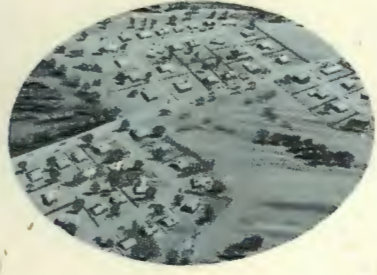


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**NEW JERSEY DEPARTMENT OF
CONSERVATION AND ECONOMIC
DEVELOPMENT**

Annual Report **1961-62**



**DEPARTMENT
OF
CONSERVATION
AND
ECONOMIC DEVELOPMENT**

Annual Report 1961-62

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THE HONORABLE RICHARD J. HUGHES, *Governor*

Members of the Senate

Members of the General Assembly

This report concerns the activities of the
Department of Conservation and Economic Development
for the fiscal period 1961 - 1962.

A handwritten signature in cursive script, reading "H. Mat Adams".

H. MAT ADAMS
Commissioner

DEPARTMENTAL ORGANIZATION

The Department of Conservation and Economic Development is now composed of six divisions: Resource Development, State and Regional Planning, Water Policy and Supply, Fish and Game, Shell Fisheries and Veterans Services. As a result of a major reorganization effected on July 1, 1961, the planning function has been elevated from a bureau status to that of Division of State and Regional Planning and the division of planning and development has been reorganized as the Division of Resource Development.

The Commissioner of Conservation and Economic Development, who has responsibility for the administrative activities and programs of the Department, is appointed by the Governor of the State of New Jersey and serves at his pleasure. Each of the divisions of the Department, except Fish and Game, is headed by a director appointed by the Governor. The Director of Fish and Game is appointed by the New Jersey Fish and Game Council subject to gubernatorial approval. All divisions, except State and Regional Planning, have advisory councils composed of citizens appointed by the Governor for four year terms.

RESOURCE DEVELOPMENT. The Director of the Division of Resource Development reports to the Commissioner of Conservation and Economic Development for the following bureaus:

Bureau of Navigation. This bureau is responsible for:

- beach protection—including the federal assistance program
- inland waterway dredging and marking
- marina and concession operations
- power boat and operator licensing (inland and tidal)
- riparian rights
- marine law enforcement
- harbor masters
- state-county-municipal relations in the navigation field
- licenses and permits for structures on navigable waters
- state-federal relations
- Army Corps of Engineers
- U. S. Coast Guard

Bureau of Parks and Recreation. This bureau is responsible for:

- administration of all state parks, park concessions and improvement programs—including new construction operations policy, policing, rentals
- coordination of recreation information and assisting in organized activities at all levels throughout the state.
- preservation of historic sites—including road marker program

Approximately 300,000 acres of developed and undeveloped park lands are under the jurisdiction of this bureau.

Bureau of Forestry. This bureau is responsible for:

- conservation of New Jersey's forest resources—including supervision of forest management practices.

operation of the State Nursery
operation of the State Forest Fire Service
cooperative activities with General Services Administration (excess property program), U.S. Forest Service and Federal Communications Commission concerning the forestry radio system
staff assistance to the Commissioner of Conservation and Economic Development in his role as member of the State Soil Conservation Committee

Bureau of Aeronautics. This bureau is responsible for:
licensing of all land and water take-off and landing areas (private, commercial and helicopter)
airport inspection
complaints and alleged violation of air traffic rules
state-federal relations in the aviation field

Bureau of Geology and Topography. This bureau is responsible for:
investigation and analysis of the general geographic and geologic conditions of the State
evaluation of geologic conditions underlying industrial plant sites—including the atomic energy field
conducting workshop programs in geology
staff assistance to the Commissioner as member ex officio of Examining Board of Well Drillers

Bureau of Housing. This bureau is responsible for:
adequate public housing facilities for the citizens of New Jersey—including the handling of problems relating to veterans' housing, both temporary and permanent
staff assistance to the Commissioner in his role as Administrator Public Housing and Development Authority

Bureau of Commerce. This bureau is responsible for:
promotion of New Jersey via all media
economic research—including statistical data collection and analysis
national and international relations in the economic field
staff assistance to the Commissioner in his role as member of the Governor's Economic Committee

In addition, the Director of the Division of Resource Development assists and advises the Commissioner on matters pertaining to the development of public markets, reports on the proceedings of the Resource Development and State Housing Councils, and serves as a member of the Department's Land Use Committee.

STATE AND REGIONAL PLANNING. The Director of the Division of State and Regional Planning is responsible to the Commissioner of Conservation and Economic Development for programs designed to promote the orderly development of the State's physical assets through evaluation of existing development conditions and trends, comprehensive guide plan and long term capital improvement programs, and coordination of the development activities of the several state departments. The Director reports to the Commissioner for the following bureaus:

Bureau of Statewide Planning. This bureau is responsible for:
assistance in integrating physical development activities of all state agencies through the Governor's Interdepartmental Committee for State Planning
planning services to the Department's Land Use Committee
review of referrals relating to statewide development

Bureau of Regional Planning. This bureau is responsible for:
encouragement and promotion of regional planning through advisory services to local efforts to plan for development on a regional basis
publication of data and other informative material on development trends in each region of the State
development of State legislation essential to inter-municipal cooperative development action

Bureau of Community Development. This bureau is responsible for:
stimulating, assisting, and coordinating local planning
translation of State development policies into local action programs
administration of community development programs—including design of program procedures
preparation of technical reports on community development problems

In addition, the Director of the Division of State and Regional Planning provides staff assistance to the Commissioner of the Department on activities concerning public markets, pinelands area regional development, the meadowlands area development, transportation and official planning organizations; and serves as a member of the Department's Land Use Committee.

WATER RESOURCES. The Director of the Division of Water Policy and Supply, in addition to responsibility to the Commissioner of Conservation and Economic Development for the administration of the \$45,000,000 long range water resources development program authorized by the Water Supply Law of 1958, reports to the Commissioner for the following bureaus:

Bureau of Water Resources. This bureau is responsible for:
development of plans and policies for solution of the State's water resources and flood control problems
study of future reservoir storage sites
cooperative long-range groundwater investigation program with the U. S. Geological Survey
data collection on high water
issue of flood warnings in cooperation with the U. S. Weather Bureau and Civil Defense

Bureau of Water Control. This bureau is responsible for:
approval of dam structural characteristics and inspection of dams in the State
licensing of well drillers and issue of well permits
maintenance of water use records
maintenance of stream gaging stations and groundwater observation wells
water rights legislation
statutory regulating powers concerning water supply and stream encroachments

This bureau also serves as the administrative and engineering staff arm of the Water Policy and Supply Council.

Bureau of Water Supply. This bureau is responsible for:
management and operation of water supply facilities administered by the Division of Water Policy and Supply
negotiation of contracts for sale of state-developed waters
This bureau manages the 60-mile long Delaware and Raritan Canal.

Bureau of Design and Construction. This temporary bureau is responsible for:
engineering review of all designs submitted for the Spruce Run-Round Valley water reservoir projects
supervision of project construction at the Round Valley and Spruce Run projects

In addition, the Director of the Division of Water Policy and Supply advises and assists the Commissioner of the Department in matters pertaining to the comprehensive development program for the Delaware River Basin, reports on the activities of the Water Policy and Supply Council, serves as a member of the Department's Land Use Committee and provides staff assistance in matters pertaining to the National Rivers and Harbors Congress and Interstate Conference on Water Problems.

FISH AND GAME. The Director of the Division of Fish and Game reports to the Commissioner of Conservation and Economic Development for the following bureaus and units:

Bureau of Wildlife Management. This bureau is responsible for:
wildlife research, habitat improvement, game propagation and distribution, predator control, public hunting-ground acquisition, maintenance and operation

Bureau of Fisheries Management. This bureau is responsible for:
fish propagation and distribution, stream and lake acquisition and development, creel census, fresh and marine waters research
maintenance and operation of public fishing grounds
investigation of pollution conditions affecting the propagation and preservation of the State's fishing resources

Law Enforcement Unit. This unit is responsible for:
the protection of the marine resources of the State
representative to all fish and game management activities through the Conservation Warden Service

Public Relations and Conservation Education Unit. This unit is responsible for:
a comprehensive public relations and educational program aimed specifically at the safe and felicitous use of the out-of-doors.

Administrative Unit. This unit is responsible for:
supervision of the sale of fishing and hunting licenses,
coordination of the activities of other agencies with respect to effect upon fish and game resources of the State, and maintenance of Division records

In addition, the Director of the Division of Fish and Game reports to the Commissioner of Conservation and Economic Development on proceedings of the Fish and Game Council and serves as a member of the Department's Land Use Committee.

SHELL FISHERIES. The Director of the Division of Shell Fisheries reports to the Commissioner of Conservation and Economic Development on the following activities:

- preservation and improvement of natural shellfish seedbeds
- enforcement of shellfish laws and policing of the Atlantic Coast and Delaware Bay shellfishing areas
- licensing of clamming and tonging activities
- licensing of oyster boats
- surveying and mapping of all areas leased to oyster culturists
- cooperative program with the Oyster Research Laboratory of Rutgers to promote the productivity of natural oyster seedbeds and to improve quality of shellfish in New Jersey

In addition, the Director of the Division of Shell Fisheries reports to the Commissioner of the Department on the proceedings of the Shell Fisheries Council and serves as a member of the Department's Land Use Committee.

VETERANS SERVICES. The Director of the Division of Veterans Services reports to the Commissioner of Conservation and Economic Development for the following sections and units:

Information and General Services Section. This section is responsible for:

- assisting veterans or their dependents in applying for all benefits to which they may be entitled
- operating and maintaining information programs to aid the welfare of veterans and dependents

Veterans Guaranteed Loan Section. This section is responsible for:
guarantee of loans to qualified veterans for establishing or re-establishing businesses
collecting of loans declared in default

Veterans Emergency Housing Unit. This unit is responsible for:
the operation and maintenance of State-owned veterans' housing
disposition and liquidation of emergency housing units through private or municipal conversion or sale

In addition, the Director of the Division of Veterans Services reports to the Commissioner of the Department on the proceedings of the Veterans Services Council.

ADVISORY COUNCILS

Resource Development Council

Oka V. Swisher, <i>Chairman</i>	Wayne D. McMurray
Mark Anton	Edward C. Rose
Roland DeWilde	Frank J. Valgenti
Wm. Haffert, Jr.	Henry T. Wietsma
Jack M. Kane	William E. Waters
J. Nevins McBride	

Natural Areas Council

Murray F. Buell, <i>Chairman</i>	Mrs. Frederick Van Istendal
Robert L. Perkins	Robert Hoke
Theodore M. Edison	Frederick Smith

State Housing Council

Charles Mesenazos, <i>Chairman</i>	Emanuel A. Smith
Richard P. Donovan	Roy W. Tierney
John I. Meyers	

Water Policy and Supply Council

Kenneth H. Murray, <i>Chairman</i>	August C. Schultes
William G. Bank	Lillian M. Schwartz
I. Ralph Fox	David I. Stepacoff
Herman A. Klenner	Vinton N. Thompson
Thomas J. Mullen	

Fish and Game Council

Earl L. McCormick, <i>Chairman</i>	William Lundsford, Jr.
Charles Canale	Ralph T. McNeel
Fred H. Totten	James Charlesworth, Jr.
Harry W. Frome	David H. Hart
George H. McCloskey	Clarence Sheppard
Henry J. Kelly	

Shell Fisheries Council

Atlantic Coast Section	Maurice Cove Section
Frank Garrison, <i>Chairman pro tem</i>	Harold Bickings, <i>Chairman pro tem</i>
Arnold P. Cramer	Fenton Anderson
John M. Pancoast	John M. Pancoast
Carl Tarnow	William H. Riggan
Vacancy, Atlantic County	Melvin W. Sharp

Veterans Services Council

William G. McKinley, <i>Chairman</i>	Charles E. Kinney
Stephen M. Linzenbold	Thomas F. Murray
Joseph G. Carty	James P. Rogers
Joseph R. Russo	Dr. Humphrey Wolfe
Albert J. Gifford	

GREEN ACRES

Green Acres exemplifies action by State government to meet a new and impelling problem—the loss of open space. The mission of Green Acres is to assure sufficient open space for outdoor recreation and conservation needs of the present and the future and to secure and save such lands in the face of heightening pressures for other uses.

The fiscal year has marked three stages in the Green Acres Program; the passage and signing of the authorizing legislation, public adoption of a referendum for a \$60 million land acquisition fund and the launching of the acquisition program. In the law \$20 million is reserved for matching assistance to local governments and \$40 million is reserved for direct State acquisition. Matching assistance to local governments is set at 50% of the actual purchase price of land. The Department to date has approved public purchases estimated to cost \$8,000,000.

The law further states that “to the extent practicable” land secured should serve a “multiple use” purpose; should be “predominantly open and undeveloped”; and should be selected with regard to “the present and future needs and resources of all areas of the State.”

The Department’s administrative divisions and councils, other units of State and local government, and the Green Acres Citizens Committee have ably cooperated in achieving these results. Within the Department, each division has proposed its priority projects, and the Land Use Committee has screened and recommended priority selections. The Green Acres Citizens Committee, which conducted a public relations program for the successful referendum, has continued to serve as an advisory group.

The Department has defined four “classes” of land for administrative control of the first State purchases. Each class marks the open space condition of a particular area of the State whether urban, suburban, outer suburban, or

rural. This class grouping depicts the relative extent and speed of change in open space. In an urban class, for example, little open space remains and land prices are already high. In a suburban class, development is rapidly taking open land and land prices are correspondingly rising. In an outer suburban class, open land condition and price rise are still not critical, but are becoming so. In rural class lands, the change of open land condition and price is still relatively stable.

This guide for State Green Acres acquisitions helps give proper weight to the recreation needs and resources of each area. It also helps establish the kind and cost of Green Acres purchases appropriate to each. All classes of land are included in the initial \$8 million cost of projects already approved.

