



new jersey department of environmental protection

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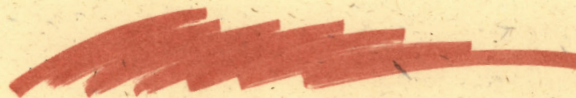
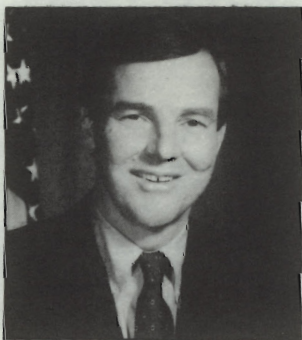


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**To Governor Thomas H. Kean,
Members of the New Jersey Legislature and Citizens of New Jersey:**



Last year, my first year as Commissioner, was most gratifying. The relocation of the Department of Environmental Protection to the new building at 401 East State Street was accomplished with minimum disruption of service. The building, which houses most DEP programs, not only allows for expansion of programs and more efficient delivery of service, but also signifies a new energy and renewed commitment to the environment and the people of New Jersey.

Since the establishment of the Department of Environmental Protection in 1970, as proposed by then Assemblyman Thomas H. Kean, our state has served as a role model for many other states. Our leadership was recognized in 1986 by the Fund for Renewable Energy and the Environment, a Washington-based environmental organization, which rated New Jersey's overall environmental protection program among the top three in the United States. Both our solid and hazardous waste programs and policies were identified as the best working models in the nation.

DEP will continue to aggressively pursue resolution of our diverse environmental problems. There are no easy answers. We are still dealing with historic environmental issues, complicated by unprecedented population growth and land development. Among our priorities, we need to conserve our dwindling open space through comprehensive planning and acquisition programs, and protect our valuable coastal resources.

Your support for environmental programs has been inspiring. DEP will continue to rely on the Office of the Governor and the bi-partisan legislature for support in our mutual mission to protect the environment and the people of New Jersey.

Richard T. Dewling, Commissioner



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coastal resources

Coastal Zone Management

In 1986, the Division of Coastal Resources (DCR) reached many of its goals in updating, improving and implementing New Jersey's Coastal Zone Management Program. With a \$1.9 million grant from the federal government for continuation of New Jersey's coastal management program, DCR has continued to review permit applications, perform coastal planning tasks, inspect and enforce coastal regulations and implement shore protection projects.

One major goal achieved in 1986 was the amendment of the rules on Coastal Resources and Development. These amendments were adopted on February 3, 1986, and represented several years of reviewing existing policies and modifying them to further the objectives of the Coastal Zone Management Program.

Mitigation Policy

A new policy consolidated requirements for mitigation when environmentally sensitive resources, such as wetlands, are permitted to be disturbed or destroyed. In 1986, the mitigation policy was used successfully by DCR to require PSE&G to supply funds to purchase waterfront property along the Delaware River that contributed to the preservation and development of the Shorebird Critical Habitat Protection Area.

Dune Restoration

DCR also continued its implementation of a \$2 million federal grant for Emergency Beach and Dune Restoration projects. The funds are passed to local coastal municipalities for the creation and restoration of dunes. Dunes along the shoreline protect inland areas from damaging waves and act as a reservoir of sand for the beach.

Planning Grants

DCR provided planning grants totaling \$132,000 for 15 projects in the waterfront and shore areas in this sixth year of Local Coastal Planning Grant programs.

The grants were provided to municipalities and counties to stimulate local efforts for the provision of public access and recreational opportunities along coastal bays, rivers and oceanfront, for orderly development of waterfront areas and for the protection of critical natural resources.

Coastal Watch Program

DCR's Public Participation Program produced many noteworthy items, including the Coastal Watch Program, which, when implemented, will provide improved communications between DCR and the public.

Shore Protection

The major shore protection project undertaken and completed in 1986 was the Atlantic City Beachfill. At a cost of \$5.3 million, this beach nourishment project for the Atlantic City oceanfront provided an additional 150 feet in width of new beach. A similar beachfill project is scheduled for the Borough of Avalon for the Spring of 1987. Final funding for the construction of the new south jetty at Barnegat Inlet by the US Army Corps of Engineers was also obtained in 1986

after members of DCR worked with local, county, state and federal officials for many years.


Funding for future shore protection projects was pursued by supporting Governor Kean's call for a stable source of funds. Shore protection funds have been provided by the voters with the approval of bond issues, but this source of funding is not stable and provides money for only a limited number of years. A stable source of funds would allow the DCR to perform many needed projects in a timely fashion and to better plan for future projects.

The DCR's wetlands program made many significant advances in 1986. A wetlands mitigation database was established to track wetlands mitigation projects so that review and enforcement of these projects could be improved. Preliminary results from a wetlands buffer study is providing DCR with a stronger objective background for determining buffer widths in general situations. DCR also established a freshwater wetlands delineation team to provide more accurate wetlands surveys and protect these important environmentally sensitive resources. DCR continues to update coastal wetlands maps.

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local environmental management

The Office of Local Environmental Management (LEM) serves as a liaison between the Department and local health agencies in carrying out the County Environmental Health Act (NJSA 26:3A-21 et seq.). Adopted in 1978, the Act formalized a long-standing cooperative effort between the Department and local health agencies providing environmental health services for the control of air pollution and solid waste, hazardous materials, noise and water pollution.

Local health agencies—municipal, regional or county—are a vital link in the Department's three-pronged objective to:

- protect the health of New Jersey's citizens
 - prevent pollution of New Jersey's environment
 - promote, maintain and improve New Jersey's natural resources
- Local health agencies are best suited

to fulfill these objectives in many areas because of their knowledge of local conditions, their proximity to the problems and their ability to respond in a timely manner.

In its liaison role, the Office of Local Environmental Management works with local health agencies to implement work programs prepared by the counties.


The work program identifies environmental objectives, agencies responsible for program implementation, available personnel and resources and a schedule for achieving program objectives.

After county work programs are approved, the Department negotiates interagency agreements with each county by identifying specific tasks to be accomplished. The interagency agreements define local and state working relationships and responsibilities to meet performance standards in air, noise, water, solid

waste, hazardous substances and laboratory activities.

Problem detection, emergency response, sample collection and analysis, monitoring and oversight, enforcement, community relations and public information and education are just some of the key roles filled by local health agencies working with DEP. To date, 98 interagency agreements have been signed for control activities related to air and noise pollution, solid waste and hazardous material discharge and water pollution.

As in the past years, local health agencies played important roles in dealing with several important environmental issues. Three areas of particular note were the coastal water quality monitoring program, radon monitoring programs in the Reading Prong area in northwestern New Jersey and emergency response activities in Central New Jersey.



environmental analysis

Wetlands Mapping

The Office of Environmental Analysis (OEA) has played an important part in identifying, through a definitive mapping process, critical coastal wetlands essential to the preservation of New Jersey's environment.

From January 8, 1986, to December 12, 1986, OEA prepared 151 maps. For the same period, the office forwarded 158 maps to the Tidelands Resource Council for review and adoption.

GIS

DEP is committed to the development, acquisition and implementation of a computerized Geographic Information System (GIS). In 1986 OEA made a contract with the State to provide new State-wide photographs designed to meet GIS needs and to offer the most up-to-date information regarding New Jersey's ever changing landscape.

The information gained from this overflight will assist OEA in documenting recent changes to coastal shorelines and tidal wetlands. The photographic record

can help agencies and offices concerned with compliance monitoring, land use, development patterns, site assessments and State plans for development, conservation and preservation.

OEA proposes to develop, implement and complete over a two-year period a State-wide land-use map that will help public and private environmental organizations keep track of patterns of development. OEA is also preparing a map of the State's interior wetlands, which will help us target protected areas.

environmental quality

Public Participation

Throughout 1986, the public's attention was directed on an almost daily basis by the media to many of the contemporary environmental problems addressed by the Division of Environmental Quality (DEQ).

As a result, DEQ policymakers came to realize that, because of the strictly technical and scientific nature of most of the business conducted by a regulatory agency, there are times when the public is disinclined to see the DEP as other than an impersonal arm of State Government. This became particularly apparent when DEQ was confronted with making controversial decisions in the areas of air quality and radioactive waste disposal.

In this vein, as one of its primary goals for 1987, DEQ has begun a concerted effort to supplement its public education and participation activities and to assume a more active role in addressing the concept of environmental risk so that it can reassure an increasingly sophisticated public on those occasions when their fears may overshadow the facts.

Reorganization

On a different note, the highlight of the year for DEQ was its administrative reorganization, which took place concurrently with an overall restructuring of the DEP. The reorganization consisted of a series of shifts of technical specialists from within DEQ, the creation of several completely new programs and an expansion of the present programs; at the same time, the plan provided for future growth that DEQ may require. Given all of these long-awaited and long-overdue changes, DEQ is better equipped to meet the challenges of 1987 with greater efficiency, improved staff morale and a reinforced sense of purpose.

Air Quality Standards

It is not news that New Jersey is facing a severe shortage of landfill space. The State is actively meeting the solid waste disposal crisis, through the DEP's support of resource recovery

technology. Among the requirements that a proposed resource recovery facility must meet is a demonstration that it will not cause or contribute to a violation of any ambient air quality standard.

Long-term studies show progress being made in New Jersey toward meeting national ambient air quality standards. For example, the trend in motor vehicle-related pollutants—carbon monoxide, ozone, nitrogen dioxide and lead—indicates that the federal motor vehicle pollution control program and New Jersey's mandatory motor vehicle emissions inspection and maintenance program are both working.

Although ozone and carbon monoxide levels improved in the late 1970's and early 1980's, it is apparent in 1986 that stricter regulations controlling Volatile Organic Substances (VOS) from automobiles, among other sources, are still needed to avoid unhealthy levels. Motor vehicles are also a major source of lead emissions. With the gradual switch from leaded to unleaded gasoline, however, lead concentrations in urban air have dropped dramatically in the 1980's.

Radiation Protection

The naturally occurring environmental phenomenon known as radon continued to be a priority at the DEP in 1986. Significant progress in radon detection and mitigation has been made, thanks to the combined efforts of DEQ's radiation protection program, the EPA and the New Jersey State Legislature.

