves and



New Jersey's unique and diverse natural resources provide for a variety of recreational and aesthetic enjoyments for residents and tourists alike.

provided consumers with safe, edible mollusk.

In the areas of commercial and recreational fishing, DEP is engaged in inventorying, regulation and stocking as well as technical support for the state's $200 million commercial fishing industry.

The '70s saw more vigilant enforcement of state fish and game laws, with arrests and prosecutions up almost 100 percent in the decade.

DEP's hunting program, among the most modern in the country, requires that hunters have a minimum of six hours of training. DEP also regulates trapping, which has become a $25 million industry in New Jersey, making us fourth in the country in the production of pelts.

Coastal

The oceanfront is a fragile environment and New Jersey's approach to protecting its coastal areas is distinctive. The goal is to ensure that there will be a healthy shore for future generations — but it may be a different shore, one of more recreational uses and less permanent development. For example, barrier islands serve as a bulwark against the ocean's fury. Permanent development in such areas is not only environmentally unsound, but it needlessly places life and property in danger.

In the years before the creation of DEP, New Jersey's 122 miles of coastline might well have been considered a steadily-eroding endangered species. The state had a policy of encouraging sales of state-owned tidal lands in order to bring cash into the Treasury. The coastal wetlands were being filled in at the rate of 1,500 acres a year. Construction was regulated by the municipalities which allowed high-rise buildings along the shoreline, primarily in Monmouth County, Ocean City and the Atlantic City area. In 1979, with expanded controls in force, less than one acre of coastal wetlands was filled.

The passage of the first Wetlands Act, which brought special protection to lowlands along the shores, indicated to the people of New Jersey that the preservation of the shore was important and that fragmented local regulation was not in the best interests of the state from a long-term perspective. This Act brought 242,000 acres of coastal wetlands in eleven counties under state regulation.

Expanded and stronger regulations were passed in 1972 and 1973. This period marked the end of random decision-making and voided such projects as an onshore oil support base in Brigantine and a high-rise in Tom's River.

Some of the arguments for wetlands protection:

- Safeguarding the food chain from the smallest organisms up to huge fish, and including New Jersey's valuable shellfish resources.
- Storm protection, where the energy of the waves is dissipated and breeding and "nursery" habitats are provided for aquatic life.

The 1977 $20 million bond for shore protection, which will cover only a fraction of the cost for necessary projects, led to the preparation of New Jersey's Master Plan for Shore Protection, which is nearing completion.

To improve public access to state beaches, a popular shuttle bus system for Island Beach State Park was instituted in 1977.

The coast is more than the seashore in New Jersey; it includes the many urban waterfronts in our state. Programs were initiated in the '70s for protection and beautification of these areas and expansion of their recreational facilities.

The Department's responsibilities in shore areas include boat regulation and marine enforcement in ocean, river and bay waters.

Pinelands

The Pinelands, a diverse and fragile area of one million acres covering all or part of seven South Jersey counties, is the last vast near-wilderness area in New Jersey. This represents nearly one-fifth of the state's total land area.

As early as 1971 DEP took initial Pinelands preservation measures. Governor Byrne took a major step toward perpetual protection of this land when he convened a conference at Princeton University in 1976.

The Governor didn't stop with that. In May, 1977 he issued an executive order establishing the Pinelands Review Committee, and he pledged $10 million in Green Acres money for start-up Pinelands acquisitions. Over $60 million of state and federal funds have since been earmarked for Pinelands acquisitions. He also directed the State Attorney General to sue to claim title to 2,000 Pinelands acres upon which the state held tax liens.

In February, 1979 Governor Byrne issued Executive Order 71 to establish the Pinelands Planning Commission and temporarily ban issuance of any state authorizations relating to construction or development pending completion of the Commission's comprehensive management plan for the region.

DEP set stringent standards to protect the area's surface and groundwaters and established regulations for construction and development of proposed sewage disposal facilities.

The Federal government recognized the importance of this unique area by establishing the Pinelands National Reserve of roughly one million acres and providing New Jersey with funds for long range planning and purchase of environmentally threatened acreage in the Pine Barrens.

This preservation provides New Jersey with recreation space, a huge but vulnerable water supply resource and a laboratory to study a variety of endangered species in their natural habitat. These include the tree frog, southern gray tree frog, tiger salamander and the bog turtle.

SUMMARY OF 1979 ACTIVITIES

Fiscal year 1979 was a year of consolidation, a year of joining isolated programs into a "whole" approach to protect our citizens and our resources.