A wide range of outdoor recreation and conservation land use will be provided in these projects. Examples are: Troy Meadows—a wildlife preserve area which also maintains an open, natural land aspect adjacent to the State’s largest population concentration; Black River—another open and natural condition permanently protected for public hunting, and fishing in not yet totally developed suburbia; Wawayanda Tract—lake and wooded land heights for a major new State Park and multiple recreation drawn from a still open area; Monmouth Battleground—preserving and enhancing this valued setting of New Jersey colonial history; Delaware River—access points for boating and fishing and other riverside recreation; tracts along the Atlantic Coast and lower Delaware Bay—areas which will provide public beaches, reserves of salt meadow and marshland, and give access to coastal rivers and bays for multiple recreation and conservation use. Altogether over 200 acquisition proposals have been screened in approving the first 34 projects which will add an estimated 40,000 acres in public recreation land.



The screening of all proposals has helped to focus program objectives for particular attention in the next phase of Green Acres acquisitions. Already marked for attention are the following:

(a) use of contracts to secure development rights and conservation easements in lieu of purchase and evaluation of this use in fulfilling Green Acres objectives;

(b) opportunities for State acquisitions in and close to urban areas, to help further meet urban problems of great demand and high cost in providing adequate recreation facilities;

(c) projects which combine water supply reserve with waterfront recreation, thus serving multiple use objectives;

(d) further attention to unique, natural opportunities for Green Acres acquisitions with high multiple recreation potential such as coastal shore areas, and Delaware River sites;

(e) purchases which will serve outdoor interests with markedly growing demand, such as camping and hiking, winter sports, boating and other water sports, and preservation of natural wildlife areas.

The Department has administered the first phases of the local matching assistance program in parallel with State acquisition. Procedures for local unit participation have been prepared and distributed to all counties and municipalities. Local applications have been received for over \$2 million in matching funds. All are pending preliminary approval.

Similar to the guidelines for State purchase, the Green Acres law specifies the conditions for approval of matching assistance. These stress substantiation of the need of the proposed acquisition; establishment of its projected development and use; and certification that the projected use is in accord with a comprehensive plan for the local unit's total land development.

The Department recognized that many units of local government would require time and assistance to prepare programs which would meet these conditions. It considered that the administration of the matching program should be timed accordingly, and should encourage participation. The Department felt further that any base used for grant approval should take account of the varied recreation needs, land

condition, and stage of governmental planning among the State's counties and municipalities.

The base used provides the following: a dollar quota of matching funds designated to each county area according to county population; a time phase of 18 months to draw on this quota; a waiting period before approval to allow county government to coordinate applications to determine interest and to permit adjustments if quotas were exceeded. The sum of \$10 million of the total \$20 million matching has been made available for this phase.

These administrative procedures have been effective and well accepted. Most county governments have coordinated local activity and many have given extensive leadership in stimulating and assisting local Green Acres participation.

Four counties and 11 municipalities have sponsored a total of 49 applications now awaiting approval. The estimated total acreage is about 3,000 acres. With no acreage minimums stated in the law, projects range from 1.35 acres for one municipality to 377 acres for one county application. Participation to date by local government is concentrated in New Jersey's northern and central metropolitan areas. Queries for applications and statements of application intent have been received from every county area, however.

Although the local assistance program is in its first phase, some indications for the future program can be anticipated. Among these are:

(a) the volume of local unit participation will definitely increase, but overall first phase quotas seem adequate for pending interest;

(b) in the second phase, provision must be made for adequate funds for local units not active in the first phase; present formulas for distribution may be continued or adjusted as necessary;

(c) some present acquisition needs at the local level have been resolved by State purchases, and the converse also;

(d) first phase experience of coordination of county, municipal and State government for Green Acres goals will establish patterns for further joint study and decision on future acquisitions.

The timely development of New Jersey's Green Acres program has assisted participation in other public and privately sponsored programs for outdoor recreation and conservation. The federal open space matching assistance program has been one of the most important. The Department has applied for \$1,300,000 of federal funds for seven Green Acres projects considered eligible under Title VII of the Housing Act of 1961. The Act provides grants of 20 percent to 30 percent of the cost of acquisition.

Participation in other programs also includes joint federal and State interest in New Jersey shore restoration and conservation, and proposals for a national recreation area in northern New Jersey under the development of the Tocks Island Delaware River Reservoir. The Department also has been able to relate Green Acres planning to interest in such programs as the Regional Metropolitan Planning Association, Pennjerdel, and the interest of sportsmen, wildlife conservation, and similar outdoor recreation and conservation organizations.

The Department has set a three-year goal for completion of the major portion of Green Acres acquisitions. This goal applies to both State and matching assistance programs. The urgency of this pace is well substantiated by the problems and progress already experienced. Green Acres objectives at both State and local levels face the dual squeeze of rising land costs and of change affecting still open areas. In almost every major project considered thus far, the Department has encountered some existing impairment to acquisition, or an impending serious land use change tending to reduce or eliminate its suitability for Green Acres purposes. Similarly, factors of competitive pricing of land shrink the acquisition dollar during the steps of approval, purchase negotiation, and completed contract.

The administration of Green Acres moves forward, however, with a constructive sense of "action in time." The Department hopes to keep to the minimum consistent with the purpose any readjustment which acquisition may cause individuals, business and other governmental authority. The Department has been encouraged and greatly assisted by the extensive

support and interest which Green Acres has received from many public and private sources. This sustained public interest and attention is further assurance of Green Acres success.

The Green Acres Citizens Committee, an advisory group to the State for the Green Acres Program, has been particularly helpful in its assistance to the Department in the development of the Green Acres Program. The Department wishes to extend its gratitude to the Citizens Committee for its continued help, to the County and Municipal Governments that have assisted in shaping the program and to the many individuals who have aided so substantially.



SHORE RESTORATION

New Jersey's coastline from Barnegat Light to Cape May Point was hammered by the most savage tides and winds within memory in early March 1962. When the storm had subsided, New Jersey was confronted by a major disaster situation. Hundreds of homes and summer cottages, businesses, boardwalks and essential public facilities were either washed out to sea or in shambles. Protective barriers against the sea such as bulkheads, seawalls and sand dunes all along the shore area were heavily damaged.

The contour of the New Jersey shoreline had been altered beyond recognition in many places. Long Beach Island, for example, had been completely cut through in two places. The coastline of New Jersey was left in the most vulnerable condition in history. The area from Bay Head to Seaside Heights, Sea Isle City, Avalon, Long Beach Island and the southend of Ocean City experienced the worst damage.

The net effect of the March 1962 storm was a severe setback to the beach protection and improvement programs of the Department of Conservation and Economic Development. As soon as conditions permitted, the Department, upon the basis of on-the-spot inspection estimated that the cost of restoring protective beaches, jetties, bulkheads and seawalls would reach \$26,000,000. In April shore municipalities reported needed work estimates of \$21,000,000 which would require \$10,500,000 in State aid matching funds. Although the storm was a severe blow to preparations for the coming summer tourist season, it was plain to everyone that the immediate and most pressing problem was to restore beach protection against further disaster should another storm develop. Thus, the first step taken was the immediate restoration of protective barriers. Such protection was considered temporary but effective against a future storm of an intensity which might occur once in ten years.

The storm of March 1962 was unique in the consecutive occurrence of five high tides in the three-day period of March 6, 7 and 8. At Atlantic City, for example, the highest tide was three feet above the piers constructed at an elevation of +8.0 Mean Low Water. The observations of the Department immediately after inspection of the disaster area were: areas protected by dunes at elevation +16 Mean Low Water or less were over-ridden, destroyed and leveled; areas protected by bulkheads, seawalls, jetties and groins suffered less damage rearward of the beaches; areas most damaged were at locations where trouble had been experienced over the years; and the quantity of sand removed from the beaches by the storm exceeded that of all previous occurrences.

Later and more detailed inspection and survey work in the disaster area revealed that the nearshore water depth had deepened to a dangerous degree and the alongshore bar had been broken, lowered or totally removed in several localities. Areas of lesser damage were those protected by stone seawalls or by bulkheads which had groin fields before them, areas with dunes at elevation of +20 or greater above mean low water and localities protected by substantial groin systems.

Immediately after the storm the U. S. Corps





of Engineers started work on emergency protection in priority areas, by construction of the emergency protection section or a modification thereof as recommended by the Beach Erosion Board and approved by the Office of Emergency Planning.

In addition to requesting that the State be declared a federal disaster area, State legislation was immediately approved making \$2,500,000 in State matching funds available to the distressed municipalities. Legislation was adopted making \$4,000,000 available as a supplementation of the regular \$1,000,000 state-aid-matching-fund coast protection program, of the Department. The federal government responded to New Jersey's request that the shoreline be declared a major disaster area by making assistance available under Public Law 875.

In April, 1962, a meeting was held by the Department for the purpose of discussing the disaster problem with the involved counties and municipalities and for receiving applications for State aid. During April and May surveys and general overall plans were carried forward by the Department for the purpose of continuing and supplementing the restoration work of the U. S. Corps of Engineers and for handling the expenditure of funds made available under Public Law 875 to the Office of Emergency Planning. The Department also provided assistance to the affected municipalities in obtaining permits, easements, property, and other necessary means to carry out the program of the Corps of Engineers under the Office of Emergency Planning authorization.

By June, preparation and plans were formalized to begin the work of restoring the beaches in Ocean County at eight locations there by



supplementing and enlarging on the emergency work done by the Corps of Engineers. The locations were: Lavallette, North of Barnegat Inlet; and Barnegat Light, Loveladies, two at Harvey Cedars, North Beach, Brant Beach, and the south section of Long Beach Township at the Dunes, all on Long Beach Island.

In addition to the direct placement and restoration of the beaches and dunes, the theory is to reap a secondary benefit by placing the sand at various strategic locations along the shore for replenishment of sand to the littoral drift, and with its southerly direction, to start the process of sand movement on a drifting course along the coast. The present contract estimates placement in excess of 1,000,000 cubic yards for Long Beach Island. The basic general plan is to build a 40 foot wide dune at elevation +14 Mean Sea Level with a frontal beach fill at elevation +80 Mean Sea Level generally 80 feet wide and sloping seaward to meet the existing bottom. The plan is to straighten the shoreline within practical limits.

The Department is presently working on restoration projects in cooperation with the municipalities on Long Beach Island at Beach Haven, Ship Bottom, Surf City and Long Beach Township; north of Barnegat Light at Seaside Park, Seaside Heights and Bay Head. Similar beachfill projects are planned at Brigantine and Atlantic City in Atlantic County.

The Department, in cooperation with the municipalities, is planning projects for construction of essential groins, jetties, bulkheads, and structures along the 125 mile oceanfront from Sandy Hook to Cape May for completion within the fiscal year ending June 30, 1963.

ANTI-BEACH LITTER CAMPAIGN

The resort business is one of the State's most important economic assets. More than one and a half billion dollars in generated volume of business during the 1960 and 1961 seasons, plus extra tax revenues in July and August credited to vacation business of from \$3 million upward to \$5 million, are indications of the importance of the vacation business—a growing industry in New Jersey.

A long range program involving frequent spot checking at unannounced locations by continuing coastal patrol and direct approach to possible sources of litter and pollution such as ocean going vessels and commercial and private fishermen, barges dumping garbage and industrial wastes has been initiated by the Department to keep the beaches free of waste and debris. New Jersey has a reputation for beautiful white sandy beaches which must be maintained.

Public reaction to the program has been very encouraging. Boat owners, surf and commercial fishermen, the steamship lines and the thousands who annually throng the beaches have clearly indicated that as individual citizens they are equally determined to fight litter and pollution along the New Jersey shore.

Mayors of resort communities, the U. S. Coast Guard, the Corps of Engineers, the State Department of Health, the New Jersey State Police, and others, have strongly cooperated with the Department in the campaign against beach litter.

The full extent of the law is being applied. Under Act 2A: 170-69.1, any person who discharges waste or debris from any vessel into coastal waters or tidal bays where it may tend to litter any bathing beach or pollute the adjacent water is a disorderly person. Conviction carries penalties up to a maximum of imprisonment for not more than one year or a maximum fine of not more than \$1000, or both. The aid of all levels of government is being enlisted in the anti-litter campaign.

Since initiation of the program there has been a pronounced and significant improvement in the attractiveness of New Jersey beaches.



Helicopter Patrol

As part of the stepped-up law enforcement program against littering of beaches, pollution, illegal clamming and as an added means of assuring safe boating on our waterways, a full-time helicopter patrol has been established by the Department.

The helicopter is a versatile, powerful and immediate means of assisting in law enforcement. Equipped with air-to-ground communications and a public address system, conservation law enforcement officers, state and local police and marine patrol personnel can be notified on the spot when investigation and correction is needed. For example, if a boat is seen tossing garbage or litter into the water near beach areas, a helicopter can lower and provide law enforcement officers opportunity to take pictures, record the name and description of the boat, and by loud speaker order, an immediate halt to such violations.

In addition to law enforcement, a helicopter proves exceptionally well suited for some phases of conservation work. A helicopter has been used for spot weed control in lakes, for aerial survey of park and forest areas, forestry work, disaster damage survey, photography, heliport and airport site inspection and evaluation, traffic flow control at the various State park and forest areas and inspection of suspected industrial waste discharges.

FLOOD WARNING

In April 1962 the Department's Division of Water Policy and Supply was authorized to delineate and mark flood hazard areas and to coordinate development, dissemination and use of information on floods and flood damages. Plans have been formulated for the erection of test markers on State properties to emphasize the State view that marking a flood hazard area is a means of encouraging prudent use of flood plains and the reduction of future flood losses.

The Millstone River has been selected as the area for the initiation of the marking program because the Department, through a cooperative agreement with the U. S. Geological Survey, has a detailed report describing the extent and frequency of flooding along this river. The success of a comprehensive program will depend upon whether or not county and municipal cooperation can be developed on a state-wide basis.

CONVENTIONS AND CONFERENCES

New Jersey will be host to the 1964 convention of the International Association of Game, Fish and Conservation Commissioners. Conservation officials from around the world will meet in Atlantic City between September 14 and 18, 1964. New Jersey was selected as host for 1964 at this year's Association Convention at Jackson Hole, Wyoming. The 1964 Convention will coincide with New Jersey's Tercentenary Celebration.