A \$1.3 million State-wide scientific study of radon funded through a bill sponsored by Senator John Dorsey (R-Morris) and Assemblyman Richard Zimmer (R-Hunterdon) was begun for the DEP this year by Camp, Dresser and McKee. The intent of the study is to pinpoint the locations as well as the specific housing types throughout New Jersey that may predispose residents to be at risk for radon exposure. The DEP is also supporting an epidemiological study begun by the Department of Health that will determine the link between risk of lung cancer and residential exposure to radon gas.

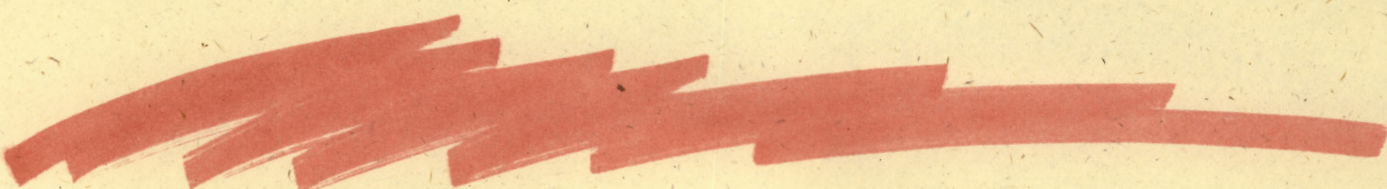
One of the issues that the DEP intends to direct its attention to in the upcoming year, by means of a public information campaign, is the apparent public apathy about the seriousness of radon as a health hazard.

Continued

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environmental quality continued

Noise Control

Throughout 1986, the Office of Noise Control diligently continued its enforcement of stationary industrial and commercial noise regulations, and many facilities were modified and rendered much quieter. The Office also became more actively involved in reviewing the Environmental Impact Statements attached to proposed resource recovery and landfill facilities. In the face of the public's becoming more aware and less tolerant of airport noise, the staff has expanded their efforts to examine the problem of aircraft noise, and noise abatement solutions at Newark Airport have been discussed with the Port Authority. Noise became a key issue in the project to widen the New Jersey Turnpike, and, again at public prompting, regulations controlling fire siren noise were thoroughly re-examined with an eye to future reform.

Pesticide Control

In 1986, the Division's Bureau of Pesticide Control revised and enforced ten subchapters involving all aspects of pesticide control. New farm-worker regulations were put into action to make sure that pesticides are used safely on farms and to minimize exposure of field workers to pesticides. Since many farm workers speak Spanish, a bilingual investigator has been hired to serve both as a liaison between the Bureau, the farm workers and other agencies and as a pesticide regulation enforcement officer.

The Bureau also entered into a cooperative agreement with the US Food and Drug Administration to monitor pesticide residue on food crops. With the cooperation of farmers, Bureau investigators collected samples at New Jersey farm sites and sent them to the FDA lab for analysis. All of the samples collected were in compliance and within the safe standard for the pesticide and the crop. The Bureau will continue (and is hoping to expand) this program during the 1987 growing season. Much of the credit goes to the State's farmers, who are doing their part to provide the consumer with fresh and safe produce.

Environmental Labs & Quality Assurance

Although in comparison with DEQ's other programs the Bureau of Environmental Laboratories is somewhat less well known, it performs an essential service to the DEP, private business and industry by performing chemical and biological sampling and analyses. Radiological and chemical pollutant analysis is a specialty.

The Office of Quality Assurance is an essential behind-the-scenes unit responsible for developing and enforcing all DEP quality assurance policies and procedures. This unit administers the State Laboratory Certification Program by conducting investigations of laboratories and assisting in the management of environmental research.

Enforcement

The Division's busy Enforcement unit saw an impressive increase in the number of penalties collected in 1986. During the 12-month period ending June 30, \$1.7 million in penalties was collected; the 12-month period ending November 30 saw \$2.2 million. An average of 25 to 30 hearing requests per month were processed—a considerable improvement over 1985.

When the public becomes more familiar with the kinds of penalties levied, the future promises better compliance.

In 1987, the Enforcement unit will bring a tougher approach to bear when dealing with industrial polluters, especially the repeat offenders, so that their treatment will be a deterrent to others.


Catastrophic Prevention

The Release Prevention and Response element was created by the DEP to carry out the provisions of the Toxic Catastrophic Prevention Act (TCPA), signed by Governor Kean on January 8, 1986, in the wake of the devastating chemical accident in Bhopal, India. This element also administers the Right To Know program and a centralized Emergency Response unit.

At the end of 1986, the TCPA program reported that over 1,800 companies had returned forms mailed to them by DEP requesting an inventory of any of eleven "Extraordinarily Hazardous Substances," identified by the legislation, that are manufactured, handled or stored on site. After the forms have been reviewed, some of these companies will be required by the DEP to formulate a risk management program if they do not already have one.

In 1986, the Right to Know unit was moved from the Office of Science and Research to the Release Prevention and Response unit as part of the DEQ's reorganization in an effort to promote a better coordinated, more comprehensive program on the identification and management of hazardous substances in New Jersey. Toward this end, a State-wide inventory of hazardous substance use, production, storage and disposal practices is being compiled and will be regularly updated.

With the enactment and enforcement of current and future regulations, New Jersey will have the most comprehensive and aggressive regulatory base in the nation for controlling the risks presented by the manufacture, handling or storage of potentially dangerous chemicals in the environment.



fish, game & wildlife

Resource Education & Development

The year 1986 was a landmark one for the Division of Fish, Game and Wildlife (FGW). Throughout the year FGW made progress in enforcing wildlife laws, educating the public to the importance of Living Wild resources, providing recreation and contributing to the State economy.

The Pequest Trout Hatchery and Natural Resources Education Center was open each weekend, and over 50,000 visitors toured the hatchery. The trout-rearing operation at Pequest continued to exceed expectations, producing 600,000 brook, brown and rainbow trout for stocking in both spring and fall.

The Hackettstown hatchery raised 26,000 striped bass fingerlings for stocking in the tidal waters of the Navesink River in Monmouth County in an attempt to reestablish a breeding population of striped bass for the Navesink-Shrewsbury River system. The bass are doing extremely well; some exceed 20 inches in length.

Enforcement

The Pollution Unit within the Bureau of Law Enforcement collected a record \$120,000 in fines from polluters of New Jersey waterways. In addition, Operation Game Thief has been restructured to provide for the reporting of a much broader number of violations, including pollution and illegal dumping.

Recreation

Recreational opportunities provided by the State's wildlife resources increased in 1986, as did the wildlife enthusiast's contribution to the State's travel and tourism industry. Combined deer seasons alone contributed \$100 million to the State's economy.

Based on available information, New Jersey's 4,985 square miles of deer range support a summer population of 135,000 animals. On a local basis, deer densities range from just a few to more than 50 deer per square mile of deer range.

Habitat Protection

Habitat protection continues to be a key priority. The Delaware Bay shore was recognized as the first "Shorebird Reserve" in the Western Hemisphere. The Endangered and Nongame Species Program completed several projects on the Delaware Bay involving migratory shorebirds. Six surveys of the entire bay were completed in conjunction with the New Jersey Audubon Society and the Division. A second survey of the major beaches was taken to determine the effect on migratory birds caused by human use of beaches.

Significant additions to critical wildlife habitat were made through use of the funds derived from the New Jersey Waterfowl Stamp program, now in its third year. Nearly \$1 million has been generated since the stamp was introduced in 1984. This revenue comes from the sale of the stamps, required of anyone over the age of 14 wishing to hunt waterfowl in New Jersey, and from the sale of the waterfowl stamps and prints to collectors. To date the State has spent more than \$285,000 to purchase nearly 2,500 acres of prime wildlife habitat through the stamp program.

Hunter Education

New Jersey's mandatory hunter education program has been extremely active, with more than 18,000 students successfully completing a hunter education course during the past year. This program has been singled out as one of the best in the nation.

Endangered Species

During 1986, the Endangered and Nongame Species Program released nine bald eagles, which were imported from Canada and raised in New Jersey. Thirty-six eagles have now been raised and released in New Jersey since the eagle restoration program began four years ago.

New Jersey continued to play a major role in the nationwide effort to restore the peregrine falcon population. During 1986, New Jersey led the way with more breeding pairs of peregrines than any other state east of the Mississippi River. New Jersey peregrines were found to be nesting at double the rate anticipated at the start of the restoration program. So far, 15 pairs of nesting peregrines have settled here, and the chick production is good.

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green acres

In 1986 Green Acres celebrated its 25th anniversary with a ceremony at the Statehouse, at which Governor Kean and 22 others received certificates of appreciation for their support of and contributions to the program. On the State level, 197,543 acres have been preserved, and local efforts have set aside another 55,053 acres.

Green Acres continued its efforts in stream corridor preservation by holding three meetings to introduce a pilot project for the Raritan River Basin. The project has the endorsement of the Division of Water Resources and the Department of Agriculture.

Eighty-four local project applications were received, requesting \$8,142,905 in grants and \$42,204,620 in loans for a total of \$50,347,525. Another \$28,847,525 in applications were requested but could not be accommodated owing to limited funding.

In Hamilton Township, Atlantic County, 4,000 acres were acquired near Makepeace Lake. Seventy-five percent of the acquisition price was provided by federal Pinelands 502 funds. Though split by the Atlantic City Expressway, this area is considered by scientists to be an important environmental "connector" between the state's northern and southern pine areas.

Green Acres spent \$119,000 to purchase 147 acres as additions to Bass River State Forest, Turkey Swamp Wildlife Management Area and Ringwood State Park.

Governor Kean attended a press conference at Turtle Back Zoo in West Orange, at which a \$250,000 Green Acres grant was announced. The grant marks the first phase of a master plan for a New Jersey Wildlife Interpretive Center that promotes the concept of a "cageless" zoo.

The town of West New York, through a \$277,000 grant, expanded a recreation site originally acquired through the 1961 bond fund. The park is an important part of a recreation network in one of the most highly urbanized areas in the country.

The borough of Lawnside, Camden County, dedicated Recreation Park, a complex developed with the aid of a 50 percent \$200,000 Green Trust grant. The site will be accessible to the handicapped and will be the first of its

kind in this area. Lawnside, a minority community, is a first-time applicant.

Secretary of the Interior, Donald Hodel, announced that New Jersey will receive nearly \$3 million from the Land and Water Conservation Fund for outdoor recreation. The State will receive a \$1,662,904 grant amendment to augment an earlier grant to purchase 222 acres of land for Monmouth County parks that border the Swimming River Reservoir.