1979 was also a year of inventory taking, of reviewing the many achievements of the past decade and then of using this information to plan for the future.

1979 could be known as The Year of Hazardous Waste — for in that year DEP began aggressive movement toward controlling this all-pervasive danger to our land and lives.

Hazardous Waste

DEP's major regulatory focus in 1979 was to upgrade and tighten all efforts relating to hazardous wastes. In August the Governor appointed a Hazardous Waste Advisory Commission composed of representatives of government and industry. As a result of legislation passed during the year, DEP gained authority to regulate and clean up not only today's problems but those of the past by searching out and evaluating abandoned landfills. Another accomplishment was the setting up of a strike force to identify violations, many of a criminal nature, so that enforcement action could follow.

Solid Waste

A recycling committee was formed to develop a statewide policy on recycling, a "bounty" program, and other programs which can be implemented at the local level.

Environmental Health and Safety

DEP's Program on Cancer and Toxic Substances amassed county-by-county cancer fatality statistics which may point toward future lines of research. The tables relate factors such as geographic distribution, ethnic background and employment with many kinds of cancer.

The department's response to the Three Mile Island nuclear incident near Harrisburg was quick and thorough. Monitors were set up along the New Jersey-Pennsylvania border to warn of abnormal radioactivity, and milk arriving from Pennsylvania was monitored. No abnormal radiation was revealed. The department increased its capability to collect and analyze environmental samples. Its routine surveillance program around state nuclear facilities exceeds standards set by the Nuclear Regulatory Commission.

The transportation of radioactive drugs and shipments of other radioactive material are also the responsibility of this Department. Through the recent promulgation of transportation regulations, the Department will be aware of all hazardous shipments of radioactive material coming into or originating in the state.

Nuclear Medicine procedures in New Jersey are proliferating at a tremendous rate. The annual estimate of procedures exceeds 750,000 patients. The technologist who administers radioactive drugs to these patients is now required to be certified by DEP. The Department's certification program is new, but already it is being copied by other states.

Water

The year saw an upgrading of standards for water quality through a continuing monitoring program which resulted in closing polluted wells in several areas. New certification programs for laboratories that test drinking water were established. In Jersey City a multi-billion dollar potable water plant was built with federal and state funds.

Our shellfish resources have been increased by the reclassification of 7,261 ocean acres for harvesting, making a total of 153,265 productive acres within our three-mile limit.

During an 88-day tug operators' strike, a major health disaster was averted by the Department's cooperative efforts with the Coast Guard to move sewage sludge to ocean dump sites. Finding a safe alternative to ocean dumping of dredge spoils and waste remains a major priority.

Aerial photos of the entire state were taken to identify possibly dangerous in-ground storage of waste materials by industry. Improper in-ground storage of industrial wastes could pose a serious threat to groundwater supplies.

A total of $123 million in federal and state funds was expended to aid 50 municipalities to construct new or upgraded wastewater treatment facilities.

Funds were obtained for a diagnostic feasbility study on Weequahic Lake, one of the ten projects in the country under President Carter's urban initiative program to assure the continued recreational value and usefulness of our limited natural resources in urban areas.

DEP's dam inspection program received federal funding in 1978, Inspections are proceeding on the basis of potential hazards, with orders being given thus far to lower water levels behind two dams. Two hundred and twenty eight dams have been inspected, with the program due for completion late in 1981.

Flood control regulations were adopted to spell out eligibility requirements for flood control projects to be funded under th Flood Control Bond Act.

Air

Institution of a computerized air pollution data system in 1979 will improve enforcement. In 1979 DEP adopted regulations to deal with emissions of hydrocarbons from industrial sources. Previously, we had been controlling new sources with our permit program, but now plants existing prior to this program and manufacturing chemicals, petrochemicals, paint and other materials, will be under control.

Coastal

1979 was a notable year for coastal preservation, with only one acre of wetlands filled in as compared to an average of 1,500 acres per year before DEP controls.

The Shore Protection Master Plan launched in 1979 will enable DEP to study the range of alternatives from letting nature take its course to high technology engineering aproaches which could be very costly. The need was recognized and is being dealt with in order to prevent damage to and removal of strategic dunes which offer shorefront protection.

New emphasis was given in 1979 to improvement of urban waterfront sites under the Riverlands Renaissance Program. Evaluation was initiated for 31 municipalities for beautification and recreation programs. Expansion and improvement of fishing facilities for urban populations also got underway.