New Jersey was host to more than one thousand planning officials and community officials in April 1962 when the American Society of Planning Officials held its 26th annual meeting in Atlantic City. The theme of the five-day meeting was the challenges and achievements in coping with the complex problems of metropolitan areas and urban areas. Round table discussions and workshops focused on the economic, political and social forces underlying planning proposals for land use and development, movement of people and goods, urban renewal programs, urban design and other facets of urban growth.

On April 18, 1962, New Jersey was also host to the twelve Atlantic States Governors Conference on the March Storm Damage called by Governor Richard J. Hughes at the encouragement of the President of the United States.

The purpose of the conference was the discussion administrative and legislative actions needed to rehabilitate the seashore and to promote the development of a lasting long-range protection program for the Atlantic Coastline.

Among numerous other meetings was the Annual State Housing and Urban Renewal Conference, co-sponsored by the Bureau of Housing, the State Housing Council, and the New Jersey Association of Housing and Redevelopment Officials, held on April 2, 1962, at Asbury Park. The Annual Conference this year featured the Silver Anniversary of Housing in America (1937-1962). Over 400 persons attended, an increase of more than 100 over the 1961 Conference, representing a broad cross-section of city, state and federal officials as well as members of local housing authorities and redevelopment agencies and representatives of private industry in the State. A discussion on the recommendations for middle income housing, urban renewal assistance and housing for the elderly followed the remarks of principal speakers. Workshops on the subjects of middle income housing, low rent housing and urban renewal were held. All of the sponsoring agencies reported that this was by far the best conference in attendance, and the best organized and most interesting conference to date.

INTERNATIONAL TRADE

New Jersey has a potentially bright future in international trade, offering many desirable opportunities for New Jersey industries and businessmen. Through discussion of the subject with various industries and organizations it has been determined that more precise information is needed to indicate the probable effects of imports and exports on the State's economy and labor force. It is important that the State and private industries cooperate now in obtaining basic information to determine our foreign trade role and prepare for it through a sound promotion program.

According to studies by the United States Department of Commerce, New Jersey ranks seventh in the nation in foreign market sales. New Jersey now exports well over \$900 million

in manufactured goods.

Plans for the publication of a New Jersey Directory of International Trade are under way. Such a directory is one of the ways New Jersey-made products may be better known overseas. About 37 percent of all New Jersey employees in manufacturing industries are employed in plants which sell their products overseas as well as in the United States. When completed, the Directory will list products, firms and services in New Jersey available to overseas customers, and illuminate the advantages of New Jersey as an area suited for industrial development. It is expected that the Directory will be distributed to consular overseas offices and to international trade organizations in the United States and other countries.



DELAWARE RIVER BASIN

On November 2, 1961 the President of the United States signed the Delaware River Compact. Enactment was achieved within eight months of the approval of the draft by the governors of New Jersey, New York, Delaware and Pennsylvania on February 1, 1961. The New Jersey Senate approved the Compact on April 24, 1961, the Assembly passed it on May 1, 1961 and the Governor of New Jersey signed it the same day. The enactment of the Delaware River Compact into law within two years after the inception of negotiations, consideration by eight state legislative bodies, four governors, federal representatives, the House of Representatives, the United States Senate and the President of the United States is a notable achievement in the annals of state-federal relations in the field of water resources conservation and development.

By terms of the Delaware River Compact, the Delaware River Basin Commission came into existence on October 27, 1961. The Commission has been staffed and is now in full operation with headquarters located at Trenton, New Jersey.

Technical planning work on the survey of the Delaware River Basin came to a close in August 1960 with the completion of the last of the appendices of the full report—one of the most intensive and comprehensive surveys ever made of a major river basin within the United States. Official termination of the survey was announced by the U. S. Corps of Engineers on May 1, 1961, marking the culmination of a major effort by numerous local, state and federal agencies to provide for a sound long range development program for the Delaware River Basin.

The survey report of the U. S. Corps of Engineers constitutes the starting point for the



development of a comprehensive program for the Basin by the Delaware River Basin Commission as directed by the Compact.

On March 28, 1962 the Commission adopted the first phase of a comprehensive plan. This plan incorporates eight major reservoirs—among them Tocks Island and a national recreation area at that reservoir site. All have been recommended by the Corps of Engineers for authorization by the Congress. Also in the first phase are twelve smaller projects of which some are being developed or are slated for development by the Basin states or by local soil conservation districts and watershed associations.

The unique features of the Compact provide reasonable assurance that the development program for the water resources of the Delaware River Basin can be achieved. The federal government is a party to the Compact. The Governors of the four states and an appointee of the President, each having an alternate member empowered to act in his stead, constitute the membership of the Commission which has broad planning and programming responsibilities. Most important, the Commission has the power to perform extensive development and management functions. For example, if no other agency is in position to carry out a program, the Commission is empowered to act. The Commission has jurisdiction over the allocation of Basin waters and during a water shortage, may regulate withdrawals and diversions.

The Commission represents the first joint state-federal administrative agency in the field of river basin development. Major effort is now being devoted to the business of securing the necessary legislative measures in Congress to enable the Commission to implement Phase One of the Comprehensive Plan.

PUBLIC INFORMATION

The added awareness and interest in conservation and economic development by our urban population have prompted many programs now carried on by the Department. The need for such service to New Jersey's increasing population is in direct proportion to the steady expansion of responsibility and new undertakings.

Communications facilities of many kinds are used to convey information. News releases were used extensively to provide general information throughout the State. During the year, about 350 news announcements were mailed to New Jersey's 400 daily and weekly journals; to radio and television stations and to writers with special interests.

The subjects ranged from hunting seasons to beach protection and from New Jersey's economic position as "the medicine chest of the nation" to the opening of historic Sandy Hook State Park.

Special services to newspapers and other publications average about 10 a month. Examples of these are the bringing together of members of the Department involved in the promotion of Green Acres for a photograph published in *Life Magazine*, or providing a tape recorded greeting from top officials for broadcast in Europe during an all-States program.

Radio has increased in importance as a Department information media. The Department's weekly program, HOW NEW JERSEY GROWS, has completed its 18th consecutive year of broadcast reporting on operations of the Department. Twenty radio stations carry the program. Safe boating spot announcements and public service announcements such as events of interest, observance of historic anniversaries, and facts about New Jersey also are recorded and provided to stations. Fifty other New Jersey and metropolitan radio and television news directors receive these announcements in mimeographed form. Eleven additional radio programs were prepared as cooperative ventures with educational institutions and radio stations.

The weekly fishing report was prepared and

used for the five-month summer season by nine radio and television news editors, including WOR New York; WCAU Philadelphia; and WRCV Philadelphia.

The Department participated in the preparation of 10 television programs including special reports on the restoration of the shore area after the severe Atlantic Coastal storm of March 1962; a Salute to New Jersey on the Perry Como Show televised nationally in January; and a second program about New Jersey presented on a Los Angeles television station in February.

Approximately four articles a month were prepared on topics ranging from Green Acres to historic sites and carried in Sunday supplements, special interest magazines and Department publications.

Special service projects, averaging six a month, were rendered to public and private concerns. Arrangements for oyster boat trips for newswriters and photographers, assistance to a national forestry magazine writing about the Delaware Basin Compact Commission, the preparation of a capsuled New Jersey history, and the operation of the New Jersey public information service for ASPO—the American Society of Planning Officials—during the national convention in Atlantic City are examples of such services.

The New Jersey Picture Identification Contest, used by 33 New Jersey newspapers and one television station, was continued for the second year. Three pictures were carried each week for eight weeks with appropriate captions and stories. Awards in the form of vacations at the seashore or on State lands afforded an opportunity to publicize these sites and their use.

Inter-office services included the editing of about six publications each month, clipping and routing of newspaper and magazine articles pertaining to Department responsibilities, and arranging for request speakers, movie showings and other presentations desired by groups interested in the various aspects of the work of the Department.

A NEW PUBLIC MARKET FACILITY FOR NEW JERSEY

Upon the basis of studies developed by the New Jersey Departments of Conservation and Economic Development and Agriculture and the United States Department of Agriculture it has been concluded that a site located in Hudson County is the only practical location in the New York-Northeastern New Jersey metropolitan area meeting the basic requirements for a major new public market facility to meet the area's growing food distribution problem.

The existing meat, fruit and produce facilities in the metropolitan area are not adequate. Changes in methods of shipping, handling and types of products have occurred without corresponding improvements in available marketing facilities. The result has been the creation of bottlenecks which have increased handling costs, reduced efficiency of operations, and raised the costs of meat, fruit and produce to the consumer. The proposed site, located in Secaucus, North Bergen Township and Jersey City, is about one mile west of the Hudson River directly west of midtown Manhattan. The total land area of approximately 960 acres is bordered on the west by the New Jersey Turnpike, on the north by New Jersey Route 3, on the east by the New York, Susquehanna and Western Railroad, and on the south by the Hackensack River.

In its study of the New York Fruit and Vegetable Market, the United States Department of Agriculture recommended that a food distribution center should be of sufficient size to accommodate all food commodity groups. The site described above is the only practical location available meeting this most important requirement. A primary advantage of the site is the availability of excellent existing transportation facilities. Six railroads have direct access to existing track facilities which do not require floating transfer equipment. From all major points of food origin, trucks will have direct access to the proposed market via modern highways. Distance and estimated average travel time from the site to the major crossings in the downtown Newark and New York metropolitan area is very advantageous; Lincoln Tunnel, 3.0 miles, 10 minutes; Holland Tunnel, 2.3 miles,

10 minutes; downtown Newark, 5 miles, 13 minutes; George Washington Bridge, 11.3 miles, 20 minutes and to the proposed Narrows Bridge, 20 miles, 30-35 minutes.

The site area is largely undeveloped and available at roughly ten percent of the estimated cost per acre of other available sites. Demolition and relocation problems would be minimal. Gas, electric and sanitary sewer facilities already exist.

Since the approval of necessary legislation initiation of promotional studies, and formation of a five member Food Market Commission, significant progress has been made. In December 1961 the Hudson County Board of Freeholders unconditionally guaranteed a \$15 million bond issue of the Commission. In January 1962 the Commission sold the initial issue and in February 1962 issued a first installment of \$1,700,000 as part of the financing program for development of plans, reclamation and site improvement and land acquisition in the section of the site selected for immediate development.



RESEARCH AND DEVELOPMENT

New Jersey, a State with a share of the nation's research far exceeding its relative size and population, and rapidly expanding as a center for young industry which will spend heavily for research and development, has successfully organized a New Jersey Council for Research and Development.

The Council came into being when interested leaders representing business, industry, labor, education and government, banded together to do something about the specific problems facing the research and development community in the State. The logical and orderly expansion of the State's overall economy is closely allied to its research and development. Technological growth is the cornerstone of a healthy economy. The great reservoir of talents and skills available in industrially diversified New Jersey is being placed at the disposal of the Council.

As research grows in New Jersey the need for more scientific manpower will grow with it. If the State is to continue its leading position in this field, maximum effort toward utilizing, developing and improving the skills of the work force must be exerted. The Council has embarked on a cooperative effort with colleges and universities throughout the State to develop and improve training programs for qualified personnel. Increased employment is an offshoot

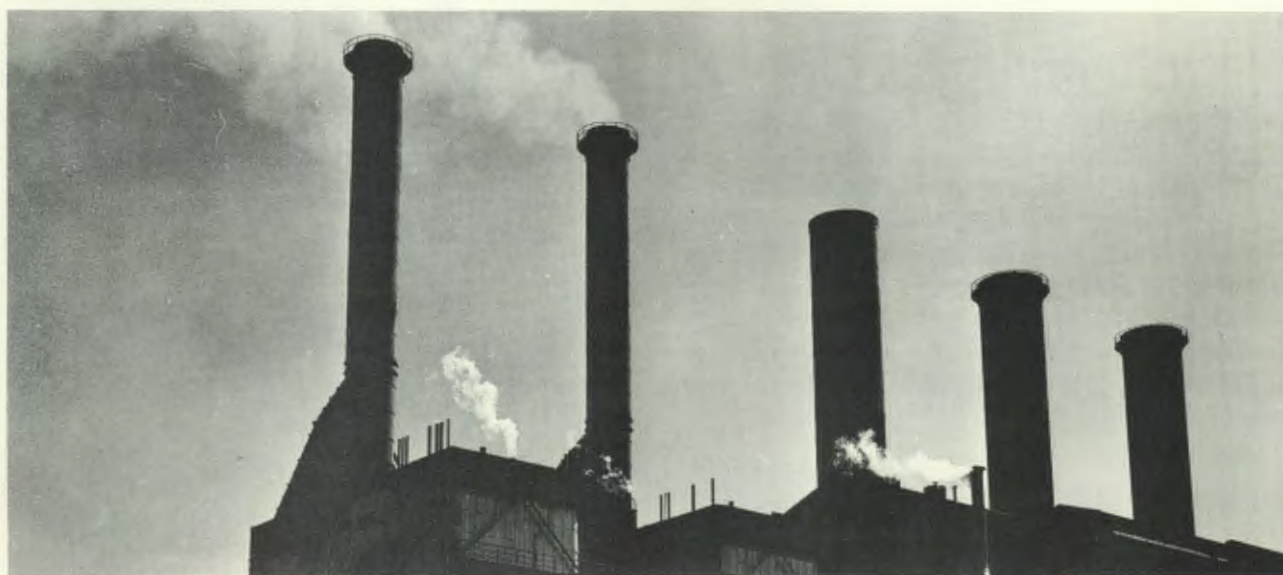
of the upgrading of properly trained people which creates employment opportunities for new personnel.

A vigorous statewide science program during evening hours when the working scientist might attend; the establishment of more facilities for postgraduate work; the development of an exchange information center with such features as a storage system of back files, courier service to borrowers and liaison with university and public libraries, are other areas receiving the attention of the Council.