A ground-breaking ceremony was held for Phase Two of Smithville Park in Burlington County. This phase includes the dredging of Smithville Lake and the creation of fishing piers, a boat dock, a canoe-landing area on the Rancocas Creek, a picnic area, walkways, a tot lot, comfort stations and shelters and utilities.

On November 18, Exchange Place Park in Jersey City was dedicated. With funding from a \$1.25 million Green Acres grant, a \$1 million federal Land and Water Conservation Fund grant and \$250,000 from Jersey City, this waterfront pier park will include sitting areas, landscaping, a brick-paved area,

an exhibit area, piling removal and bulkheading, lighting, and an amphitheater. The park affords a spectacular view of the Manhattan skyline and is considered a key element in the revival of Jersey City's waterfront.

Green Acres closed 1986 at a financial crossroads. On the State side, all monies have been allocated. Unless there is additional funding, no new projects will be started and some current ones will be curtailed. It is projected that current programs will be completed in 18 months.

The status of the local program is just as critical. The last \$20 million of capital appropriation from the 1983 bond issue will be allocated to project proposals received prior to March 31, 1987. There will only be approximately \$6 million available to meet the next round of annual requests, which have ranged from \$52 to \$113 million.


Any additional open space must be acquired in the next five years. Without a substantial funding source, the Green Acres Program will cease to exist.

There is a State-wide public open space deficit of 300,000 acres.

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hazardous site mitigation

Superfund

New Jersey's national leadership position in the hazardous waste program is exemplified by the fact that 97 New Jersey "abandoned" sites are listed on EPA's "Superfund" National Priority List (NPL). We have more sites on the NPL than any other state, which represents our decision to identify sites and to take advantage of federal funding to permanently correct the problem.

The major strides forward in New Jersey can be attributed to an evolutionary period that spanned from 1972 to 1982. The Department developed regulations and legislation designed to control and mitigate hazardous waste spills. For example, the Spill Compensation and Control Act of 1977, and its subsequent amendments, established notification procedures in the event of a discharge of hazardous waste and gave the Department authority to treat discharges on either an emergency or long-term basis. The Spill Act also provided the Department with the ability to seek damages from responsible parties when public funds were used to clean up a site. The evolution of this regulation served as a model for the federal "Superfund" program.

The Division of Hazardous Site Mitigation (HSM) has worked to develop the site remediation process and a consistent policy that would be used to assess needs at all sites. The first phase of the remediation process is to identify sites through permit compliance monitoring, new permit requests, property sales, formal inventories and citizen complaints. The sites are then investigated and assessed, and if they pose an immediate threat of fire, explosion or direct human contact, the Department is empowered to immediately secure the site, limit public access and contain the hazard. Following stabilization for situations that are not emergencies, the sites are ranked according to their potential impact on public health and the environment.

During the next step, remedial investigations are undertaken to identify the scope of the contamination problem. A cleanup feasibility study is undertaken to determine the course of action most suitable, and detailed plans are then

prepared and implemented.

HSM also supervises the cleanup performed by contractors. State monitoring of the site may be required for as long as 15 to 30 years in order to ensure that proper cleanup actions have been taken and have been effective.

The Division's Bureau of Site Management has supervised site investigations at over 90 hazardous waste sites, 68 of which are Superfund sites. The Bureau's missions are to stabilize sites in order to eliminate immediate dangers to the public and to manage the contractors performing Remedial Investigation Feasibility Studies (RI/FSs), which lead to a solution decision.

There are RI/FSs underway or completed at 91 of the 97 sites on the NPL. These sites represent the most complex situations needing full and final remediation. Multiple phases and concurrent projects are frequently conducted at these sites.

During the same period, eleven RI/FSs for Superfund sites were completed. The NJDEP accomplishments in this area account for 13% of the total Superfund program, far more than any other state in the nation. These completions are particularly significant since they occurred in a year when the federal Superfund program was substantially crippled owing to the lack of reauthorization. The foresightedness of the New Jersey program enabled the State to make available to the USEPA over \$37 million to continue with the Superfund projects in New Jersey.

The Bureau of Community Relations is involved in ongoing communication with concerned citizens, public officials and the media in regard to the State cleanup activities. Informational fact sheets and brochures are published and distributed; public meetings, briefings and remarks are conducted; and in 1986 over 4,000 requests for information on hazardous waste cleanups in New Jersey were answered. The Bureau is currently preparing a complete audiovisual program on hazardous waste issues.

Environmental Measurements and Quality Assurance

During calendar year 1986, the Quality

Assurance Section of the Bureau of Environmental Measurements and Quality Assurance (BEMQA) continued to provide the intra- and inter-divisional analytical data needs. This was done through validation of detailed analytical data deliverables from sampling taken in CERCLA, Spill Fund, RCRA and ECRA Projects. Based on these reports, investigators were able to make analytical decisions regarding site contamination, remediation, resampling requirements and contract compliance for payment purposes. One of the most significant accomplishments was the development and implementation of QAX, a computerized data logging system used to track and update the status of all investigations. A similar system is now under development for the tracking of field sampling audit reports.

It is the philosophy of BEMQA Quality Assurance to work constructively with laboratories under contract to ensure high-quality data. Toward this end, over twenty laboratories have been audited to assess capabilities and ensure that HSM's analytical needs be met. The result of the efforts has been the development of good rapport with laboratories and familiarity with their practices and methods of reporting results.

Training for departmental personnel in the area of environmental chemistry has been in aim of Quality Assurance. Since October 1985 this office has arranged a continuing education course for credit in organic chemistry for environmental scientists at Trenton State College. Formal courses in gas chromatography and mass spectroscopy by the Finnigan Corporation are also planned for 1987.

The issue of laboratory-induced contamination of samples and blanks and the effect on data interpretation has begun to be studied. Representatives of BEMQA meet regularly with USEPA Region II officials to discuss problems. QAS had designed a special research project, to be carried out at the NJDEP Environmental Laboratory, to evaluate methylene chloride contamination levels in samples and blanks and to detect low methylene chloride concentrations with quantitative certainty of results. We expect to complete work for this problem, critical for potable water analyses, during early 1987.

hazardous waste management

Cradle-To-Grave Management

The Division of Hazardous Waste Management (HWM) was created to design and implement programs to manage hazardous waste in a "cradle-to-grave" approach. "Cradle-to-grave" describes a program that regulates hazardous waste from its point of generation to final disposal. The focus of the HWM is to ensure that the industrial community takes responsibility for managing hazardous waste in an environmentally sound manner through adherence to regulations.

To accomplish our goals, HWM has developed an integrated case management strategy to facilitate routine advancement of hazardous waste cases. New Jersey currently has five primary program areas dedicated to the management and remediation of hazardous waste sites so that individual sites can be mitigated in a variety of ways.

Polluters Pay

One of the critical initiatives HWM has supported very recently is the establishment of a hazardous waste "user fee." The Division recognizes that the initiative for financial self-sufficiency and prevention of future hazardous waste problems involves application of the "polluter pays" principle. The Department's Hazardous Waste Management Program includes registration, issuance of permits, compliance monitoring and enforcement for over 4,500 hazardous waste handlers (generators, transporters, treatment, storage and disposal facilities). The State is developing fee programs to establish a financial mechanism for ongoing support of regulatory, planning and enforcement aspects of the hazardous waste programs.

Enforcement

Enforcement activity also includes the weekly inspection of at least 20 major commercial hazardous waste facilities across the State, in addition to inspections of hazardous waste generators and transporters annually. Nearly 600 investigations of reported

spill and improper disposal incidents took place in 1986.

The Division's Special Operations Unit also worked closely with the State's Criminal Investigation experts in order to support and arrange for overt and covert investigations as well as for the execution of criminal justice warrants.

To further provide efficient Department organization and better utilization of resources, HWM's staff of computer and communications experts have created and developed data management systems to track the numerous activities conducted by our professionals. Hazardous waste manifests are in a computerized system in order to track the movement of wastes throughout the State.

Household Hazardous Waste

HWM assisted in the successful collection of household hazardous waste in six counties this year. A "household hazardous waste collection day" was held in each county, with both federal and county funding. The State assisted the counties in obtaining the federal money as well as overseeing the safe collection and disposal of a variety of wastes, including paints, pesticides and herbicides. Counties expressed their desire to hold continuous programs, and

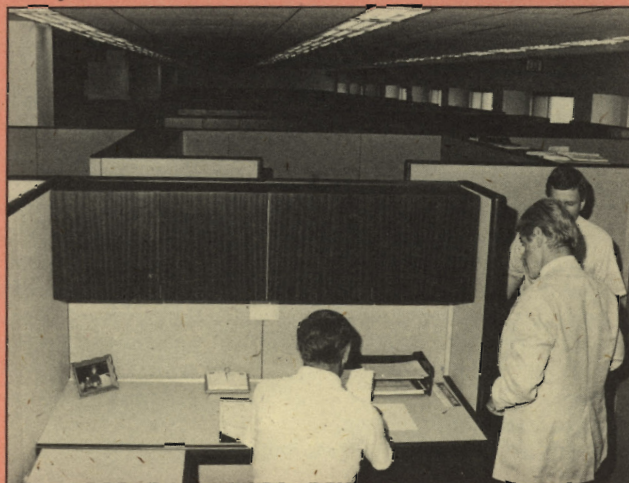
in fact one county has followed the example and this year held its own pesticide collection day.

Minimizing Production


During 1986 HWM began to take a hard look at ways to minimize the production of hazardous waste in the State. Realizing that this is the key to the prevention of hazardous waste problems, DEP has committed itself to supporting waste minimization efforts. A number of activities will be produced, including waste reuse by manufacturers through a waste exchange program as well as on-site recycling of waste. A Source Reduction Task Force, which the Division will support, will also be developing and publicizing source reduction methods for the benefit of manufacturers in order to further protect New Jersey's environment.

Upon implementation of these initiatives, New Jersey will be the first state in the nation to have an integrated program that reduces and minimizes wastes at their source to the greatest degree practicable while aggressively regulating wastes that are produced. This will help prevent future problems and simultaneously address past cleanup problems.

To better serve you...



....efficient use of space.



parks & forestry

State Park Service

Over nine million people visited New Jersey State parks, forests and historic sites in 1986.