Open Space

1979 was an important year for continuing progress in the Pinelands, with the first acquisitions under the Governor's Pinelands program taking place.

Last summer DEP introduced a pilot program of cultural and arts events in state parks. Six state areas, including the new and very popular Liberty State Park, played host to a successful group of programs which ranged from individual performers and a concert by The New Jersey Symphony Orchestra to the recreation of The Battle of Monmouth.

With park attendance up 10 percent last year, one-fourth of our visitors availed themselves of our new free admission policy for passengers arriving in cars with five or more people. Senior citizens 65 years of age or over are also entitled to free admission to all state parks, forests, recreational facilities and historic sites.

Work moved forward on the realignment of the Appalachian Trail which extends through New Jersey on its way North to Maine and South to Florida. The old trail winds in and out of the state twice, following existing roads and crossing private property. The new trail will be more scenic and will be concentrated on public lands.

A 1979 Trails Inventory will constitute a master plan for the trails in our system for biking, hiking, snow sports, canoeing and horseback riding.

Development of a Heritage Program was initiated in order to provide an inventory of our state's natural and cultural resources. In cooperation with other state agencies, DEP will identify New Jersey's plant, animal, geological, historical and cultural assets and determine where protection is needed.

Progress was made in 1979 in the Wild and Scenic Rivers Program with the adoption of river study and classification guidelines.

The intent of the Governor to assure maximum development of commercial and recreational fishing in the state is reflected in legislation passed in 1979 to reorganize and upgrade DEP's fisheries work.

ISSUES FOR TOMORROW

The '80s will see a continuation of the work initiated during the past ten years. Building on the previous decade's achievements, New Jersey will see even more significant progress in environmental health and safety, air pollution control, water resource management, control of solid and hazardous waste, expanded shore and dune protection, development along our urban waterfronts and improved aesthetics.

There will be new issues, too, as growing environmental and scientific knowledge reveals hitherto unrecognized perils. DEP faces both the known and the unknown in its never-ending task of enhancing and protecting the environment of this state.

The focus ahead will be increasingly on toxics and other contamination at lower levels, the residual levels that remain after the initial source of pollution has been brought into compliance with existing regulations.

So far, DEP has been concerned with cleanups; in the future the department must deal with maintaining natural and cultural resources once they have been improved.

There need not be a clash between the environment and the economy if the appropriate programs for control and enforcement are developed. In fact, appropriate programs guarantee, rather than hinder economic growth. Just as with all of us, business and industry need a healthy environment in order to grow and prosper. It is no secret that environmental decay fosters commercial decay. Yet New Jersey's environmentally desirable areas are now experiencing intense development pressure as both business and residential interests seek an environment in which they can prosper. Environmental control creates jobs in many instances. What must be maintained is a balance between environmental protection and economic development.

Generating more interstate cooperation in controlling air and water pollution, hazardous waste disposal and regulating shipments of hazardous materials will remain a top priority.

Hazardous Waste

Probably the biggest area of growth in DEP in the '80s will be that of hazardous wastes. The problem is generated by our consumer society which demands more and more of the products which produce these wastes. But solutions are in sight, although they require expensive and complicated technology and a firm commitment from both the public and private sectors. DEP will be approaching these solutions with expanded staff and funding from the federal government.

On the agenda are:

- Location of sites for disposal and treatment facilities.
- Expanded enforcement to ensure exclusion of hazardous waste from ordinary landfills.
- Setting new standards for haulers of hazardous waste and operators of treatment facilities.
- Encouraging private industry to construct and operate appropriate facilities.

The recent amendments to New Jersey's pioneer Spill Compensation and Control Act enable DEP to seek out and decontaminate old landfills which pose a significant threat to health and safety.

In Middlesex County, DEP will, with federal funds, complete cleanup of a wide area where homeowners unknowingly transferred soil from a severely contaminated site into their gardens.

Solid Waste

Municipal solid waste disposal will be eased with construction of new county resource recovery facilities over the next five years. Funding sources must be developed for these needed facilities. Implementation of a statewide beverage container collection program will further help to reduce the ever expanding volume of solid waste which currently burdens New Jersey municipalities.

Solid waste will be subject to renewed regulation in the '80s with the landfill situation improved and with the encouragement of private construction of resource recovery plants. DEP will convey the message that it will cost more to dump garbage — as high as $15 per ton for an environmentally sound system as opposed to $3 for dumping at an inadequate landfill.