The Council also can assist in facilitating growth by alerting government at all levels to the necessity of maintaining the best possible climate for research and development as a means of continuing industrial expansion.

Scientific "breakthroughs" emanating from New Jersey will be promulgated by the Council so that the nation may know of the State's research and development.

Another means through which the Council can help disseminate information about the growth of research in New Jersey is a public relations program with statewide newspaper and radio publicity, newsletters and special bulletins, special events of a technical nature and meetings bringing together those people particularly concerned with research.



DIVISION OF RESOURCE DEVELOPMENT

Parks, Forests and Historic Sites

Over 3,000,000 people visited the State's parks, forests and historic sites during the year, representing almost a quarter of a million increase in attendance over the 1960-61 fiscal period. A record 356,000 visited High Point State Park alone. Sandy Hook, leased from the federal government on January 8, 1962 on agreement the State will maintain it according to agreed plan, has met with immediate public acceptance. A record 352,000 visited Island Beach State Park which is now in competition with High Point State Park for top attendance.

A number of facility improvements to meet current needs were made during the 1961-62 fiscal period. To meet public demand for additional facilities at Island Beach State Park both the original 800-car parking area and beach area were duplicated. Other improvements included new accommodations for picnickers and fishermen. Plans for the near future include a new bath house and concession building and a boat approach area on the bayside.

Enough temporary facilities were erected in time at Sandy Hook to accommodate a record number of visitors. Expansion of facilities is scheduled to meet public demand in the coming year.

Increased usage of facilities at High Point State Park required expansion of sewage disposal systems and installation of additional laundry equipment. Historic attractions such as the Nelson House and Bear Tavern at Washington Crossing State Park received extensive repairs. Unfortunately all work at this park did not fall within the improvements category. An estimated 400 of the park's greatest assets, its trees, had to be removed because of damage suffered during a small but highly destructive tornado.

Other parks of historic importance also received attention. Steps have been taken to restore the tower and museum at Edison State Park. The Manager's Cottage at Allaire State



Sandy Hook

Park has been restored, refurnished and opened to the public. Restoration work on other historic structures at this park is continuing. Extensive repairs also have been made on historic structures at Ringwood Manor State Park.

Restoration of Boxwood Hall in Elizabeth was completed this year. The number of visitors to all areas of historical significance totaled 228,301.

Improved parking facilities have been provided at both Stephens and Hopatcong State Parks. Barnegat Lighthouse State Park now has a boundary fence and a paved entrance road and walkways. The effectiveness of recent stone jetty and timber groin beach protection works was dramatically demonstrated at this park during the March storm. New play equipment centers have been established in many State parks during the current year.

Over 900,000 people visited State forests during the past fiscal year. Restoration work at Batsto in the Wharton Tract area is being continued. Forty new sites for camping and picnicking have been opened at Worthington in addition to four miles of new access and service roads. Thirty sites in the new camping area in Stokes State Forest have been surfaced with weathered shale. New camping facilities have been installed at Lebanon and Belleplain State Forests. Extensive facilities improvements have been made at Belleplain.



Indian King



Stokes State Forest



High Point



Twin Lights
Sandy Hook

Summary of Attendance and Income, 1961-1962

State Parks			State Forests		
Park	Attendance	Income	Forest	Attendance	Income
Allaire	75,086	\$ 16,850.20	Bass River	77,180	\$ 37,619.12
Barnegat Lighthouse	115,762	25,305.30	Belleplain	54,105	13,749.42
Cheesequake	174,683	37,526.05	Green Bank	20,990	—
Edison	9,859	1,302.68	Abram Hewitt	6,335	—
Fort Mott	37,355	1,240.15	Jenny Jump	19,772	1,867.05
Hacklebarney	38,613	2,716.56	Lebanon	69,775	11,904.05
High Point	356,899	55,110.25	Norvin Green	7,370	—
Hopatcong	226,210	59,982.70	Penn	26,860	608.19
Morris Canal Rents, etc.	—	6,133.30	Stokes	309,547	30,270.06
Island Beach	352,987	145,723.51	Worthington	21,260	598.85
Musconetcong	52,210	265.18	Wharton Tract	326,838	39,299.83
Parvin	114,455	33,071.92	Total	940,032	\$135,916.48
Princeton Battlefield	16,857	825.00			
Ringwood Manor	61,319	15,442.96			
Stephens	76,583	1,044.55			
Swartswood	77,492	27,949.60			
Voorhees	37,581	1,741.70			
Washington Crossing	221,036	4,657.15			
Washington Rock	15,390	331.97			
Office Sales	—	94.75			
Total	2,060,377	\$437,315.48			

(All Facilities)

Location	Attendance	Income
Forests	940,032	\$135,916.48
Parks	2,060,377	437,315.48
Historic Sites	26,260	5,307.43
Total	3,026,669	\$578,539.39

State-owned Parks and Forests—1961-62

Parks	County	Year Acquired	Acres In Land	Acres In Water	Acres
Allaire	Monmouth	1940	1,278		1,278
Barnegat	Ocean	1951	13		13
Cheesequake	Middlesex	1938	903	15	918
Cranbury Lake	Sussex	1925	70	129	199
Edison	Middlesex	1947	30		30
Farny	Morris	1944	803		803
Fort Mott	Salem	1947	104		104
Greenwood Lake	Passaic	1925	2		2
Hacklebarney	Morris	1924	193		193
High Point	Sussex	1923	10,982	79	11,061
Hopatcong	(Sussex)	1925	13	2	
	(Morris)		78	14	107
Island Beach	Ocean	1953	2,694		2,694
Little Basin	Hudson	1925	2	10	12
Mount Laurel	Burlington	1908	20		20
Musconetcong	(Sussex)	1925	14	231	
	(Morris)		14	231	343
Parvin	Salem	1931	918	107	1,025
Princeton Battlefield	Mercer	1946	40		40
Ringwood Manor	Passaic	1936	569	10	579
Sandy Hook	Monmouth	1962	460		460
Stephens	(Morris)	1925	94	4	
	(Warren)		133		231
Swartswood	Sussex	1914	185	519	704
Voorhees	Hunterdon	1929	429		429
Washington Crossing	Mercer	1912	369		369
Washington Rock	Somerset	1913	27		27
			20,437	1,204	21,641

(Cranbury Lake, Farny, Greenwood Lake, Little Basin & Mount Laurel are not developed.)

Forests	County	Year	Acres	Acres	Acres
Bass River	(Burlington-)	1905	6,820	67	
	(Ocean)		1,531		8,418
Belleplain	(Cape May)	1928	5,944	93	6,492
	(Cumberland)		455		
Green Bank	(Atlantic)	1930	300		
	(Burlington)		1,533		1,833
A. S. Hewitt	Passaic	1951	1,874	16	1,890
Jackson	Ocean	1915	43		43
Jenny Jump	Warren	1931	882	33	915
Lebanon	(Burlington)	1908	15,145	71	
	(Ocean)		7,000		22,216
Norvin Green	Passaic	1946	2,260		2,260
Penn	Burlington	1910	3,228	90	3,318
Stokes	Sussex	1907	12,439	56	12,495
Wharton	(Atlantic)	1954	10,252		
	(Burlington)		70,916	535	
	(Camden)		13,403		95,106
Worthington	Warren	1954	6,158	42	6,200
			160,183	1,003	161,186

COMMERCE

The Department advertises and publicizes the advantages of the State as a vacation center, as a residential area, as a base for the location of new industry, as an adviser supplying business and communities with a variety of technical services, as researcher and statistician by examining and interpreting a mass of economic data on the State, and as a "liaison officer" by keeping close contact with the "New Jersey Family" and prospective New Jersey firms.

On March 15, 1962 a *New York Times* 32-page color supplement entitled "Everything Grows in the Garden State" was sponsored by the Department and distributed to more than one and a half million initial readers. The supplement presented a panorama of the State including its dynamic record of growth in industry and people; access to key national regional and local markets; industrial diversification and large highly skilled and productive labor force; its vitality and fertility in agriculture; its excellent system of public utilities; educational, recreational and cultural facilities; and its plentiful water, mineral, forest and wildlife resources; the "industrial development family" and rapport between business and government; the Green Acres Program for preservation of open space for outdoor recreation and conservation purposes; the integrated food market; the Meadowlands as a future home for industry and the State's urban renewal programs.

This type of selling job for New Jersey is a must in a region where there is a high degree of competition for people and producers, competition for industries, labor and vacationers. It is promotion in the best sense of the word, since the results are beneficial to the people of the State as a whole.

To a great extent, industrial promotion and advertising are carried out on a person-to-person basis. The policy of close cooperation with individuals and agencies is seen in the relationship with the "*New Jersey Industrial Development Family*," a group comprising the State's industrial realtors, representatives of utilities, railroads, local and county industrial commissions, commerce agencies and various associations.

When a firm indicates an interest in locating within the State, the requirements of the concern are determined and the "industrial family" is called in including credit financing and advertising agencies and other supporting business groups. These favorable and fruitful relationships provide a one-stop service for industry, bringing into play the most effective means for government assistance to management in decision-making and planning for the future.

This past year over 200 firms contacted the Department concerning the location of home or branch plants or entire operations in New Jersey, and during the year over 150 "follow-ups" were recorded.

The Lily-Tulip Corporation is a case in point. This firm's announcement in July 1961 of intentions to build a plant in New Jersey culminated a three-year period of working on an original confidential prospect, first referred to Trenton by a phone call from the Stanford Research Institute's locational study of seven states.

Field site tours and inspections in the State were promptly organized. Although the prospect remained unnamed for the first two years, the prospective location narrowed down to New Jersey and one other state. This manufacturer of paper containers will employ 1,200 persons in a 900,000 square foot plant.

Services to business and industry are not curtailed after a firm has settled in the State. A variety of direct aids and counseling services are maintained on a continuing basis. Requests for information are received and cleared at the rate of 40 a month.

Responses include information on markets, distribution of "fact sheets", growth data on New Jersey counties on a variety of subjects and listings of small business investment companies in New Jersey. Promotion of New Jersey via the *New York Times* supplement of March 1962 is an example of such continuing services.

The provision of information for local area development programs, contacts with local development commissions, circularizing fact sheets to the New Jersey Industrial Development Association (NJIDA) and to the Industrial Realtors, specialized industrial development services,

STATE PROMOTION

Promoting New Jersey Abroad

This subject, New Jersey and foreign trade, takes on a new dimension when the tourist trade is considered as well. The department's State Promotion Section is cooperating with the *United States Travel Service* on a foreign language folder pilot project, which deals with Jersey resorts, industry, educational institutions and residential living, with special emphasis on industrial plant tours to attract foreign business and industrial groups. The initial printing includes 30,000 copies each in German, French and Spanish and 40,000 in English. Although the primary objective is Europe, attention is also being directed to South America. Distribution will be a joint effort with the USTS and foreign travel agencies, steamship and airlines, overseas information bureaus of various organizations, and overseas embassies and counsels. The program also will be supported by direct advertising in overseas media, newspapers, radio and television. The tempo of the overseas program will be stepped up gradually with the peak during the New Jersey Tercentary and New York World's Fair in 1964. Surveys to measure the effect of the advertising will be taken from time to time.

This Section has also been assisting in preparing *New Jersey Welcomes Foreign Visitors* for the *NATO Handbook for Foreign Visitors* and in sending information and pictures on New Jersey resort areas to the Foreign Missions Office.

A Storm to Remember

For three days last March a giant storm packing gale winds up to 50 miles an hour with tides far above normal slashed the Jersey coast, wrecking miles of shorefront and causing millions of dollars of damage. Fear that people would be discouraged from visiting the shore during the summer prompted the Promotion Section to increase advertising and publicity to assure a favorable season. The major incentive was the fact that much of the repair work already had been completed before the opening of the season.

The section cooperated with the National Public Relations Council a firm put on contract with the Department to create favorable publicity through all media. Special attention was given to contacts with syndicated columnists.

The Vacationer's Importance

The March storm and recovery efforts provided a case study of the importance of the shore to the State's economy. New Jersey ranks in the top five recreational states with an annual growth of 5%. Its strength as an estimated more than billion and a half dollar "generator of business" is seen in the millions of tourists the Garden State attracts and the employment it offers. In promoting this large investment many attractive brochures publicizing resort activities are sent out to thousands of inquirers. The section works closely with the New Jersey Resort Association, the New Jersey State Hotel Association, Chambers of Commerce and related agencies to improve the effectiveness and quality of resort literature and advertising.

Numerous promotional literature projects in addition to assistance given in preparation



of the March 18 New York Times Supplement "Everything Grows in New Jersey," were completed, among them a commercial entertainment facilities folder, revision of the fishing folder, a new summer vacation folder entitled "Vacation Fun in New Jersey", a new 1962 events schedule, a fall and winter folder, "A Guide to Industrial Facts", a special edition of "New Jersey Firsts", material for NBC's "Historic Route #1", "Year Round Fun in New Jersey", a folder on unusual places to visit in New Jersey entitled "Off the Beaten Path" and a revised marina booklet.

A new inventory control system for literature distribution also has been established. The "ditto service", supplying names and addresses of all inquiries for resort and travel literature to the major resort for additional information with their local literature, is being continued. A new display poster for conventions, fairs, exhibitions, overseas distribution, sports and travel shows also is being developed.

Educational Promotion

In recent years the scope of this program has broadened considerably so that it now includes answering thousands of requests for information on a wide range of topics, assisting in the prepa-

ration of exhibits to be displayed in New Jersey and elsewhere, aiding colleges and schools and other states in planning special programs, editing material for almanacs, and providing information for publishers of textbooks and encyclopedias.

A new pamphlet, "A Guide to Industrial Facts", is intended for use by students and the brochure, "Know Your State", and the flyer, "Facts about New Jersey", have demonstrated their usefulness as reference guides.

Agricultural Promotion

Although primary agricultural promotion work is done by the Department of Agriculture, the State Promotion Section also contributed through space advertising, radio spot announcements, and other media. The purpose is to stimulate interest in the Garden State grown products and to encourage consumer demand.