Liberty State Park was in the national spotlight during the July 4th celebration of the Statue of Liberty Centennial. During the week of June 28 through July 6, the Park hosted a variety of exciting programs including ballet and dance performances, concerts, dramatizations, sporting events and a naturalization ceremony. The Park also provided berthing space for over 50 tall ships participating in the "Parade of Sail." The internationally televised "Americana Music Concert" was held at the Park on the evening of July 4th, and hundreds of thousands of visitors chose the Park as their vantage point to view the largest fireworks display of all time, which followed the concert. Throughout the week-long celebration, employees of the DEP volunteered their time to act as guides to the many Park visitors.

More than one hundred thousand persons viewed Halley's Comet at various State park locations throughout the year. Interpretive staff at High Point and Island Beach planned and conducted tours to view this once-in-a-lifetime event.

Several capital improvements to State Park facilities were completed in 1986. Among them:

- Allaire Visitors' Center opened to enhance visitors' understanding of the ironworks village and industry.
- Dam renovation projects (significant to recreational use) occurred at Parvin Lake and Double Trouble North Pond.
- Sanitary facilities were completed at Spruce Run, Stokes (Shotwell Camping Area), Wharton (Atsion Camping Area) and Cheesequake (Ferry Point, Sand Pit and Proing Hill).

The mission of the Division of Parks and Forestry (PF) is to maintain and protect the quality of our traditional parks and natural resources, but this is difficult to accomplish because of budgetary restraints. Public-private partnerships are being sought to allow park and public recreation development through private investment incentives. During 1986, this concept was initiated

with Farley Marina and Kuser Mansion/Skylands Manor. Both projects should be completed in 1987.

State Forestry Service

Severe drought conditions in 1986 raised forest fire danger to the highest levels since 1963. This resulted in several major fires, including the largest one in North Jersey in 10 years. Despite the overall potential for fire, a major disaster was averted through rapid initial air attack and aggressive fire suppression tactics. Statistics for the year were near the five-year average, with 1,651 wildfires burning 10,785 acres. Not only was a potentially disastrous fire season averted, but the Bureau of Forest Fire Management was recognized nationally for its fire prevention efforts. A Bronze Smokey the Bear Award and two additional awards for individual program achievements were presented. A notable accomplishment in 1986 was the assistance in forest management on Division of Fish, Game and Wildlife lands, which resulted in improved wildlife habitat.

The State Forest Nursery provided 762,000 genetically improved forest seedlings and shrubs to the public and private sector. At Belleplain, Wharton, Lebanon and Stokes State Forests and High Point State Park, 124,000 seedlings were planted. In addition, private landowners reforested 472 acres with seedlings purchased from the nursery.

Natural Lands Management

In 1986, the Natural Areas Program designated the first site to the State Natural Areas System since 1978. Over 1,500 acres of Bear Swamp, Cumberland County, were designated as a Natural Area following the Department's acquisition of the site. The area is significant for its hardwood swamp and mature forest growth, in addition to supporting the only nesting pair of bald eagles in the State. In March, over 23,000 acres of Wharton State Forest were listed on the State's Register of Natural Areas, in recognition of the area's importance as a habitat for endangered species.

New opportunities for recreation were increased by the Open Lands Management Program this year. The program provided grants to develop recreational opportunities on private land for public use. Landowners assume responsibility for maintaining the site for a specific period of time. The cost of developing facilities averaged only \$13 an acre, a remarkable savings in supplying new recreational opportunities for our citizens through public-private partnerships.

In May 1986 the Natural Lands Trust sponsored a dedication of the first "Sister Reserve." Governor Kean joined with Delaware's Governor Castle to proclaim the lower 25 miles of the Delaware Bay shore as the first shorebird reserve in the Western Hemisphere. Over 21 states and four foreign countries have joined the "Hemisphere Shorebird Reserve Network." Over \$600,000, provided by Public Service Electric and Gas Company as part of a coastal development mitigation requirement, has been invested by the Trust to ensure preservation and management of these areas.

Historic Preservation in New Jersey

In October, the Office of New Jersey Heritage sponsored a "Friends of the Parks" meeting and cosponsored with Preservation New Jersey a series of six workshops to train local historic district commission members. The Office was actively involved in outreach and planning projects to strengthen historic preservation throughout the State. Accomplishments also include funding the final component of the Pinelands Commission's cultural resource plan, contracting for the first phase of developing a comprehensive State historic preservation planning process and continuing to promote the Main Street New Jersey Program offering technical advice to communities.

The Office is coordinating the development of historic sites planning and is working toward establishing the New Jersey Council of Reenactment Advisors. Several capital construction

Continued

parks & forestry continued

projects involving restoration and renovation of State-owned historic sites were initiated on the following sites:

Somers Mansion, Ringwood Manor, Old Barracks, Kuser Mansion, Whitesbog Village, Allaire Chapel, Fort Mott State Park, The Hermitage and the Allaire Mansion.

In order to continue to develop, improve and rehabilitate State-owned park facilities, forest and natural lands, PF will pursue stable funding for capital improvements and land acquisition. Without such funding, State-owned historic sites and park facilities will continue to deteriorate.

PF will develop policies, guidelines, and priorities for woodland management programs in response to the amendments adopted to the Farmland Assessment Act. Through policies and regulations, the Division will promote the best forest management practices on privately owned land to eliminate excessive and unnecessary cutting and assist tax assessors in uniformly administering the act as it pertains to woodlands.

PF will pursue the passage of legislation to provide volunteers with liability coverage. Volunteers perform important work in State parks, forests,

historic sites and forest fire programs, and liability coverage is necessary to continue existing and to create future volunteer programs.

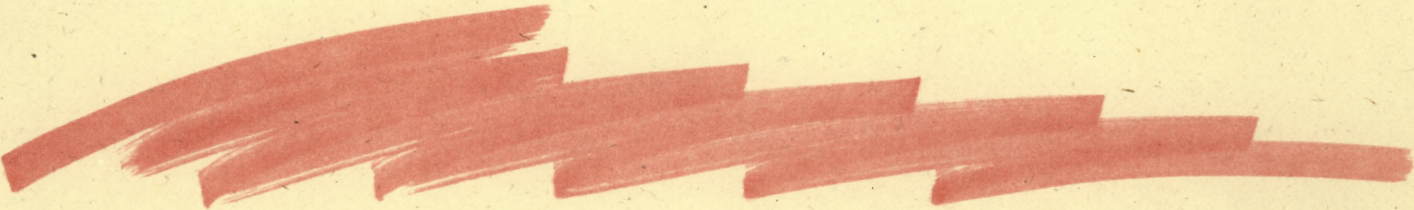
The Office of Natural Lands Management will initiate the development and management of Cedar Creek Trail through volunteer groups. The Office will also initiate a study of the Lamington/Black River Corridor and develop local support of a river program.

Construction of the seawall and a marina at Liberty State Park will be completed by 1988.

To better serve you...



....pleasant working conditions.



science & research

The year 1986 in the Office of Science and Research (OSR) was marked by substantial accomplishments in research endeavors, development of a bold, new environmental health assessment program, determination of drinking water standards and the establishment of a Department-wide Geographic Information System and Departmental Library.

Protection Of Public Health Through Research

Continuing to fulfill its responsibility to protect public health and welfare by identifying both the occurrence of toxic and hazardous chemicals in the environment and potential human exposures, OSR initiated a number of new research activities, successfully completed or continued work begun previously, and broadened its use of the risk assessment process.

An important aspect of OSR's mission is to develop and apply innovative approaches to understanding potential health effects caused by toxic contamination of air, water, soils and biota. Consequently, a number of studies performed in 1986 were unique in their objectives, design or scope.

For several years, intense public attention has been focused on potential environmental impacts of the Ciba-Geigy Corporation, Toms River facility, with particular concern regarding the industrial effluent discharged by the plant into the Atlantic Ocean. Ciba-Geigy discharges approximately four million gallons a day of effluent, the contents of which have been only partially characterized, into the ocean off the coast of Ortley Beach. This outfall is the only industrial discharge off New Jersey's coast. Concern over the ocean discharge centered on potential risks posed by the discharge to public health, especially to bathers, as well as effects on the aquatic biota.

In order to assess the potential health risks, NJDEP included a requirement in the company's discharge permit that a series of research studies be conducted on the effluent under the supervision of OSR. The studies began in May 1986 and several phases are now completed. The entire project is scheduled to be

concluded in the Spring of 1987. Uniquely comprehensive in their scope and intensive in their level of detail, these studies are focusing on where the effluent goes once discharged, identification of the chemicals in the effluent and effects of the effluent on marine organisms. The data generated by these studies will be used to refine an earlier risk assessment, the evaluation of the effluent's potential public health implications.

Because landfills not only release chemicals that can contaminate ground water but also produce potentially toxic gases, OSR initiated a comprehensive investigation of volatile organic air emissions from landfills. This investigation, the first of its kind in New Jersey, will quantify the toxic substances emitted by ordinary landfills by using a sophisticated mobile monitoring laboratory.

In February, the report "A Study of Dioxin in Aquatic Animals and Sediments" was released. The report describes an extensive OSR study of dioxin bioaccumulation in striped bass, blue crabs and lobsters in the Passaic River and Newark Bay. This report set the stage for public health advisories concerning consumption of these species as well as further studies looking at how dioxin can move through aquatic systems. As a result of this and similar work on PCBs performed by OSR, New Jersey was one of two states chosen by the USEPA to participate in the development of a ten-year plan for managing near-coastal waters.

A technical report, "The Occurrence and Fate of Toxic Substances in New Jersey Sewage Treatment Facilities," was issued in October. This document summarizes the results of priority pollutant analyses of wastewater or sludge, or both, at 16 sewage treatment plants throughout the State. In addition to the chemical analysis, Ames mutagenicity testing, fish bioassays and air sampling for volatile organics were performed by OSR and the Division of Water Resources at selected facilities.

OSR continued its evaluation of innovative biological analyses for the detection of toxic substances in environmental media. OSR has expanded its mutagenicity testing program and is now evaluating the

impact of environmental samples on mammalian genetic material. Also, the use of a new fish (Medaka) bioassay for detection of carcinogens and other toxic substances in wastewater is being investigated.

OSR recognizes, as does the federal EPA, that the use of pesticides and their potential for environmental contamination and, ultimately, human exposure are inadequately understood. As a result, OSR intensified its pesticides research effort in 1986 by (1) developing a three-year survey to determine identities and quantities of pesticides used in New Jersey, (2) investigating pesticide contamination of ground water to determine if agricultural chemical use is seriously degrading New Jersey ground water quality in the Coastal Plain and (3) participating on an interagency Pesticide Review Committee whose purposes are to evaluate toxicity and environmental fate of problem pesticides identified by EPA and DEP and to develop a procedure for evaluating environmental and public health risks possibly associated with a pesticide before it is allowed to be registered in the State.