New resource recovery programs for solid waste disposal are expected to handle 35 percent of New Jersey's garbage by the end of the '80s. By that time, DEP predicts that five or six major plants will be in operation by private investors. Resource recovery is anticipated statewide by the end of the '90s. Resource recovery plants will serve as power plants for nearby industry, generating cheaper energy by burning garbage. While these plants will provide the benefits of cleaner water and land, DEP must be diligent in its efforts to prevent pollutants from returning to the air. Advanced air pollution control devices will be required.

Air and Water

New Jersey will be into 21st century techniques with its initiatives in air and water pollution control and protection.

A major DEP mandate for the '80s is to protect the valuable water resource in the Pinelands and elsewhere for future generations. To ensure an adequate quantity of water, the next decade will see development of new potable water supplies such as the proposed reservoir system for the Manasquan, Hackettstown and Raritan Confluence sites.

The 1980's will see full implementation of New Jersey's Water Pollution Control Act. Federal programs to control discharges of pollutants into streams and (for the first time) into groundwaters, construction of sewage treatment plants, and protecting the purity of drinking water will be fully managed by the department. Toxic discharges to sewage plants will be targeted.

Safe disposal of toxic residuals resulting from the cleanup of air and water will be one of the greatest challenges of the '80s. DEP's efforts will shift from control of pollution to control and management of the pollutants themselves.

Application of state and federal programs in the '80s will bring resolution of flooding problems that have plagued much of the state.

Exploration will begin on energy-saving methods of achieving needed levels of wastewater treatment. Areas open to shellfish harvesting will continue to increase. Following the completion of its Lakes study, DEP will seek funding for lakes restoration.

1982 will mark completion of a comprehensive survey of New Jersey industry in which 15,000 concerns are questioned by DEP about their manufac-

ture, use and disposition of 150 carcinogenic and toxic substances. This background information will be computerized and analyzed for different purposes, including occupational health and manifesting of chemical wastes.

New emergency response planning efforts will heighten DEP's already-expanded radiation monitoring capabiii-ties.

With the recognition of coal as a cheaper energy source than imported fuels, the department's efforts to ensure clean burning must be continuous. DEP has already approved a number of projects which use low sulphur coal with efficient air pollution control devices to catch particulates.

A pollutant source which the department has just begun to consider is the photochemical oxidents — smog and ozone — which are auto- and industry-related. DEP is looking toward more sophisticated and expanded testing to control these sources.

One new concept ahead for managing the air space is "banking" — issuing debits and credits for what is being released into the air. Banking is one more example of how environmental controls have been refined in order to accommodate growth and protect irreplacable natural resources, such as air.

Open Space

The '80s will see a continuing focus on land acquisition, improvement and beautification and on recreational and cultural enhancements. As travel becomes more expensive DEP expects the use of nearby outdoor facilities to increase considerably.

Funds authorized by the 1978 Green Acres Bond Fund will be used in the '80s for land acquisition, development and rehabilitation. The focus here will be on urban open space and recreational facilities. The Riverlands Renaissance, a promising new urban redevelopment strategy, will affect water pollution control and harbor cleanup. With technical and financial aid to local government and efforts made to attract private investors to these waterfronts, New Jersey will see the transformation of rotting piers and antiquated buildings into parks, restaurants, museums and shops.

Continued development at Liberty State Park will add a 1.5 mile promenade along the Hudson River, with a protective levee which will prevent erosion and flooding and allow maximum use of the park area. Ground will be broken this year for the Liberty State Park Environmental Education Center.

DEP's commitment to maintaining its investment in park buildings, roads and other facilities must be renewed and strengthened. Looking toward more efficient operations in the future, DEP is considering the use of solar energy for hot water and heat and has already begun to use building materials which save money and manpower in the long run.

New Jersey residents will enjoy a variety of entertainment in their major parks through a summer performing and visual arts series. Plans already underway for next summer include performances at twenty-four locations with two weekend craft festivals and seven visual art shows.

Citing 1980 as The Year of the Coast spells out a commitment to strengthen our efforts for the future in the area of coastal resources, to ensure that there will be a shore for our grandchildren and great-grandchildren — even if it may be a different shore. New concepts concerning coastal development and regulation could limit rebuilding of storm-damaged areas and lead to state acquisition of new lands for preservation.