Advertising this year included 539 lines and two pages in the magazine, "New Jersey Farm & Garden (Business Farming)", 847 lines in "The Moos", 12 columns in "The Packer" and "Produce News", a 10,000 copy reprint of the booklet, "Riches of New Jersey", and release of 1,200 copies of the Proclamation for June Dairy Month.

RESEARCH AND STATISTICS

Vital Aids and Services to Business and Government

The State's rapid population and industrial growth coupled with mass migration of people to suburban areas and industry shifts to better markets make the face of New Jersey a constantly changing mosaic. Businessmen, industrialists, public agencies, and financial groups want to know what is happening and how it will affect the economic, social and cultural climate of the State.

Private and public groups supplied with such information as population, housing, income, employment, manufacturing, taxation, marketing and retail sales, and transportation facilities are better able to judge the feasibility of any development, expansion or investment. Their actions in turn have a profound effect on the economic well-being of the State. Government agencies also benefit from the up-to-

date information. The commuter problem, urbanism, taxation—these and others by their very nature call for the use of accurate figures and careful analyses.

Statistical compilation, research and analysis is the responsibility of the Department's Research and Statistics Section. Filing basic facts and figures and adding to these stores of basic knowledge are the concerns in the first area. These basic statistics are compiled in such a way as to be readily adaptable to specific requests. In addition, important unpublished material from public and private sources is collected.

The interpretation and organization of such basic information for the "applied" work of planning, promotion and plant location is the second major function.

Under these two major headings come a number of other areas of responsibility. Among these are expert assistance to other State agencies

and the Governor's Economic Committee, attendance at numerous professional conferences and workshops, undertaking of special surveys, publication of the New Jersey Economic Review every two months, and preparation of reports on a variety of other topics.

One direct application of the mass of data is in the Economic Watchdog Staff Subcommittee of the State government. Such information contributes to the work of the Governor's economic advisers and includes charts, graphs and tables showing the basic economic trends and business activities in the State. Among the indicators used are electric power sales, bank debits of major New Jersey cities, construction contracts awarded, number of business failures and new incorporations, personal income, automobile and department store sales.

People Are a Main Concern

Among the many papers and reports published, *Research Report No. 125*, "Population Characteristics in New Jersey", has been one of the most important to date. This pamphlet was intended to answer some of the questions about the vast growth of population, which passed the six million mark in the last decade. Population figures reveal changes in the character and form of the population. Such information is useful to planners, industrial and housing developers, government and education officials. Graphs and tables in this 93-page report answer questions on density and total population by municipalities, migration from 1950-1960 by counties, age groups, marital status by counties, age distribution 1890-1960 by pentads, sex and race in 1960 by counties and municipalities and household in 1960 by counties and municipalities.

Research Report No. 123,

"Population Trends in New Jersey", released prior to the publication of the above report, focused on a different aspect of the question and studied population changes by county since 1880. It shows which counties grew and which were dormant. It presents an historical approach, tracing the trends of the 21 counties through different decades, notes their rates of growth, and changes in density.

A formula for providing annual estimates of

population for counties and municipalities during non-census years has been devised.

Other Significant Reports

Another major project this year was revision of the *County Data Sheets*. A supplement on the counties has been published entitled "*Research Report No. 117*" using statistics from the 1960 census which are the latest figures available. Another major revision was completed with the publication of *Research Report No. 126* "A Digest of Employment" which provides accurate employment figures through 1960.

A third area of revision was in housing reports, using new figures from the 1960 census. This pamphlet was published in June, 1962.

Industry and Economy

The following projects on the industrial health of the State were completed during the year:

(1) a summary of basic economic data, non-agricultural and manufacturing employment, state personnel, per capita income, value added by manufacture, marketing and sales;

(2) estimates and forecasts of the State's economy in various forms;

(3) comparative figures showing growth trends in New Jersey for more than 25 statistical series from 1950-1960 on population, total and per family buying income, retail sales, electric power sales, etc.;

(4) study of construction activity to determine whether it is a good series for economic analysis;

(5) information on manufacturing growth in a number of establishments and employment, growth of personal income, industrial growth as measured by industrial power, production, or bank debits;

(6) a brochure on income patterns.

Statistics on specific industries, types of industries, and for plant location activities were also provided, including: releases on the importance of the chemical industry in New Jersey, on components of the industry, and on its development of new facilities and research; a report on "Industrial Research in New Jersey"; tabulation of business failures in the State, the number of liabilities; review of wool processing industry in New Jersey; comparison among states of value added by manufacture for each industrial category;

a monthly summary of the Prime Government Contracts Awarded to New Jersey firms; revision of record regarding new industrial firms to give more authoritative information about new plants coming to the State, new branch plants established and relocation and expansion of older industries; a chart showing the 10-year employment in the chemical industry; a chart on the establishment of new firms in New Jersey by years, with indicators of initial employment and potential full operating employment 1952-1960; and studies of the effects of Small Business Investment companies on the State's economy.

The New Jersey Economic Review

This periodical, published every two months provides valuable information on employment, business activity, new companies and industrial firms. Businessmen, government agencies, development agencies, industrial commissions, and trade organizations have found it most useful. The Review is now distributed to over 1000 subscribers. Each issue features an article devoted to one aspect of the Jersey economy. Examples in past issues are commuter patterns and New Jersey's role in international trade.

Standard Building Code

Sound planning for future development demands the use of modern sanitation and construction codes, and it is the role of the State to assist local government by furnishing codes for enforcement. The department is required by law to prepare and distribute a "Standard Building Code of New Jersey" which any municipality may adopt by reference. The building

code is continually revised so that it will remain an effective instrument of municipal government.

A large number of municipalities have no codes, while in others codes are inadequate or obsolete. Especially in this period of rapid expansion, both industrially and in population, modern codes are essential if the safety and general welfare of the public are to be secured and maintained.

The State building code is provided in three sections. Parts A, B, C, D, and F, comprise the first. Part A contains general provisions and definitions; Part B sets forth requirements for structural, fire, and general safety with a component manual; Part C enumerates the requirements for elevators, escalators, and conveyor equipment; Part D provides the basic rules for air conditioners, mechanical ventilation and refrigeration; Part F concerns the requirements for wiring and electrical equipment. The second section is Part E, a plumbing code prepared by the State Department of Health. Under the third heading are regulations for one-family and two-family dwellings.

The trend toward universal adoption of the code is continuing—five municipalities and townships formally adopted the code during the year and five others are seriously considering its acceptance. At the end of May, 71 communities had secured the code. Total distribution of various sections of the code to contractors, engineers, architects, industrial firms and municipalities amounted to 2,396 during the year.

GEOLOGY AND TOPOGRAPHY

Many citizens logically assume that once the eternal rocks have been identified the geologic work has been done. To a degree this is true, in that natural changes are so slow as to be imperceptible to man in his transitory passage upon this earth. However, as man's needs change and he gains in wisdom, our resource needs and our evaluation of them must also change if they are to be used effectively.

Geologic and topographic mapping, the identification of minerals, rocks and fossils, and the solution of problems in ground-water and engineering geology continued to be major activities

of the survey in 1962, as they have been every year since 1835. However, the ever-changing needs for more knowledge in new specific areas was demonstrated during the year by the many requests for information about geology, fossils and minerals related to leisure time activities and outdoor education, the interest in rare earth minerals, studies related to the disposal of nuclear waste, requests for information about possible offshore oil, and the evaluation of water resources with respect to their effect upon zoning, planning and industrial development of the municipality or township.

Routine Geology

It is expected that a geological survey will provide an identification service for those who may find minerals, rocks, fossils, or unusual geologic conditions. It is also expected that a survey will provide information on a wide variety of subjects including those listed above and matters pertaining to natural resources, topography and geography.

During 1962 some 10,000 requests of this nature were answered. In addition to these routine requests for information and identifications, the Bureau was asked for assistance and advise on the recovery of a mastodon skeleton found in Bergen County, the skeletons of a large sea turtle and a mosasaur found in the greensand marls of Sewell, and investigation of a new cave found near Newton.

Geologic mapping was continued in the High Bridge, Culvers Gap and Branchville quadrangles. The New Jersey Tercentary Commission was given assistance in the assembling of information and the preparation of two maps for the Historymobile showing the geologic changes in New Jersey before the development of the present terrain. A third map, completed in cooperation with the State Museum, showed Indian trails and the areas occupied by the most important New Jersey Indian Tribes.

Publications

In many professional circles the effectiveness of a geologist and of a geological survey is judged by its publications. By such a standard, 1962 was an outstanding year. The revision program to improve the State Atlas Sheets resulted in the completion of two more sheets, No. 36 and No. 22, with the addition of the red and green plates to indicate main highways, county boundaries, and State forests and parks. A magnetic declination map of great value to land surveyors and engineers working in New Jersey was also prepared.

After nearly ten years of effort, Part II of Cretaceous Faunas, a highly technical revision and updating of the standard work on fossils found in most of the coastal plain formations, was received from the printer in March.

During 1962 a Geologic Report Series was established and five of the first six reports were made available to those interested in such specialized subject matters. The series was

established to provide a means for making specialized information available without using up limited printing funds in the acquisition of large stocks of slow moving printed reports. Reports in the series are mimeographed, blue-printed on photolithed as the potential demand requires.

A bulletin on the world famous mineral occurrences at Franklin, New Jersey, was critically reviewed by mineralogists who are authorities on this mineral deposit and was then sent to the printer. Publication is expected in the fall of 1962. A second popular bulletin on New Jersey caves, started with the assistance of two New Jersey cave exploration groups, is being prepared for the printer.

The most important single lecture presentations were the lectures and guided tours given to the International Mineralogical Conference during the two days they visited New Jersey's mineral locations. A lecture program on New Jersey's mineral resources was given to the 60 mineralogists from all parts of the world who were attending the Northeastern Field Trip of this International Conference.

Major conferences on water resource problems organized by the Camden County Planning Board, the Stony Brook-Millstone Watershed Association, the West Windsor Township Planning Board, and the Association of Somerset County Governing Officials were also attended.

Oil and Natural Gas

Sporadic and unsuccessful efforts have been made to find oil or natural gas in New Jersey ever since Drake started the modern oil business with his successful oil well at Titusville, Pa. The development of successful off-shore drilling techniques in deep waters has led to renewed interest in the possibility of oil being found in New Jersey particularly off-shore in the deeper sediments of the coastal plain. Some private geophysical exploration was made off the New Jersey coast during the late summer and fall of 1961. In anticipation of the renewed interest in the possibility of oil, a large number of the water well records and the logs of the few oil prospect wells in the New Jersey coastal plain have been examined. This study was completed with the publication of Geologic Report #3, *Deep Wells of the New Jersey Coastal Plain*, which summarizes the extent of our geologic

knowledge of the deeper formations and Geologic Report #2, *Thirty-one Selected Wells of the New Jersey Coastal Plain*, which gives the lithologic description of some of the deeper wells and exploratory drill holes which had been carefully sampled. A geologist was assigned to take pit samples and observe the Division of Water Policy and Supply and United States Geological Survey drilling operation for a deep test well at Island Beach State Park. This well reached basement rocks at a depth of 3884 feet after penetrating what may be about 800 feet of pre-Raritan lower Cretaceous sediments.

Engineering Geology

From time to time industrial development officials or other State organizations request field studies or information from various files about the geology of specific areas for use in major engineering programs.

In early 1962, 50 copies of the Geologic Report #1 *Bedrock Map of the Hackensack Meadows*, were sold for incorporation in a report being prepared by an engineering firm for the U. S. Army Engineers. In addition to these copies, 60 other copies of this report had been sold by December, 1961 to individuals and engineering firms interested in subsurface conditions in the Hackensack Meadows.

The State Architect was assisted several times with well problems for various State facilities, and the Division of Water Policy and Supply was assisted on several occasions with respect to the geology of Spruce Run and Round Valley. In addition to checking geologic information as revealed by excavations at Spruce Run and Round Valley, a geologist was assigned to Spruce Run for five days in August, 1961, at the request of the Division of Water Policy in order to work on specific geologic problems. The New Jersey Geological Survey was also asked to make preliminary reconnaissance on the geology of proposed reservoir in Monmouth County and at Six-Mile Run, Middlesex County.

The Federal Housing Administration requested information on several occasions about the possibilities of limestone sink-holes affecting proposed housing developments in northern New Jersey. There were also other engineering requests for information about conditions which might be expected in the excavations of tunnels,

foundation conditions for urban renewal projects, the possibility of constructing a disposal well for caustic wastes from a major oil refinery, and the geology around bridge abutments for major highway construction.

Shore Protection

The paradox of the change of the unchanging is excellently illustrated by the destructive storm which devastated the New Jersey coast in March, 1962. Although the State Geological Survey had not been involved in any shore protection programs since the 1920's, the Bureau was asked to give priority consideration to aerial photo interpretation of storm damage. From this study and a subsequent enlargement of the research effort it was determined that eight miles of the New Jersey barrier beach at three locations had been broken through and over, with nearly complete destruction of all houses and facilities, during the height of the storm. Several temporary new inlets to Barnegat Bay were established, but only one of these, that at Harvey Cedars, required closure by corrective action by the Army Engineers. The sections of the coast devastated in March, 1962 had all been similarly damaged by a different type of storm, a hurricane, in September 1944.

It was also determined that no geologic studies had been made heretofore which would assist in explaining why a northeast storm and a hurricane occurring nearly twenty years apart would damage the coast in the same way and at the same locations.

A comparison of shore line charts over the past eighty years shows that 57% of the New Jersey Coast between Sandy Hook and Cape May is retreating westward at a rate of about two feet per year, about 19% of the coast has been building slowly seaward, and the remaining 24% has been eroding at an extremely rapid rate. Inlet changes in several instances may destroy as much as a mile of beach in a single storm and several miles in a few years if all islands, bars, spits and beaches around the inlet are considered. A continuing program to obtain needed basic data to investigate the geologic principles affecting the erosion of the New Jersey shore has been established. The information and findings of this program should be of great assistance to the shore protection efforts of the Bureau of Navigation.