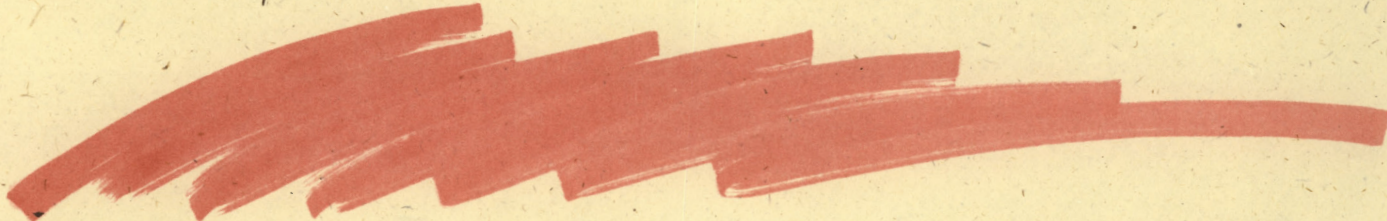
Risk Assessment Process

Risk assessment is a technique that estimates the relationship between the degree of toxic chemical exposure and the extent of health effects. In the short time since its inception, OSR's Risk Assessment Unit (RAU) has evolved into a leading influence in providing risk assessment guidance to the Department and the State and has undertaken the challenging assignment of addressing New Jersey's environmental problems with state-of-the-art risk assessment approaches.

One of the Unit's major activities in 1986 was its participation in implementation of the A-280 Amendments to the State Safe Drinking Water Act. The Unit had the extremely important job of developing the health-based standards for contaminants in drinking water. This process, as well as OSR's other accomplishments in implementing the Amendments, is described below.

Another major function of the RAU has

Continued



science & research continued

been to provide toxicity information, original risk assessments and other technical information, including the most current risk assessment policies of the EPA, to the Divisions of Waste Management; Water Resources; Environmental Quality; Fish, Game and Wildlife; Green Acres, and the Office of Science and Research. Over 100 such requests have been addressed to date by the Unit; they involved such issues as dioxins in fish and shellfish, risk assessment of the Ciba-Geigy effluent and effects of pesticides and radon at levels present in homes. The RAU has responded to requests from the Commissioner, local officials and the general public concerning chemical hazards and their effect on human health.

When currently available information or approaches were judged to be inadequate in evaluating the risk of a situation, the Unit has initiated research projects to assist in resolving those questions. These include the potential for chromium toxicity from contaminated soil in Jersey City and an investigation of the relationship between birth outcome and the level of pesticides and other contaminants in parental tissues. Other projects have been oriented toward increasing knowledge of, or ability to apply, general risk assessment principles. An example of this is an examination of the use of pharmacokinetic modeling in risk assessment.

To promote awareness within DEP of current risk assessment issues and recent developments within the field, the RAU organized the "Current Concepts in Risk Assessment" seminar series. This highly successful series featured speakers of national reputation providing presentations on relevant issues, including asbestos, PCBs, risk communication and carcinogenesis. Their presentations were attended by personnel from all DEP divisions and representatives from other State agencies and the interested public. Additionally, the Unit has been responsible for organizing and coordinating an Inter-Agency Risk Assessment Committee, an internal working group formed to promote risk assessment information exchange between all personnel in DEP and the

State Department of Health involved in the risk assessment process.

The A-280 Amendments to the State Safe Drinking Water Act are implemented jointly by the DWR Bureau of Safe Drinking Water and the Office of Science and Research. These amendments require the development of maximum contaminant levels (MCLs) for 22 contaminants. During 1986, OSR's primary A-280 activities were in the areas of risk assessment, analytical methodologies and research programs involving the detection and fate of contaminants in potable water. Two major milestones in the development of MCLs were accomplished this year: Both the final health-based levels and the practical quantitation levels (PQLs) have been accepted by the appropriate subcommittees of the Drinking Water Quality Institute (DWQI), the Department's external A-280 advisory body. In addition to water-treatment capabilities, the health-based levels and the PQLs are the critical factors needed for development of MCLs. The DWQI is expected to recommend MCLs to the Department in early 1987.

OSR derived the health-based numbers for all 22 contaminants following extensive reviews of the toxicology literature, selection of appropriate health endpoints and performance of quantitative risk assessments. Comprehensive support documents were prepared by OSR's Risk Assessment Unit detailing the chemical properties, metabolism, health effects, study selection and risk assessments for each contaminant. External technical peer review was incorporated into each document prior to proposal of the final health-based levels to the DWQI subcommittee.

The establishment of reliable, routine analytical quantitation limits, or PQLs, for the A-280 contaminants required OSR to initiate an extensive research program with the A-280 certified laboratories. This study was initiated in July and entailed multiple analyses of standard concentrations of low levels of A-280 contaminants in water. Final PQL levels were prepared and accepted by the appropriate DWQI subcommittee.

Substantial accomplishments of OSR's A-280 research activities, in addition to the completion of the PQL

study, include the conclusion of a Rutgers analytical study to establish minimum detection limits for A-280 compounds in ground and surface water matrices, the development of a proposed alternate technique for the detection of asbestos fibers in potable water, the collection of 50 ground water samples for analyses of approximately 20 nonpriority pollutant pesticides and the establishment of a testing apparatus at Rutgers University to evaluate the efficiency of a variety of point-of-use carbon filter units in removing organic drinking water contaminants.

Also, with the A-280 program, OSR conducted a survey of other states actively involved in setting guidelines or standards for organic materials in potable water. The results of this survey were presented to EPA and the states involved at an EPA-sponsored meeting of the Federal-State Technical Regulatory Alliance Conference.

Environmental Health Risk Assessment Program

For several years, OSR has maintained a distinct unit dedicated to conducting environmental health risk assessments and has employed the use of multimedia techniques to study various aspects of toxic contamination. It is this experience in research of environmental health and effects that has led OSR to become the focal point of the 1986 Governor's initiative to establish an Environmental Health Risk Assessment Program for New Jersey. This program establishes within OSR a new office, the Office of Environmental Health Assessment (OEHA), that will specifically address the application of health risk assessments in New Jersey, as well as reduce risks and explore ways to better inform the general public of potential environmental risks. OEHA has been given three primary objectives: (1) to improve the performance, application and interpretation of the risk assessment process in the State, (2) to improve public understanding of governmental decision-making with respect to environmental health issues and (3) to develop management alternatives for mitigating identified public health risks.

During 1986, the major activities conducted by OSR with respect to OEHA

were centered not only on developing the mission, goals and objectives of the new office but also on administrative tasks, such as planning an annual budget, establishing appropriate contacts throughout the State and setting priorities for staff recruitment. OSR staff also provided insight to legislative efforts to develop and make final the legislation that created the State-wide Environmental Health Risk Assessment program. OSR planned the structure of OEHA to include the establishment of three units: Risk Assessment, Risk Reduction and Risk Communication.

The Risk Assessment Unit (RSU), which evolved from the current Risk Assessment Unit within OSR, is responsible for coordinating the performance of health risk assessments in New Jersey. In addition, the RAU will continue to conduct specific multimedia health risk assessments on both a site-specific and chemical-specific basis.

The Risk Reduction Unit (RRU) will study and provide recommendations concerning the potential for reducing environmental health risks in two major areas: reduction in the generation of hazardous waste by industry and application of innovative technologies to the mitigation of existing sites of toxic contamination.

The Risk Communication Unit (RCU) is responsible for exploring improved ways in which the NJDEP can inform the general public of potential health risks. The RCU will conduct pilot projects to assess the effectiveness of various communication methods and will work cooperatively with other divisions that may be initiating similar efforts.

OEHA is committed to work cooperatively with the State Department of Health (DOH) as well as with other divisions in NJDEP. Hence, while planning the structure and program development for OEHA, OSR staff worked closely with DOH representatives as well as with NJDEP divisional representatives. The two agencies completed an interagency agreement in 1986 that outlines and formalizes the role that each agency will take in conducting and coordinating the performance of health risk assessments in New Jersey.

In addition to establishing working relationships with other agencies, OSR

staff have initiated planning discussions with representatives from major academic institutions in New Jersey, particularly the University of Medicine and Dentistry of New Jersey (UMDNJ) and Rutgers University. OEHA and these academic institutions plan to establish a fellowship program through which researchers at these institutions will provide OEHA with the state-of-the-art research needed to make effective recommendations regarding environmental health decisions and management.

Geographic Information System

During 1986, the major activities of the Geographic and Statistical Analysis unit concerned purchasing the Department's new Geographic Information System (GIS) and planning for the development of the Geographic data base.

The GIS contract was awarded to Environmental Systems Research Institute (ESRI) for a "turnkey" system consisting of prime hardware and ARC/INFO software, as well as an ERDAS image-processing work station.

In order to support the use of the GIS, the Department has recognized the need to integrate the geographic and environmental data located in each division into a comprehensive geographic data base. Both the GIS and the geographic data base will aid in providing all divisions with the means to address issues of environmental management and public health protection more effectively. From a series of interviews conducted throughout the Department, OSR staff completed a report that inventories the geographic information used by each Division. The report is being used as a

basis for establishing priorities and coordinating data-base development activities throughout the Department.

Although OSR takes responsibility for coordinating GIS-related activities, several functions initiated this year support this process. GIS Users Group, consisting of representatives from each division, was formed and meets on a regular basis to discuss technical, data-base and application issues. A newsletter, the "GIS Update," was created and sent out to the GIS community both within the Department and among outside agencies. OSR staff actively coordinate with the DEP divisions and with outside agencies to ensure that new projects incorporate the use of the GIS wherever feasible. Example projects include studies on State-wide radon, aquifer protection, acid rain and epidemiology around hazardous waste sites.

Information Resource Center

In order to accommodate the Department's growing need for adequate current technical information and improve the efficiency with which available information is used by Department staff, the concept of centralized information resources for DEP was approved. This centralized Information Resource Center (IRC) will be built upon OSR's existing IRC, and development of the new facility is the responsibility of OSR's librarians.