To maintain and strengthen New Jersey's multi-million dollar fishing industry, DEP will aide commercial and recreational fishing interests with technical support, antipollution programs and development of ports and other facilities. DEP's on-going fish studies, an excellent indicator of water contaminants, will be expanded.

New Jersey's 600 miles of state-maintained channels have suffered from lack of funds for cleanup and dredging, something the department hopes to solve in the '80s. The New York Harbor Collection and Removal of Drift Project, funded jointly by DEP and the U.S. Army Corps of Engineers, is improving the aesthetic quality of this area and making the waters safe for navigation. The program has substantially aided DEP's development of Liberty State Park and also supports the department's entire Riverlands Renaissance program. Additional funding will be needed for expansion and strengthening of the marine police in these state-maintained waterways to ensure enforcement of boating, fishing and shellfish regulations and safety, search and rescue operations.

New Jersey voters in 1976 approved casino gambling in Atlantic City, presenting DEP with the challenge of protecting the beaches, wetlands, water, air and historic sites from adverse impacts caused by the surge of development casino construction would trigger. Working closely with local officials, DEP worked within the framework of the Coastal Area Facility Review Act (CAFRA) and other regulations to protect natural values and help ensure Atlantic City's renaissance as a first-rate family resort.

The department's ongoing wildlife programs will concentrate on species and habitat identification and protection. DEP hopes to achieve its long-recognized goal for more progressive programs in the area of conservation education. In the Pinelands, where the habitat is not conducive to large wildlife populations, DEP will initiate strong management and protection techniques to maintain the diversity of species.

Expansion of the Heritage Program to identify and catalog our state's varied historic resources is underway. DEP expects to see growth of the Wild and Scenic Rivers Program beyond the two watersheds currently affected: a section of the Mullica River in Wharton State Forest, and Cedar Creek.

The $8.5 million Pequest Hatchery now under construction will be more than its name implies. It will serve as a fish culture and conservation center as well, with emphasis on urban stocking programs with several varieties of fish including bass, catfish and sunfish. The new hatchery will also serve as an environmental education center.

Additional DEP Programs

An internship program for graduate students in science and applied research will provide new resources to resolve policy issues which may hinge upon scientific factors.

The statewide lecture series on environmental issues scheduled as part of DEP's 10th anniversary celebration is designed to inform the public and to raise its consciousness on environmental issues.

The department's advisory committees and commissions made up of experts in many fields were created to provide valuable input to DEP. To be sure these professionals are utilized to their full potential, DEP plans an extensive review of all existing committees and commissions to strengthen, abolish or revise their composition where it is deemed necessary. And we have established new advisory bodies comprised of experts from the business, labor and scientific communities in order to more fully involve these groups in the complex and often controversial job of protecting our environment.

New Headquarters

In 1980, DEP expects to break ground on its new headquarters in Trenton, the Brendan Byrne Environmental Center, which will stand as a model environmental structure and will demonstrate the inherent relationship between the objectives of energy conservation, sound urban planning and environmental protection.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
1979 FISCAL YEAR SUMMARY OF REVENUES

REVENUES	1979 FISCAL YEAR
Water Fees & Charges	$ 2,966,697
Licenses & Fees	2,507,900
Publications - Sales	269,931
Federal Funds	19,270,284
All Other Sources	2,788,427
TOTAL REVENUES	$ 34,803,239

EXPENDITURES	
General State Operations	$ 35,067,325
State Aid	2,148,480
Capital	814,436
Sub-Total	$ 38,031,241
Dedicated & Special	$ 6,099,443
Federal	17,585,387
Sub-Total	$ 23,684,830

BOND ISSUES	1979 FISCAL YEAR
N.J. Green Acres Bond Act	
1961	$ 7,000
1971	$ 3,159,893
N.J. Green Acres & Recreational Opportunities - Bond Fund 1974	$ 19,797,439
State Water Development Fund - 1958	—
State Water Conservation Fund - 1969	$ 10,278,179
Clean Water Bond Fund - 1976	$ 77,575,798
Beaches & Harbors Bond Fund - 1977	3,300
Sub-Total Bond Fund	$110,821,609

DEBT SERVICE	
Interest	$ 23,491,349
Principal	$ 22,745,000
Sub-Total	$ 46,236,349
TOTAL EXPENDITURES	$218,774,029

ORGANIZATION CHART
DEPARTMENT OF ENVIRONMENTAL PROTECTION