Industrial Park for Nuclear Industry

Investigation of a possible site for a nuclear industrial park begun in 1961, continued in 1962 with the completion of the field investigations in August and the publication of a Site Evaluation report in September. New Jersey is centrally located with respect to the growing nuclear industry and has certain natural advantages which are very favorable for some types of nuclear industrial facilities. These advantages, however, have been offset in several other states which have either established offices of nuclear industry coordinators to keep abreast of the many rapidly changing needs and techniques of the industry or have established nuclear industry authorities with the power to issue bonds to assist in the development of nuclear facilities.

New York State has established a nuclear industrial park and three states now have agreements with the A.E.C. to handle nuclear industrial wastes. Key installations in the growing peaceful uses of the atom probably will locate close to approved sites for nuclear waste disposal. The geologic and other conditions in some parts of New Jersey are most favorable for some types of nuclear waste disposal operations. After the publication of the Site Evaluation report in September, a re-evaluation study was completed in January to determine New Jersey's potential position with respect to the future growth of the nuclear industry. New Jersey has the potential and opportunity to maintain its present leading position in this important and expanding segment of our nation's economy if the State and its citizens wish to make the necessary coordinated effort.

Rare Earths

Modern advances in electronics increasingly require the use of rare earths in the construction of extremely durable miniature electrical components required for the nation's space programs. The interest in uranium a few years ago led to the discovery of rare earth minerals associated with some of the New Jersey uranium occurrences.

During 1962 there was several investigations of rare earth deposits and assistance was rendered to personnel of the U. S. Bureau of Mines investigating these resources. A member of the

staff made field investigations and mapped several of the more promising rare earth deposits.

Leisure Time Geology

The changing work patterns of the American public have resulted in increased leisure time. This has resulted in an explosion of interest in rock and mineral collecting and an increased interest in geology itself. Three years ago New Jersey had seven mineral and geological societies composed of amateurs and professionals interested in collecting rocks and minerals or in learning more about the influence of geology upon the State in which they live. In 1962 there were fourteen such societies.

These organized amateur groups were assisted in a variety of ways both in lecturing to the group and by mineral identification and advice to individual members. Rock and mineral collecting was reported in one recreation study as the third ranking outdoor activity in the number of members of organized groups.

The Geological Society of New Jersey, jointly sponsored by the State Geological Survey and the State Museum, completed its fifth successful years with an enlarged membership and a marked increase in the number of requests for its publications.

This greatly increased interest in geology, rocks and minerals has been reflected in the continuing growth of the cooperative program with the Department of Education at the Stokes School of Conservation. A staff member of the Bureau of Geology conducted four field trips and gave one evening lecture every week from September through November 1961 and from March through May 1962. The geology of New Jersey was thus presented to some 2600 students in the State colleges.

Ground Water

Advice on ground water conditions and the probable depth and yield of wells at specific locations in New Jersey has been sought since the very beginning of the New Jersey Geological Survey. Some of the very earliest reports contain area or regional summaries, lists of new and important wells, and other observations on ground water conditions. Routine requests about specific sites or specific wells now average between forty and sixty per month with some requiring only five or ten minutes to answer

while a few others may require from several hours to a day or two of field work and record checking. In 1962 there was a noticeable change in the nature of the requests for groundwater information as private industry and government officials increasingly realized the importance of regional relationships.

In addition to the Geologic Reports mentioned in connection with the search for oil, county-wide summaries of groundwater yield, as indicated by well records, were also prepared. The tabulation and evaluation of nearly 2,000 well records in Mercer and Hunterdon counties was completed in June, 1962.

In addition to county summaries, a particular effort has been made to provide township summaries as a guide to local officials. Summaries of Montgomery, Warren, Green Brook and Bridgewater townships in Somerset County were completed or revised at the request of local officials Township summaries which were part of the Mercer County report were used by local officials and the Mercer County Industrial Commission as soon as they were completed. Requests for the early evaluation of several Hunterdon County townships were received from both county and township planning officials.

Topographic Section

The New Jersey Geological Survey, unlike most other State surveys, operates its own topographic mapping program and is also responsible for the maintenance of a geodetic control system of monuments, bench marks and other precisely located points. Two new State Atlas sheets were published during 1962 bringing seven of 17 up to date with five color printing to show the physical, political, and cultural aspects of New Jersey's surface. The State Atlas sheets are on a scale of one-mile-to-the-inch.

The Bureau also operates the only sales office in the State for the 170 federal topographic quadrangles covering New Jersey which are on a scale of 2000-feet-to-the-inch. The two mapping programs provide maps on two different scales and make New Jersey one of the best mapped states in the country.

Geodetic control procedures have been under study for the past three years and major re-

visions in operations were accomplished in 1962. County index maps of geodetic monuments were found to be unwieldy and difficult to keep up to date. A program was adopted to provide such information on indexes, each covering two federal topographic quadrangles or about one-eighth of most New Jersey counties. About one-fourth of the State has now been covered by index maps in this new program, and the system has already proven most helpful to land surveyors who wish monument information in particular areas in a form making it easy to quickly locate the desired monuments or marks.

The operations of the geodetic crew were greatly improved by the receipt in January 1962 of a geodimeter. This instrument, somewhat similar to radar, is capable of electronically measuring precise distances from 50 feet up to five miles with sufficient accuracy for geodetic survey work. It eliminates the necessity for the time-consuming, precise chaining with all of its possibilities for errors and the need for numerous notes. In May a special-body utility truck was received to carry the geodimeter and other equipment and materials required by the geodetic control team in such a way that field operations are improved and the several delicate instruments are protected from theft or damage in transit.

Aerial Photography

An aerial photography program, to provide coverage for the entire State over a five-year period, was continued in 1962 for the second year with flights and photo coverage of eastern New Jersey from the New York State line to north of Point Pleasant and west as far as Wanaque, the Caldwells, the Amboys and Freehold. In addition to providing information for the revision of the sheets of the State Topographic Atlases, the pictures provide up-to-date information for geologists, foresters, planners, and others interested in the changes made by man and nature upon the surface of New Jersey. The complete set of pictures for each year have been indexed and may be examined at the Survey office in Trenton. Pictures from 1962 were used by several state agencies in connection with March storm damage. An additional 2000-2500 square miles of the State will be photographed in the fall of 1962.

RECREATION

It is the responsibility of the municipality to inaugurate and develop public recreation along lines consistent with local conditions. It is the responsibility of the State to aid any political sub-division, upon request, in establishing a suitable framework for its program and to provide such technical services as may be useful in improving existing programs.

During the year, 32 surveys of community facilities and programs were completed. A paramount objective is broader assistance in developing public recreation at the community level throughout the State. A State Recreation Advisory Committee advises the Department on problems and policies dealing with long range recreational development programs. It is the duty of the committee: (1) to study and appraise recreation needs of the State and to assemble and disseminate information relative to recreation; (2) to cooperate in the promotion and organization of local recreational systems for counties, municipalities, townships, and other political sub-divisions of the State, and to aid them in designing and laying out recreational areas and facilities, and to advise them in planning and financing of recreational programs; (3) to establish and promote recreational standards; and (4) to cooperate with all agencies in the promotion of recreational opportunities.

The Department cooperates with groups conducting statewide programs and in particular with the New Jersey Public Recreation Association in the sponsorship of "Playground Championships" and physical fitness programs. Among the services is assistance in organizing recreation commissions, programs and activities. During the year 22 recreation commissions or committees were organized in the State.

The broader objective is to provide technical advice, consultation services and general assistance. These include, but are not limited to, conversion of summer programs to year-round recreation activities; organizing new summer



programs; planning schedules; organizing Teen-age clubs, Golden Age clubs, physical facilities layouts, budgeting, personnel, financing and similar administrative matters, community centers, swimming pools, skating rinks and play and sports fields. Ninety-three communities in the State were provided with this type of specialized service during the year.

The quarterly publication "New Jersey Recreation Development", containing articles on contemporary problems, ideas and news about recreation, is now distributed to 2,000 subscribers.

A "Recreation Kit", designed to stimulate interest in recreation, was published containing laws, by-laws, bibliographies and information for communities contemplating the organization of formal programs. Services in connection with local program planning were carried out for 113 communities and a total of 487 kits provided upon request.

Exhibits for conferences and special bulletins are being developed. As part of the effort to increase the scope and service values of personnel, an in-service training program is being expanded. Surveys of community needs, physical resources, program requirements and potentialities are assuming greater importance due to the demands for this type of service by New Jersey communities.

SUMMARY OF SERVICES TO NEW JERSEY MUNICIPALITIES

Recreation Kits	487	"Water Carnivals"	167
Field Visits (Consultation & Technical advice)	545	"Senior Citizens"	352
Surveys Completed (Facilities & Programs)	32	"Aids to a Teenage Recreation Program"	215
Other Services	190	"How to Build and Maintain a Baseball Diamond"	365
Conferences	45	"How to Conduct a Track Meet"	365
Clinics	1	"How to Build and Maintain a Football Field"	365
Publications Released	14	"How to Build and Maintain a Tennis Court"	365
Recreation Development Released—four issues	8000	"How to Build and Maintain a Running Track"	365
Revised and Reissued Copies of the Recreation Kit entitled "New Jersey Statutes Relating to Public Recreation"	500	"Aids to a Summer Playground Recreation Program"	148
Released Copies "Outdoor Ice Rinks", their construction, maintenance and operation	500	"Water Skiing for Fun, Health and Recreation"	267
		"Golf Courses in New Jersey"	1400
		Radio Broadcasts	2

FOREST MANAGEMENT

Private Lands

Private landowner interest in practicing forest management continues at a high level. The overall potential of woodland areas is being understood and appreciated. Interest in timber sales with its resulting income has been the most dominant reason for requesting assistance under the State program. Prices paid for New Jersey timber products is approximately double that paid in adjoining states. Interest in recreational activity on the wooded sites has also shown a marked increase. Proper management of the trees and vegetation on such wooded areas contributes to the success of the recreational units. Many requests for this type of assistance have been received.

State Lands

Management plans for the Bass River and Belleplain Forests were completed this year. Inventory data collection and management plans development is being accelerated in order to fully utilize all State forest areas on a multiple use basis.

Methods and procedures have been developed for the maintenance of roadsides through the use of herbicides. Cutting of roadside vegetation, which must be done on an annual basis, by hand or mechanical means, is very time-consuming and costly. By using chemicals an enduring benefit is obtained which lasts from five to seven years. Various combinations and application of chemicals have been tried and will serve as useful guidelines for future work.

Procedures and tools for the application of chemicals for forest stand improvement have also been developed. Results indicate that rapid

and inexpensive procedures will make it possible to greatly expand this type of work.

Reforestation

Approximately 1,000,000 seedlings are grown each year and sold to New Jersey landowners. The objective is to supply seedlings at a minimum cost for the reforestation of idle lands. Plans are prepared for each property to meet specific needs in each particular area.

Tree Experts

The Department's Bureau of Tree Experts is charged with the administration of the Tree Expert Law (Chapter 100 P. L. 1940) which provides for the examination and certification of Tree Experts. The purpose of the Tree Expert Law is to make it possible for the public to employ tree surgeons and arborists who are competent and trustworthy. Under the terms of the law, tree surgeons and arborists may present themselves to the public as certified tree experts after having passed an examination to prove that they are competent and qualified to diagnose and treat tree ills. This year the Bureau renewed the certificates of 118 arborists and issued 3 new certificates to tree surgeons who passed the required examination.

Applications received	16
Applications received for re-examination	3
Applications approved	10
Applicants examined	6
Applicants re-examined	1
Applicants not appearing	3
Applicants passing	3
Applicants failing	4
New certificates issued	3
Certificates renewed	118
Total certificates issued	121



	Owners	Acres		
Request for woodlot management assistance	639	—	Volume Inventories:	
Request for planting assistance	253	—	Bd. Ft. timber	8,663,000
Woodlots examined	426	27,041	Cords pulpwood	68,442
Planting sites examined	199	1,830	Volume Marked:	
Forest Management Plans made			Bd. Ft. sawtimber	2,499,000
Inventory: sawtimber	4	8,080	Cords pulpwood	2,716
pulpwood	2	1,063	Volume cut: Bd. Ft. sawtimber	2,351,000
Marked for cutting: sawtimber	82	1,360	Cords pulpwood	3,148
pulpwood	83	568	Prescribed burning lines plowed: Miles	65
Timber saved from destructive cutting	75	2,984		Owners 15
Prescribed burning plans made (new)	5	2,178		
Planting plans made	95	786		
Work established under management plans:				
Sawtimber cut	42	1,141		
Pulpwood cut	44	457		
Prescribed burning	24	9,314		
Total	1,973	56,802		



FOREST FIRE SERVICE

During the year, 1693 fires burned 18,385 acres of forest land. There were 29 fires of over 100 acres. The largest, 2400 acres in extent, occurred in the Beachwood area in Ocean County. This is over twice the average number of fires for the period, but only 1 2/3 the average acreage burned for the same period during the past twelve years. This record may be considered good in view of the severe fire weather which occurred from March 17 through May 10, 1962, and the prolonged spring drought which continued up to June 12.

The evidence indicates that the relatively low area per fire during this period of high fire danger should be attributed to the "air drop" of bentonite "slurry" directly on fire from a specially equipped airplane. Two airplanes were used during the spring of 1962. One was based at Coyle Field in the "Plains" area of Burlington County and the other operated from either Woodbine Airport in Cape May County, or Downtown Airport in Gloucester County. The drops from the two planes proved very effective in retarding the spread of fire until ground crews could reach the scene and actually put them out. Field personnel are enthusiastic about the use of "air drop" and the consensus of opinion is that it is a very effective means of fire control.

Incendiarism

The malicious setting of forest fires for a variety of reasons appears to be on the increase.

During the fire season last spring, air patrol was utilized. The matter of incendiarism has become so critical that a special program will be developed prior to the spring fire season of 1963 to combat this nuisance.