Active implementation of the concept occurred in 1986 with renovation of the dedicated space within the DEP Complex, ordering of necessary furniture and shelving, formation of professional Library Committee, plans for additional hiring and development of a detailed program plan.



solid waste management

A myriad of pressing and complex solid waste issues, none with easy or ready-made solutions, are now addressed by the new Division of Solid Waste Management (DSWM). The establishment of this separate DSWM not only clarifies the distinction between solid and hazardous waste concerns but has focused staff efforts to design long-term and interim strategies to meet New Jersey's solid waste disposal needs.

In 1986, four state-of-the-art landfills have been given permits or are under construction. Each facility represents a major achievement for the Department in the implementation of regional planning goals and the creation of environmentally safe landfills. The Gloucester County Solid Waste Complex in South Harrison Township, after extensive public hearings, received a Temporary Certificate of Authority to Operate and will begin receiving waste as of January 1987. Another new county facility, the Cumberland County Landfill, has been issued a final permit for construction of composite liner facilities, which are already underway and should be completed by mid 1987. Two other landfills, Southern Ocean and Pinelands Park, have been upgraded by utilizing state-of-the-art solid waste disposal engineering techniques. In support of constantly evolving new technologies, operational standards for existing solid waste facilities have been advanced with the notice, adoption and publication of major comprehensive revisions of solid waste regulations. Additionally, continuing research is being conducted on engineering problems associated with landfill design to ensure environmentally sound facilities.

The year 1986 saw the State shift from sole reliance on landfills to the first stages of high-technology resource recovery. The final issuance of permits and initial construction on the 400-ton-per-day Warren County project in Oxford Township became a reality in July of this year. This \$40 million venture, overseen by the county Pollution Control Financing Authority, will result in the first principal resource recovery facility in New Jersey. The projected two-year construction schedule should bring the facility on line in 1988. In October, an 80-ton-per-day Fort Dix Resource Recovery facility initiated shakedown and startup

testing of its mass burn facility.

Additionally, a permit was issued to Essex County for its proposed resource recovery facility in Newark.

A draft solid waste contingency strategy was developed to review and recommend options to address the interim period between the times that disposal capacity is exhausted at existing landfills and that planned resource recovery and new landfill facilities are operational. Implementation of the strategy has already begun in the northern half of the State, where the DEP amended the solid waste plans of Morris, Passaic, Somerset and Union Counties to include a new interim disposal program. This program relies on the private sector in each of these counties to locate, design, construct and operate transfer stations providing the infrastructure to prepare solid waste to be hauled to out-of-state disposal facilities. In this regard, specific sites, operational plans and waste flow directives were proposed for inclusion in the Passaic and Somerset Solid Waste Management Plans in 1986. The transfer station arrangements with out-of-state disposal are proposed for only a three-to five-year period, within which long-term resource recovery and landfill projects are anticipated to be operational.

In addition to a coordinated mix of landfilling, resource recovery and, now, transfer stations, the DSWM also advocates a vigorous recycling initiative in its plan for New Jersey solid waste disposal. As part of the Governor's reorganization plan, the Office of Recycling joined the DSWM. Through a competitive grant program, municipalities, counties and nonprofit groups were given an opportunity to apply for financial assistance to maintain or expand existing recycling programs. In 1986, out of the 349 applications from 18 counties and 194 municipalities that applied for program and education funds, almost \$2 million was recommended for 17 counties, 40 municipalities and three nonprofit agencies. Nine organizations out of 36 applicants are receiving low-interest loans to encourage development and expansion of recycling industries. In 1986, the Office of Recycling announced a new line of promotional items to be

used as part of the public education program. Recycling has gone very public with lapel stickers, activity books for schoolchildren, garbage can stickers, truck decals and pencils designed with a new colorful State logo and slogan. Administratively, DSWM centered activity on the development of rules to administer the \$168 million Resource Recovery and Solid Waste Disposal Facility Bond Act, the \$8 million Sanitary Landfill Closure and Rate Relief Fund, the Resource Recovery Investment Tax Fund disbursement of \$38 million and the Solid Waste Services Tax Fund of \$2.9 million. To promote planning and implementation of resource recovery facilities, service contracts between counties and resource recovery vendors were reviewed, first-year grants were awarded under the Solid Waste Services Tax Fund and over \$223 million in private-activity tax-exempt bonds were allocated for construction of resource recovery facilities.

Aggressive State-level action is underway in the formulation of a draft State-wide Sanitary Landfill Closure Plan to deal with the more than 400 landfill facilities that have ceased active operation. Many of these facilities were improperly closed and could present a potential threat to the ground- and surface-water resources of the State. The draft plan identifies the needs for proper facility closure and assesses technical, financial and organization strategies to carry out a comprehensive State-wide closure program. Once completed, the plan will provide background data and strategic recommendations to serve as a basis for the development of a multi-year funding program to address this important component of environmental protection.

In addition to its work in landfills, the Department is currently reviewing major resource recovery permit applications for Bergen, Camden, Gloucester and Passaic Counties.

Annually, DSWM supports registration for nearly 5,000 solid waste transporters operating over 15,000 vehicles and almost 800 solid waste disposal facilities ranging from compost operations to multi-million-dollar high-tech resource recovery plants. Some 360 solid waste facilities were registered in 1986 alone, including 94 operating landfills. These

facilities reported disposal of more than 32 million cubic yards of solid waste. There has been strong response from the State Legislature to provide financial assistance to local governments in their efforts to develop adequate solid waste disposal capacity. Such legislative activity necessitates ongoing rule writing and promulgation to administer the funding programs, development of grant and loan agreements for resource recovery and landfill construction and closure, monitoring of grant and loan programs and allocation of private activity bonds that will be available for resource recovery projects in 1987.

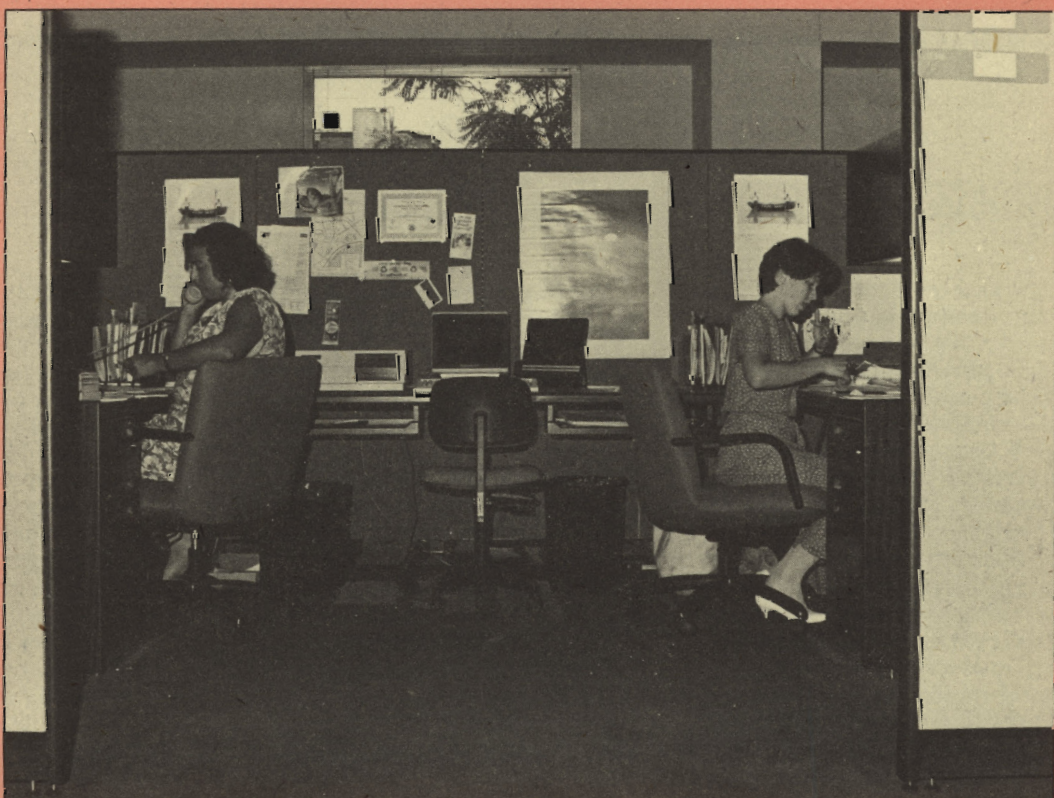
Although unprecedented State-level action was taken in 1986 by the fledgling Division to address the imminent solid waste disposal capacity shortfall, DSWM has continuing ambitious goals for the future. The interim transfer station

program will pursue plan amendments in early 1987 for Morris and Union Counties. Operation of the transfer station programs for each of the four affected counties is projected for next year, with possible expansion into counties with similar disposal dilemmas. Engineering design review or construction of another five key landfills is slated for 1987 in the counties of Salem, Gloucester, Cumberland and Burlington and in Pennsauken Township.

In the upcoming year, projects totalling over \$50 million will be awarded in the form of low- or no-interest loans to develop resource recovery facilities. Another \$50 million will be disbursed to the counties through grants for development of solid waste disposal facilities, and over \$200 million will be allocated in private-activity bonds for

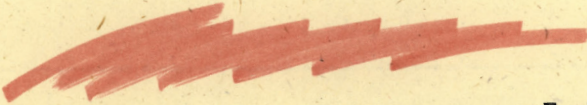
resource recovery projects. DSWM looks to an even more streamlined and more coordinated permit review process, with updated engineering design requirements for transfer stations and compost facilities. Enforcement of the asbestos control and coordination program, together with a field training program for county health department representatives, will receive more attention. Recycling looks to a new year of legislation supportive of mandatory recycling in New Jersey and efforts in promotion of market development for recyclable goods. Stronger program advocacy and interdivision and public communication will be stressed. As in 1986, DSWM sees 1987 as a year of visibility, action and attack on the problems of solid waste disposal.

To better serve you...



....busy at the job.

support services



equal opportunity & public contract assistance

Minority Participation

The Office of Equal Opportunity and Public Contract Assistance (OEO & PCA) was established in May 1985 to assist all DEP Divisions and programs in fulfilling both participation of small businesses and businesses owned by women and minorities and affirmative action requirements in public contracting, and to monitor and enforce the DEP's Affirmative Action Plan. Our "fair share" procurement goal is 12% combined minority- and women-owned businesses and 35% small businesses. In terms of our government work force, we established a plan to increase the number of minority employees annually by 3%.