Record Violation Established

Technical Violations	232
Individual Responsibilities	269
Railroad	38
Hazards	16

Cases Closed

	Number	Amount
Technical Violations	182	\$ 63.30
Ind. Respons.	177	2515.87
Railroad	27	688.32
Hazards	23	—

Cases Pending

Technical Violations	83	—
Ind. Respons.	131	—
Railroad	30	200.87
Hazards	6	—

Law Enforcement

Permits Issued	31,838
Cases Prosecuted	2
Convictions	2
Acquittals	—

Causes of Fire

Machine Use	34
Debris Burning	88
Smokers	523
Campers	6
Incendiarist	195
Miscellaneous	34
Lightning	3
Unknown	—
Total	883

Forest Fire Data

Number of Fires	883
Area Burned—Acres	5078 1/2
Average Area	5.6

AVIATION

The Department establishes standards for air fields and other aviation facilities, inspects such facilities, investigates aircraft accidents and alleged violations of air traffic rules and has a major responsibility for the adequacy of the State's air transportation facilities in meeting the future growth requirements of the State of New Jersey. The Department's Bureau of Aeronautics, charged with the above responsibilities, has significantly expanded its operations to meet them during the year.

Certain programs are accomplished jointly with federal and municipal governmental agencies. An example is the Federal-Aid-to-Airports Program. Five applications for federal aid to airports received action during the year: Morristown, Atlantic City, Mercer County, Paterson, and Newark. An aggregate figure of \$722,461.26 in federal aid, matched by local funds, was received during the year under this program.

Inspection of various types of airports requiring licensing by the Bureau of Aeronautics totaled 310; 15 complaints and alleged violations were processed; 29 aircraft accidents were investigated and 16 surveys of air traffic patterns were conducted during the year.

Only ten of the State's 75 licensed airports are municipally owned and operated. All other licensed facilities are supported through private capital sources. Without the aid of adequate zoning and provision of clear approach areas, such private facilities operate under a severe handicap. Real estate developments have blossomed in dangerous proximity to these airports especially in the central and northern areas of the State. Means are being sought to protect and guarantee the continued existence of some of our larger and better facilities because they do serve a public need which the State, county or municipal governments in all probability could never afford to replace. The Bureau of Aeronautics conducts an air marking program in cooperation with chambers of commerce, the New Jersey Department of Defense



and various other civic organizations as part of the effort to provide for safer air travel conditions within the State.

Facilities such as those of Curtiss-Wright, Lockheed, Reaction Motors, Airwork and the National Aviation Facilities Center, to name just a few, reflect the extent of aviation industry already established in New Jersey, an important factor in the economic growth of the State. The adequacy of facilities for this first-class mode of transportation and attendant industrial growth is an area receiving the careful attention of the Department. A great deal of time and effort is being devoted to the study of the possible effects that a regional jetport in central New Jersey would have on air traffic operations in the coming decade. A simulation study to aid in determining these effects is now underway.

The effect of the Local Property Tax Law on aviation in New Jersey is under study. As written, the law makes it mandatory that a tax be collected on all private aircraft based in the State. The factor of aircraft mobility could result in the supplanting of this industry to neighboring states without equitable licensing and taxation of private aircraft in New Jersey. The consensus has been that some form of State registration of aircraft would be more realistic and reasonable. Draft legislation is being prepared for possible introduction in the Legislature which would provide for State registration of private aircraft.



Riverview Towers and Shopping Center

HOUSING

On May 15, 1962 groundbreaking ceremonies for the Riverview Towers and Shopping Center, a four-high-rise apartment complex for 800 families in the City of Paterson, took place. This project (First Ward Urban Renewal Project N.J. R-27) is the first federally assisted Section 221(D)3 high-rise middle-income development in the Nation. The Congress recently enacted into law a new Section 221(D)3 of the National Housing Act of 1961 in accordance with recommendations of the President. This section known as the "below market rate" program—rental housing (five or more units) amends Section 221 (d) (3) to authorize the Federal Housing Commissioner to insure mortgages bearing interest at "below market rate" with a partial or no insurance premium and liberalized features for payment of insurance claims.

Eligible mortgagors participating in the program bearing interest at "below market rate" are non-profit organizations, limited dividend corporations, cooperatives, and public bodies or agencies which certify that they are not receiving financial assistance from the United States exclusively for public housing. This section provides F.H.A. insurance for the first time for rental and cooperative projects which limit

occupancy to low and moderate income families. Family income limits for admission to the projects will be established, based on five times the computed rentals of selected standard rental accommodations adjusted to the Census Bureau median family income figures.

All sections 221 (d) (3) rental or cooperative projects must be located in communities having a "Workable Program" which has been submitted to and approved by the Administrator of the Housing and Home Finance Agency and certified by him to the F.H.A. Commissioner. These projects can be located either inside or outside an urban renewal area. Projects financed at submarket interest rates may not be sold during the first 20 years. This rental housing program for moderate income families terminates July 1, 1965.

But the fact remains that a practical and badly needed middle income housing program for New Jersey has yet to be realized. Despite an all-out effort to secure passage of a series of vitally important legislative bills, New Jersey at the close of the 1961 Legislative Session was still without an adequate program for middle income housing.

The effort to secure a middle income housing program was renewed at the beginning of the 1962 session of the Legislature. New bills to amend the Local Housing Authorities Law and the Housing Cooperation Law and to authorize the creation of a bond issue for construction of middle income housing and to provide loans to resident builders, housing corporations, redevelopment companies and cooperatives were introduced in January and February of the 1962 session of the Legislature. These bills were A-295, A-298, A-368 and A-373. A-295 would amend the Local Housing Authorities Law (P.L. 1938 c.19) to include references to persons of middle, as well as low income and defines such persons in the middle income groups as those "who cannot afford to pay enough to cause private enterprise in their locality to build or furnish an adequate supply of decent, safe and sanitary dwellings so as to enable them, without financial assistance, to live in such dwellings, without overcrowding." This bill passed the General Assembly on April 30, 1962, was received in the Senate the same day and referred to the Senate Committee on Institutions, Public Health and Welfare, but was not reported out of the Committee up to the summer adjournment.

A-298 would amend the Housing Cooperation Law (P.L. 1938, c.20) "to include within the declarations of necessity reference to a shortage of safe, and sanitary dwelling accommodations for persons of middle as well as low income." This bill also was passed by the General Assembly on April 30, 1962, received in the Senate on May 7 and referred to the Senate Committee on Institutions, Public Health and Welfare but, as in the case of A-295, was not reported out.

A-368, designated "The Public Housing and Development Guaranty Bond Act of 1962," authorizing the creation of a bond issue debt, backed by a pledge of the state's credit, subject to referendum for construction of middle income housing under A-373, was passed by the General Assembly in April 30, 1962, after amendment by the Business Affairs Committee of the General Assembly.

A-373, designated "The State Middle Income Housing Law of 1962", which would authorize the Public Housing and Development Authority to loan resident builders, housing corporations,

redevelopment companies and cooperatives up to 90% of the cost to build housing for middle income families and repeals "The State Housing Law of 1949" (P.L. 1949, c. 303), was also passed by the General Assembly. Both A-368 and A-373 were received in the Senate on May 7 and referred to the Senate Judiciary Committee without further action. Legislation to provide for a middle income housing program will be introduced again in the 1963 session of the Legislature.

As of June 30, 1962, with the organization of 4 new Housing Authorities, there are now a total of 52 Local Housing Authorities in New Jersey. With the organization of 14 new Redevelopment Agencies, there are now a total of 23 Redevelopment Agencies throughout the State. In addition to the 23 agencies, 29 of the Local Housing Authorities double as Redevelopment Agencies, making a total of 52 Redevelopment Agencies operating in the State.



NAVIGATION

The Department has jurisdiction over the navigable waters of the State with responsibility for a variety of functions. Among them are: boat registration and regulation of power vessel operations in the interest of safety, protection of the shorelines against beach erosion, administration of riparian lands, maintenance and improvement of our inland waterways and provision of navigation aids on rivers and lakes and operation of the State boat marinas.

Boating Safety

The need for a comprehensive boating bill long sought by the Department to assure compliance with federal boating regulations and to assure the safety of the boating public on New Jersey waters has been met. Legislation requiring registration of boats operating in New Jersey waters has been enacted into law. The provisions of the law have met the standards and requirements of the federal boating act of 1958, popularly known as the Bonner Act, and the U. S. Coast Guard has notified the Department that it will discontinue issuing numbers to New Jersey vessels in July 1962. Thereafter all boating accidents involving boats numbered in New Jersey will be reported to the Department as prescribed by New Jersey boating regulations and the federal boating act of 1958.

Boats of more than 10 horsepower operating on tidal waters under New Jersey law are required to be registered with the State. All power vessels operating on non-tidal waters, regardless of horsepower, must be numbered. Boat owners with numbers issued by the Coast Guard are exempt from State registration until date of expiration shown on Coast Guard certificates. Boatmen of other States are granted 180 days reciprocity while cruising in New Jersey waters. Detailed information on boating regulations and the requirements set forth in the New Jersey Boat Numbering Act of 1962 may be obtained from the Department's Bureau of Navigation.

During the summer of 1961 an estimated 200,000 boats used New Jersey waters. The



Department scheduled more men and patrol hours during the season in an effort to hold down the soaring boating accident rate. In instances where heavy boating activity existed on all summer weekends, around-the-clock surveillance was employed. In addition, about 200 men, most of them volunteers and operating their own boats, were on duty in cooperation with the Department in the effort to prevent boating accidents.

In spite of the increased effort and the Department's appeal to boatmen to exercise caution while operating their vessels, there were 121 reported accidents, 31 fatalities and 80 injuries during the 1961 calendar year. Collisions continued to be the chief cause of accidents. Mid-season figures for the 1962 calendar year season indicate that the number of accidents, fatalities and injuries will appreciably exceed those of the 1961 season. Plans for more extensive patrols were curtailed because of the lack of a boat registration law which would have provided the fees needed to make it possible to secure additional personnel and equipment for the maintenance of safer boating conditions.

With the passage of the New Jersey Boat Numbering Act of 1962 it is now possible to develop a truly comprehensive boating safety program in New Jersey. With registration numbers clearly displayed on operating vessels, it will be possible to quickly identify the operators and to enforce regulations designed to achieve greater boating safety. Lost or stolen vessels may be returned to their owners more quickly. The Atlantic coastal storm of March 1962, for example, resulted in the loss of scores of vessels along the shore. Adequate identification would have been of valuable assistance in recovering them. With expanded enforcement made possi-



ble by the enactment of the boating bill safer boating conditions can be maintained on New Jersey waters.

Coast Protection, Regular Program.

For years the New Jersey shore has contended with the problem of beach erosion. The State recognizes the seriousness of the threat and makes annual appropriations for the construction of protective works to check the steady encroachment of the ocean on the land. Funds

allocated by the State for this purpose must be matched by the shore municipalities on an equal basis. The Bureau of Navigation in cooperation with the U. S. Corps of Engineers, Beach Erosion Board, is continuing the study of the best protective methods for the New Jersey coastline and is now embarking on an additional study of the effect of navigation inlets on beach erosion along the Atlantic Ocean Shoreline. In the 1961-62 fiscal year the following projects were either completed or initiated

**COAST PROTECTION PROJECTS
Regular Program**

MUNICIPALITY	WORK TYPE	TOTAL COST	STATE CONTRIBUTION
Atlantic City	Extension Stone Jetties	\$ 400,000.00	\$ 200,000.00
Absecon Inlet	Soil Borings	2,500.00	2,500.00
Belmar	Reconstruction existing Bulkheads	333,000.00	150,000.00
Berkeley Township	Timber Groin, beachfill	20,000.00	10,000.00
Brigantine	Steelman Bay Soil Borings	4,000.00	4,000.00
Brigantine	Timber Groins	45,000.00	22,500.00
Cape May Point	Stone and Timber Jetty	50,000.00	40,000.00
Deal	Stone Revetment, Timber Cribbing	100,000.00	50,000.00
East Keansburg	Sand Fence	5,000.00	2,500.00
Fort Mott State Park	Soil Borings	1,800.00	1,800.00
Harvey Cedars	Beachfill	30,000.00	15,000.00
Harvey Cedars	Beachfill	30,000.00	15,000.00
Island Heights	Bulkhead and Beachfill	20,000.00	10,000.00
Inland Waterway	Navigation Aids	10,000.00	10,000.00
Keyport	Timber Bulkheads	29,600.00	14,800.00
Long Beach Township	Timber Groins	100,000.00	50,000.00
Long Beach Township	Beachfill	34,278.44	17,139.22
Long Branch	Seawall, Reconstruction Jetties	200,000.00	100,000.00
Long Branch	Seawalls, Bulkhead, Jetty Repairs	270,000.00	135,000.00
Lower Penns Neck	Steel Bulkhead	100,000.00	50,000.00
Manasquan	Extension to Timber Groin	8,000.00	4,000.00
Pine Beach	Timber Groins and Bulkhead	25,500.00	12,750.00
Perth Amboy	Rehabilitation Harbor Refuge	25,000.00	25,000.00
Sandy Hook Bay	Soil Borings	3,000.00	3,000.00
Sea Bright	Reconstruction Seawall	155,000.00	77,500.00
Sea Girt	Reconstruction and extend Stone Jetty	84,500.00	43,750.00
Sea Girt	Beachfill	30,000.00	15,000.00
Shark River	Soil Borings	5,500.00	5,500.00
Shrewsbury River	Navigation Aids	2,054.00	2,054.00
TOTALS		\$2,126,732.44	\$1,037,939.22

Riparian Lands

The administration of riparian lands involves (1) the execution of grants and leases, (2) issuance of permits for the erection and maintenance of structures on navigable waters, (3) issuance of permits for dredging in the waters of New Jersey, (4) collection of royalties on materials removed through dredging, (5) regulation of land reclamation projects, and (6) prevention of the unauthorized use of riparian lands.