DEP's fiscal capacity alone places it in the forefront of ensuring State priorities for growth and the creation of jobs. DEP administers nearly a billion dollars in meeting the needs of a clean New Jersey. This responsibility requires managing a work force of 2,761 and supplementing their talents by contracting for services and products

related to environmental cleanup, wastewater projects, State parks management and other environmental programs.

The DEP played a major role in planning the first Governor's Minority Business Enterprise Development Conference. The conference gave minority vendors an opportunity to learn about the potential source of contracts that State government can offer.

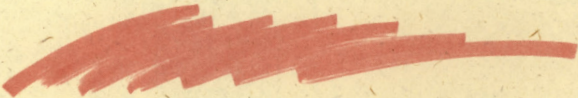
The most enthusiastic educational program was the Women In Government Luncheon, hosted for the first time by the DEP. Over 400 women in State service attended. The luncheon gave Commissioner Dewling an opportunity to express his commitment to increasing the number of women professionals in the DEP. Assistant Commissioner Fenske's keynote address discussed the role of women and environmental issues, and their contributions.

Under the State set-aside law, DEP has developed a voluntary purchasing plan to identify commodities and

services that could be purchased from small businesses and businesses owned by women and minorities. Activity of construction grants was very high in 1986. A total of \$76.9 million was awarded for wastewater treatment projects. Subagreements to minority businesses were \$9.2 million, or 12%, and to women-owned businesses, \$3.1 million, or 4.1%. More activity is expected in the next few years as a result of the passage of the Environmental Trust Fund.

Minority Engineers and Scientists are the major target group of our affirmative action auxiliary recruitment effort. The Office developed a plan that enhances our ongoing recruitment program. Five historically black colleges and three urban colleges were included in the 1986 college recruitment plan. In 1987, women's colleges will be added. As a result, DEP succeeded in recruiting 29 women and 20 minority trainees for environmental engineering and environmental specialist positions.

financial management



Over the past years the Department has made a determined effort to provide needed programs without increasing the demand for general State revenues. Methods employed include user fees to support environmental programs, replacement of grant programs with long-term zero or low interest revolving loan programs and maximization of federal funding.

During 1986 the Department continued to expand the use of user fees to support environmental programs. User tax-supported programs include recycling, solid waste litter, sanitary landfill closure, safe drinking water and the Workers' Community Right to Know programs. Fee-supported programs include Environmental Cleanup Responsibility Act (ECRA), the Toxic Catastrophe and the Underground Storage Tank programs.

The DEP's use of revolving loan funds, for the support of water supply, and the Green Trust continues. Wastewater Treatment and Resource Recovery projects will be funded in 1987 through the Environmental Trust.

At a time when federal support for State programs is being reduced, DEP has been successful in obtaining major federal commitments: \$19 million for the Liberty Park Seawall, \$25.5 million for the Barnegat Inlet and an anticipated \$57.85 million in the upcoming year from the reauthorized Superfund Amendments and Reauthorization Act (SARA).

DEP's New Headquarters

During the past year, the Division coordinated the move of nearly 1,600 employees into the new DEP building

located at 401 East State Street. This building now serves as the hub for all DEP activities. The building contains 400,000 square feet of office space. A state-of-the-art facility incorporating the latest telecommunication wiring, it houses the Office of the Commissioner, Environmental Management and Control Staff, Hazardous Waste Staff, Governmental and Regulatory Affairs Staff and the Environmental Management Staff. Special service areas include an occupational health center, maintenance office, mail room, lunchroom, office supply center and file room. DEP Management and Budget Staff is housed across State Street in the Carroll Complex. The final phase of the centralization of DEP Trenton-based activities will take place when the Station Plaza Facility is ready for occupancy by the Natural Resources employees.

personnel & data processing services

During 1986 the Division of Personnel and Data Processing Services (PDP) continued a strong emphasis on its Personnel Outreach Programs, taking key people to a variety of Trenton offices and outlying locations to provide DEP employees with information on various aspects of State government and DEP operations.

One such is the DEP's Medical Surveillance Program, which provides industrial hygiene, safety and occupational medicine information to all DEP employees. A major addition to these programs has been the completion of an Occupational Health Center in DEP's new headquarters building at 401 E. State Street, Trenton. This facility will be fully staffed with qualified medical professionals and will provide a wide range of services to meet the unique requirements of the occupational health challenges inherent in the Department charter.

The Division's continuing organization renewal programs are designed to improve organizational efficiency,

eliminate duplication of program effort, provide an orderly job title structure, provide for comparable salaries and improve morale. In 1986, a total of 1,127 positions were involved as reorganizations were completed in the divisions of Environmental Quality; Fish, Game and Wildlife; Parks and Forestry and the Resources Interpretive Service unit. Plans for 1987 include reorganizations in the Divisions of Regulatory Services, Solid Waste Management, Hazardous Waste Administration and Hazardous Site Mitigation and The Office of Science and Research.

In the ongoing departmental effort to make the most effective use of new technology, marked strides were made in Office Automation and Data Processing Services. The Office Automation group has continued and expanded the integration and consolidation of such functions as microcomputer terminal use and dedicated word processor operations. Key facilities have been strategically

located throughout the DEP's downtown Trenton campus to provide maximum accessibility and utility to all units of the Department.

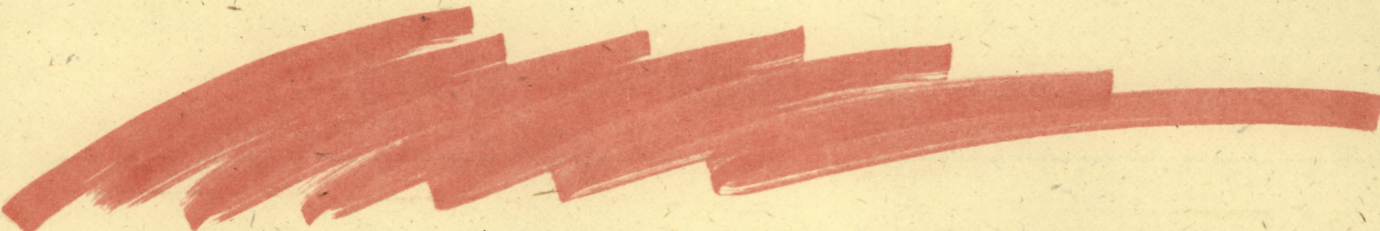
In Data Processing, 1986 was the first year of operation of the Department's own Data Center (IBM 4381 mainframe). Plans are also underway to establish a communications network to serve both the Department's downtown Trenton campus and field locations. Integration of data and information needs for issuing permits and for enforcement purposes is also being examined.

Recruiting activity during 1986 centered on mandated requirements under such high-tech programs as ECRA, CERCLA, Radon, and TCPA (Bhopal) to fill 550 positions. The Division's recruitment unit, in cooperation with Civil Service, undertook a highly visible and very successful college recruitment program designed to bring high-caliber graduates in engineering and science fields into State service.

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water resources

The Division of Water Resources (DWR) took major strides in 1986 to initiate new programs, increase enforcement activities significantly in key areas and implement refinements in existing programs. Following are highlights of accomplishments in the Division's six program areas.

Water Quality Management

On September 3, 1986, Governor Thomas Kean signed legislation requiring regulation of underground storage tanks, which have been identified as a major threat to ground water in New Jersey. The new program will require registration, systematic testing and monitoring of underground storage tanks. This will make possible early detection of leaks and discharges so that further damage to ground-water supplies can be minimized. The program will be the largest, in terms of numbers of facilities regulated, within the entire Department, affecting over 50,000 sites in New Jersey.

An aggressive sewer ban program was used to enforce compliance with New Jersey Pollutant Discharge Elimination System (NJPDES) permits. The NJPDES permit is the mechanism by which the Department regulates all discharges to the ground and surface waters of the State, and the sewer ban program is designed to prohibit new sewer extensions where the local sewage treatment facility does not meet permit requirements. At the end of 1986, there were more than 110 sewage treatment plants on sewer bans. Many of the bans will be lifted with construction of regional treatment facilities.

Coordination and refinement of the NJPDES will continue in order to effectively regulate all discharges to water. Additionally, the Underground Storage Tank Program will be fully implemented.

Water Supply and Watershed Management

Major progress was made in the Water Supply Critical Area program, which was created to restore critically depleted aquifer systems in the State. For both of

the currently designated critical areas, official procedures were completed, and specific reductions in aquifer withdrawal between 35% and 50%, depending on the aquifer, were ordered. Plans for the development of alternate water supplies required under the program were close to completion by the end of 1986.

Under the 1984 Amendments to the New Jersey Safe Drinking Water Act, interim guidelines for volatile organic chemicals in drinking water were implemented State-wide. The definitive maximum contaminant levels for volatile organic chemicals in drinking water are still pending. A few wells were ordered closed immediately, as a result of information disclosed by testing, and mandatory remedial action within a year was ordered for 19 water purveyors.

Within the Contaminated Well Field Program, State-funded grants made possible quick remedial action for a number of contaminated private wells. A typical case involved groups of as many as 200 private wells in a particular contaminated area. The program provides for immediate corrective action, without requiring identification of parties responsible for the contamination, which can often take months or years. At the end of the year, 45 cases of contaminated well fields were under evaluation or in process of remediation.

DWR is heavily involved in efforts at flood control in the Passaic River Basin, which suffers from extensive flood damage every year. The program was expanded to include completion of an early warning system, and a State program to buy out flood-prone residential properties was initiated. Advanced planning and engineering for the mainstem Dual Inlet Tunnel Flood Control Plan was completed in draft by the Corps of Engineers and will be released for public review in early 1987.

There are many goals for this program: The Critical Areas Program will be fully implemented. Maximum contaminant levels in drinking water will be established for volatile organics and trihalomethanes. The Division's capability for response to contaminated well fields will be augmented. A financing mechanism for the nonfederal portion of the Passaic Basin Flood Control project will be developed.

Enforcement

Several major enforcement cases were brought to conclusion in 1986. A penalty payment in the amount of \$1,250,000 was received from International Flavors and Fragrances (IFF), Union Beach, Monmouth, New Jersey. The penalty, the largest ever collected, was part of an Administrative Consent Order executed between the Department and IFF on October 30. The Order required IFF to pay for a remedial investigation to be conducted by a consultant chosen by the Department. In addition, IFF was required to post a \$4,000,000 letter of credit to ensure funding for the cleanup of ground and surface waters contaminated by IFF. In a second major case, NJDEP and Southland Corporation signed an Administrative Consent Order on February 14 that provides for a remedial investigation and feasibility study, and subsequent cleanup of contamination, at Southland's Great Meadow facility.

Strong initiatives were taken this year to enforce the Flood Hazard Area Control Act, which requires that construction activities in flood plains must be approved by the Department. Such activities include the placement of fill and the construction of buildings, which can significantly increase flooding potential of affected streams if not controlled. Enforcement entered into Administrative Consent Orders this year with several parties who agreed to pay a total of \$128,000 in penalties for violations and to purchase a total of 9.7 acres of wetlands, which will be permanently deed restricted, to mitigate environmental damage caused by unapproved projects.

Twenty-three additional enforcement positions have been funded through the NJPDES program to allow increasing inspections from a minimum of once to twice per year at major NJPDES facilities. It is anticipated that this will result in increased compliance with NJPDES requirements. Improvements will also be made in enforcement efforts regarding maintenance of sanitary landfills.

Construction Grants Administration and New Jersey Wastewater Treatment Trust

The Construction Grants Administration Element has played an integral part in providing technical expertise in the formation of the New Jersey Wastewater Treatment Financing Program. Sharing in the development of the Wastewater Treatment Financing Program has been the New Jersey Wastewater Treatment Trust Board. Since its first meeting in August, the Board of Directors of the New Jersey Wastewater Treatment Trust, created in 1985 by the Wastewater Treatment Trust Act, has worked with representation of the Departments of Environmental Protection, Treasury and Community Affairs in formulating the program's policies. The New Jersey Wastewater Treatment Financing Program was implemented to complement the existing federally funded grants program by providing assistance to local governments for construction of wastewater treatment facilities.

The Wastewater Treatment Financing Program is composed of the Wastewater Treatment Fund, a revolving loan fund to be capitalized by \$150 million in State

general obligation bonds administered by the DEP, and the Wastewater Treatment Trust, an innovative financing vehicle capitalized by \$40 million in State general obligation bonds, administered by the Trust Board, with the ability to "leverage" funds to increase the total amount of available funding. The \$190 million bond issue was authorized by New Jersey voters in November 1985. The financial policies of the Wastewater Treatment Financing Program have been concluded, noting that the Trust and the Fund will act together, with each entity providing 50% of a local government unit's total loan for a project. The blending of interest rates for the combined loans means that the resulting interest rates will be set at approximately 50% of market value. The loans will be made generally for 20 years and for up to 100% of eligible project costs.

Federal grants were certified in 1986 for the Bordentown Sewerage Authority, the Ocean County Utilities Authority, the Bergen County Utilities Authority, North Arlington-Lyndhurst and the Borough of Helmetta.

In the year ahead an appropriations bill specifying the first projects to receive loan assistance must be passed in an anticipated amount of at least \$100

million. Planning and design documents will be reviewed prior to the execution of loan agreements, which will establish a firm foundation for New Jersey's wastewater treatment financing program. New Jersey's program is designed to permit the ready absorption of federal assistance in the form of State capitalization grants, and it is anticipated that New Jersey will help guide the USEPA in establishing the federal program. Technical assistance will also be provided to the Pinelands Commission in administering their multi-million dollar grant and loan program for wastewater facilities.

Monitoring and Planning

In response to several emergency beach closings in recent years, a Cooperative Coastal Monitoring Program was initiated in May 1986 to monitor coastal water quality in cooperation with local agencies and the Department of Health. Water samples were collected from the surf at 184 stations from Sandy Hook to Cape May Point on a weekly basis through the summer. The careful monitoring of bacterial levels resulted in several short-

Continued

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water resources continued

term closures of beaches and investigations of the sources of pollution. In addition, a study was undertaken of the "Green Tide" algal blooms, which were a problem in previous summers and may be related to pollution in ocean waters. A great deal of information was gained from the monitoring program and related research, which will help in the formation of strategies to address problems in ocean water quality.

The 1986 State Water Quality Inventory Report was prepared and distributed. The report provided a summary of data on water quality in New Jersey's streams, rivers, lakes and estuaries. It concluded that water quality conditions continue generally to be stable, with little significant change during the past 5 to 8 years, and that 89% of the monitored fresh waters now permit fishing or swimming, or both. In general, non-point pollution (e.g., agricultural and stormwater run-off) is becoming a more serious problem, whereas point source pollution (from sewage and industrial treatment plants) is being reduced as a result of improved treatment.

A model program to control pollution from non-point sources (such as surface run-off, soil erosion, leaking septic systems) was initiated in the Navesink River watershed. An intensive public education program will be combined with a variety of specific control strategies to reduce bacterial pollution in the Navesink so that it can again support shellfish harvesting.

Two major plans, a Ground Water Quality Management Plan and a Non-Point Source Pollution Management Plan, will be developed. Investigation of water-quality problems in coastal waters and strategies for reducing or resolving problems will continue to be explored.

Geological Survey

The New Jersey Geological Survey continued in its role as a national leader in investigation and remediation of ground-water contamination. Individual staff members presented papers at several highly regarded national and international conferences, including the Alberta Research Council (Canada), American Society for Testing & Materials

(ASTM) and the Association of State Interstate Water Pollution Control Administrators (ASIWPCA).

Approximately 1,000 ground-water pollution field investigations were performed for the various agencies within DEP. Hydrogeological studies conducted as cooperative efforts between the New Jersey and United States Geological Surveys are producing information that will aid in better understanding and management of ground-water resources in the Atlantic City, Camden, and South River areas. In each of the study areas existing data, reports and information have been combined with new test boring and well information, surface and marine geophysics and geophysical logs to

produce detailed maps of the aquifers.

The Survey has also begun looking at the geological factors that affect the distribution of high radon source areas. This study has included an evaluation of aerial radiometric data to determine which rock units may be predisposed to contain elevated levels of uranium.

In 1989 field work on a new geological map will be completed, in cooperation with the US Geological Survey. This map will assist federal, State and local agencies involved with ground-water supply and pollution remediation. Geological studies of the Atlantic City, Camden and South River areas, as well as work on a predictive geological model for high radon areas, will be continued.

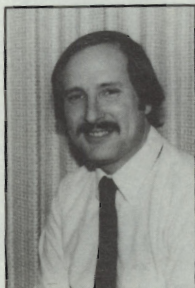
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The New Jersey Department of Environmental Protection (DEP) is composed of ten divisions and several specialized offices working as a team to retain, and in many instances, to restore safe and healthy surroundings for the people of our State. The various arms of this agency reach out to protect our natural resources and to manage our environment. The department must carefully balance the needs of the community for environmental protection with its economic and social requirements. Over the years, many innovations and model programs have been developed by DEP, earning New Jersey recognition across the nation as a leader in environmental protection.

Department of Environmental Protection

Michael F. Catania, Deputy Commissioner



Office of Science and Research

- Environmental Assessment
- Environmental Exposure
- Risk Assessment
- Risk Reduction
- Risk Communication
- Site Investigation and Evaluation
- Geographic and Statistical Analysis
- Information Resource Center

Office of Policy and Planning

Emergency Response

Public Participation

Environmental Management and Control

Donald A. Deieso, Assistant Commissioner



Division of Environmental Quality

- Air Quality Management and Surveillance
- Radiation Protection
- Pesticides, Laboratories and Quality Assurance
- Environmental Enforcement
- Release Prevention and Emergency Preparedness
- Engineering and Technology

Division of Solid Waste Management

- Solid Waste Management Planning and Finance
- Solid Waste Management Regulation
- Solid Waste Management Enforcement
- Recycling

Division of Water Resources

- Monitoring and Planning
- Construction Grants Administration
- Enforcement
- Water Quality Management
- Water Supply and Watershed Management
- Geological Survey

Local Environmental management

Hazardous Waste Management

John W. Gaston, Jr., Assistant Commissioner



Division of Hazardous Waste Management

- Hazardous Waste Planning
- Hazardous Waste Enforcement
- Hazardous Waste Regulation
- Industrial Site Evaluation

Division of Hazardous Site Mitigation

- Site Operations
- Engineering Services and Contract Management
- Hazardous Site Mitigation Sciences
- Environmental Measurements and Quality Assurances
- Environmental Evaluation and Risk Assessment
- Community Relations
- Site Mitigation

Management and Budget

Sidney Ytkin, Assistant Commissioner



Division of Financial Management, Planning and General Services

- Budget and Accounting
- General Services and Procurement
- Capital Improvements
- Hazardous Waste Cleanup
- Special Funds Administration
- Collections, Licensing and Management Services

Division of Personnel and Data Processing

- Office Automation
- Personnel
- Occupational Health/Medical Surveillance
- Center for Occupational Medicine
- Labor Relations
- Staff Training
- Data Processing

Equal Opportunity and Public Contract Assistance

Natural Resources

Helen C. Fenske, Assistant Commissioner



Division of Coastal Resources

- Coastal Enforcement and Field Services
- Planning and Project Review
- Tidelands
- Coastal Engineering

Division of Fish, Game and Wildlife

- Wildlife Management
- Freshwater Fisheries
- Law Enforcement
- Marine Fisheries
- Shellfisheries
- Information and Education
- Endangered and Nongame Species
- Maintenance and Development

Division of Parks and Forestry

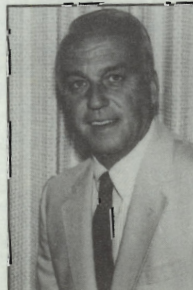
- Park Service
- Forestry
- Resource Development
- Heritage
- Natural Lands Management

Green Acres/Recreation

- State Land Acquisition
- Green Trust Management
- Outdoor Recreation Planning

Regulatory/Governmental Affairs

Donald T. Graham, Assistant Commissioner



Intergovernmental Affairs

Environmental Claims

Regulatory Services

Audit

Communications and Public Education

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New Jersey Department of Environmental Protection
should be addressed using the following
Caller Number (modern day equal to PO Box numbers)

Individual
Agency, Division
NJDEP
CN # as appropriate
Trenton, NJ 08625

Agency, Division	CN #
Fish, Game and Wildlife—Special Deer Permit	003
Division of Environmental Quality	027
Division of Environmental Quality—Radiation, Pesticides and Laboratories Element	411
Division of Hazardous Waste Management	028
Division of Water Resources	029
Division of Fish, Game and Wildlife	400
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