Grants and Leases

Riparian lands are those areas flowed by mean high tide or the entire ocean front and all bays, inlets, and streams where the tide ebbs and flows. Although ownership is vested (or was originally vested) in the State, the lands may be sold (granted) or leased to private individuals and groups, and in keeping with a long-standing practice, all revenues derived from these transactions are ear-marked for the support of our public schools. As a rule riparian lands are acquired by individuals for the purpose of erecting small piers or bulkheads to protect property or to improve or to enlarge waterfront facilities. In fiscal 1962 the Bureau executed 125 grants and leases. A development tending to increase the value of riparian properties is lagoon construction along the New Jersey shore—the professional developer's answer to the demand for more edgewater homes with suitable boating facilities.

Among other types of riparian conveyances is the license usually issued for a single fee to public utilities, private corporations, and municipal and county governments. This confers perpetual authority to use riparian lands for such purposes as cable and pipeline crossings. In fiscal 1962 the Bureau of Navigation issued 157 licenses of this type.

Riparian grants and leases as well as single-fee licenses are issued only to an exterior line offshore. For the maintenance of structures in some areas beyond this point, an annual license is required.

Another type of license issued confers the right to engage in commercial dredging in the waters of New Jersey. In return for the license, the State collects a royalty on all materials obtained from dredging. Five commercial dredging

agreements were in effect during fiscal 1962 providing royalties totaling \$30,825. Commercial dredging has steadily assumed new importance because of the heavy demand for fill material for use in highway construction and real estate development. The amount of fill obtainable from land sources in certain areas is becoming increasingly scarce, and if the demand is to be satisfied, one alternative is to tap the beds of rivers and bays.

Permits.

As most municipalities require authorization for the construction of houses and commercial buildings, permits are required for the erection and maintenance of structures on riparian lands and for maintenance and dredging in State waters. During the year, 247 permits for dredging, construction of bridges, structures and the laying of pipelines and submarine cables were issued.

Engineering Operations

Engineering operations include dredging to improve the navigability of waterway channels, the erection of structures to protect the shoreline from erosion, and maintenance of navigation aids on principal inland waterways. During the past year the following projects for the maintenance and improvement of inland waterways were undertaken.

Dredging Projects

Municipalities	Total Cost	State Contribution
Atlantic Highlands, Dredging Atlantic Highlands Marina	\$ 60,000.00	\$ 30,000.00
Boro. Barnegat Light, Navigation Channel, Bay Channel	9,000.00	8,280.00
Lower Township, Navigation Channel, Spicers Creek	115,000.00	115,000.00
Margate City, Dredging Orient & Sunset Canals	23,645.21	13,645.21
Ocean City, Dredging 16th & 18th Streets Lagoons	20,000.00	20,000.00
Township of Ocean, Navigation Channel Double Creek Slough,	51,000.00	46,920.00
Township of Ocean, Navigation Channel, Mud Channel, Barnegat Bay	15,000.00	15,000.00
Totals	\$293,645.21	\$248,845.21



State Marinas

Atlantic City, Pier and Bulkhead Construction	\$165,000.00	\$ 82,500.00
Leonardo Mooring Piles	6,000.00	6,000.00
Soil Borings	5,000.00	5,000.00
	\$176,000.00	\$ 93,000.00

Navigation Aids.

Approximately 300 miles of waterways in New Jersey are marked by the placement of flashing beacons, range lights, buoys, spars and markers on stakes. Flashing Navigation Beacons: 151 Buoys and Spars: Steel river type—110; fiberglass—130. Four thousand channel marking stakes are set annually.

Marinas.

During the fiscal year improvements were made at three State Marinas. At Forked River construction is underway on new toilet and shower buildings and power and water service facilities are being extended to piers now under construction. Work is underway at Leonardo for improvements to pier, power and water facilities. General construction of the new piers 9 and 10 at the Atlantic City Marina was completed during the year and extension of utilities to other piers is underway.

The number of berths at the four chief marinas now total 594; Atlantic City, 300; Forked River, 90; Leonardo, 190; Point Pleasant, 14.

Navigation Receipts—Appropriated Revenue

Lease Rentals	\$ 35,098.78
Annual Licenses	11,622.53
Use & Occupancy	3,449.45
Royalties	30,829.45
One Fee Licenses	13,044.00
Interest	387.58
Guarantee Deposits	2,524.43
Advance Payments on Grants	427,230.27
Grants	472,249.28
	\$996,435.77
Atlases & Maps	428.00

Navigation Receipts—Unappropriated Revenue

Concessions: Forked River Marina	2,742.67
Leonardo Marina	1,382.49
Atlantic City Marina	17,974.81
Preparation of Instruments	7,860.00
Miscellaneous (copies of grants, accident reports, etc.)	132.00
Rentals: Leonardo	28,690.97
Forked River	16,024.07
Atlantic City	54,887.00
Point Pleasant	1,040.00
Fortescue	1.00
Power Vessels	66,066.50
	\$196,801.51

**Marine Patrol Activities
Calendar Year 1961**

Gasoline (gallons used)	25,682
Complaints	2,079
Investigations	2,093
Killed	31
Persons Injured	80
Total Accidents	121
Summons	159
Aids to Boaters	1,739
Recovered Boats	160
Recovered Boat Value	\$133,090.00
Recovered Property Value	25,380.00
Man Hours Expended	37,190

STATE AND REGIONAL PLANNING

Statewide Planning Program

The Statewide Planning Program consists of three phases: Phase I, which is a survey or inventory phase; Phase II, which is devoted to the formulation of alternative proposals and development plans; and Phase III, which will be a detailed statewide planning program and capital improvements program.

Phase I, begun in 1960 and now nearing completion, has resulted in the publication of the important study entitled *The Setting for Regional Planning in New Jersey*. The study defines the various socio-economic centers in the State and delimits their tributary areas. Logical planning areas are defined on the basis of this information and on geographical considerations. This marks a departure from the usual procedure of planning for municipal or county-wide areas which do not always constitute logical areas for development. The information gained from this study will be utilized in all subsequent studies of the Statewide Planning Bureau.

Two studies of the interaction of population and economy also have been completed under Phase I and are being prepared for publication. The first is an exhaustive inventory of existing studies for the use of planners; the second is a more selective treatment of the subject aimed at the general public.

Substantial work has been accomplished on studies of industrial land use, residential land use, the northeastern New Jersey Waterfront, the coastal area, and an inventory of existing open space uses and needs. Studies of natural resources, public utilities and transportation facilities are under way.



The capital improvements programs of other states are being evaluated, and work is underway on devising a format for a State capital improvements program with advice from the Department of the Treasury. A special study is also being prepared on legislative and judicial policy as it affects the physical development of the State. Under Phase II, which was begun this year, a plan for open space acquisition and development is the first study underway.

Funds for Phases I and II have been made available by the State and by the Federal government under provisions of Section 701 of the Housing Act of 1949, as amended. Fifty per cent of the cost of Phase I was granted by the Federal Government in 1960, and two-thirds of the cost of Phase II in March, 1962.

Statewide Inventory.

The department maintains a continual inventory of information of public concern. Record sheets of all public and semi-public properties have been prepared and are constantly revised and kept current. In addition, the following new reports were prepared this year:

1. County Owned Lands in the State of New Jersey, Location and Acreage as of November, 1960 (Map also.)
2. Federal, State and County Owned Lands in New Jersey, by Municipalities, as of January, 1962.
3. Public and Private Watershed Areas and Municipalities Supplied in the State of New Jersey, as of January, 1962 (Map also.)

Revisions of previous reports were prepared as follows:

1. New Jersey County and Municipal Work Sheets.
2. New Jersey County and Municipal Land Areas, for the Census Periods 1890 through 1960.
3. Public Land and Property in New Jersey under the Jurisdiction of the Department of Conservation and Economic Development, as of January, 1961 (Map also.)

A report entitled Population Densities and Density Changes, 1930-1960, is now being prepared.

Questionnaires were distributed this year to municipalities as part of the State's detailed inventory to ascertain the nature and extent of planning services in each. A ninety per cent return of the questionnaires was achieved, and the results are currently being tabulated.

Departmental Planning Section.

Staff services were provided during the year by this branch of the Statewide Planning Bureau to the Department Land Use Committee. This section was responsible for drafting the Green Acres legislation of 1961 and initiating the procedures of the Green Acres program prior to the establishment of an independent Green Acres unit.

Regional Planning Activities

A new type of regional planning activity was officially authorized this year with the passage of Senate Bill No. 257 in the New Jersey legislature. New Jersey municipalities and counties are now permitted to enter into agreements with out-of-state counties and municipalities to establish regional or area advisory councils. Formerly, inter-municipal and inter-county planning stopped short at the State border. The activities of the advisory agencies authorized under this law are expected to prove especially fruitful since New Jersey shares many development problems with her neighbors. The



new agencies are eligible to receive technical assistance and counsel supplied by the State to all planning groups upon request.

Meadowlands

A number of important developments have also taken place in connection with in-State regional planning activities. On September 26, 1961, the United States Congress appropriated \$50,000 to be used by the U.S. Army Corps of Engineers to conduct a study of the Hackensack Meadows. These meadows, consisting of 15,000 acres of swampland along the Hackensack River, are potentially valuable because of their location in the heart of the northeastern New Jersey industrial region. Reclamation or development of the meadows cannot be undertaken prior to ascertaining the interests of the federal government in the area. Hence, the Corps of Engineers' study is an absolutely essential step at this time. The Meadowlands Regional Development Agency, assisted by the Department of Conservation and Economic Development, was largely responsible for the presentation of testimony before the House of Representatives Appropriations Subcommittee which resulted in the \$50,000 appropriation.

The Meadowlands Regional Development Agency (MRDA) was organized in September, 1960, with the aid of the Department of Conservation and Economic Development and consisted originally of the Borough of Carlstadt, Borough of East Rutherford, Town of Kearny, Township of Lyndhurst, Borough of Moonachie, Borough of North Arlington, Township of North Bergen, Borough of Rutherford, Town of Secaucus and Borough of Teterboro. These municipalities were joined this year by Jersey City.

All of the municipalities committed to the agency have agreed in principle to share both the costs and the profits of the development of the meadows.

Additional activities of MRDA, conducted during the past year with the aid of counsel of the Department of Conservation and Economic Development, have been the preparation of a series of proposals involving riparian rights in the Hackensack Meadows; cooperation with the U. S. Army Corps of Engineers; and preparation of a recommended five-point program for the development of the meadows. The riparian proposals were presented to the State Legislative Study Commission on Riparian Laws in October, 1961. The five-point development program was presented to the Governor on June 11, 1962.

The five-point program calls for (1) the undertaking of a leveling survey of the meadowlands in order to determine the mean high water line of the Hackensack River and its tributaries. Such a survey is necessary to settle questions of ownership in the meadowlands because a statute dating back to colonial times rules that lands inundated at mean high tide belong to the State. The program also calls for (2) an engineering survey of the meadowlands, already begun by the U. S. Army Corps of Engineers; (3) a demonstration study on the techniques of inter-governmental organization for reclamation and development; (4) the preparation of a comprehensive master plan of development for the Hackensack Meadows; and (5) continued cooperation between MRDA and the New Jersey Department of Conservation and Economic Development.

The Pinelands

Substantial planning progress for the development of the New Jersey Pinelands has also been made during the past year. The pinelands cover a 980-mile stretch of undeveloped land in Burlington and Ocean Counties. The State has been cooperating with the Pinelands Regional Planning Board, established by the freeholders of both counties, in obtaining federal assistance to study the various possibilities for development. In May, 1962, a grant of \$106,000 was secured from the Urban Renewal Administration to finance planning activities for two years. Basic studies of land use, popu-

lation, physiographic features, *etc.*, will be undertaken prior to the preparation of a comprehensive master plan for the pinelands region.

The municipalities surrounding Lake Hopatcong, the largest body of water in the State, are about to form a regional planning board following the recommendations of the State. The municipalities concerned are the Borough of Hopatcong, Township of Jefferson, Borough of Mount Arlington and Township of Roxbury. Each has passed a resolution accepting the findings of a report proposing a Lake Hopatcong Regional Planning Board, which was prepared by the State and presented to them in July, 1961. An ordinance authorizing the creation of the board has already been passed by Hopatcong, Jefferson and Mount Arlington. Creation of the regional planning board upon passage by the Township of Roxbury will enable the four municipalities to deal effectively with problems of conflicting uses on the lake, and to establish an orderly pattern of lakefront development.

County-Wide Planning

County-wide plans, under provisions of Section 701 of the Housing Act of 1954, as amended, have been undertaken during the past year in Sussex, Ocean, Passaic and Cumberland Counties. A comprehensive plan for the western region of Monmouth County has also been undertaken which will complement the earlier plan for the coastal region of the county. The State was instrumental in obtaining a grant consisting of two-thirds of the total cost of planning for Sussex County, and three-fourths of the cost for the other four counties which are in labor surplus areas.

Area Redevelopment

Labor surplus areas are those where unemployment levels persistently equal or surpass one and a one-half times the national average as defined in the Area Redevelopment Act (ARA) of 1961, which provides four distinct types of aid to depressed, or labor surplus, areas. The types of aid are (1) loans to help in the expansion of existing plant facilities or the construction of new plants; (2) loans or grants for community facilities that are needed to create permanent new employment opportunities; (3) job retraining programs, including subsistence allowances while workers are learn-

ing new skills; and (4) technical assistance on studies that are essential to solving specific economic problems. The Director of the Division of State and Regional Planning has been appointed State Coordinator for the ARA program in order to help New Jersey's labor surplus areas receive the benefits described above.

Six New Jersey counties—Atlantic, Cape May, Cumberland, Monmouth, Ocean and Passaic—have been declared labor surplus areas and have been assisted by the State in fulfilling requirements for participation in the ARA program. A booklet entitled *New Jersey in the ARA Program* describing technical and financial assistance available from the ARA and preliminary procedures for joining in the program is available free of charge to municipalities.

The ARA requires that an area designated for aid must be represented by a group consisting of local, civic, commercial, industrial and labor leaders in urban sectors, or corresponding rural leaders in farming communities. The representative group is charged with the responsibility for preparing an Over-all Economic Development Program (OEDP) for the depressed area. The OEDP should describe the current economic condition of the region, and a program of action for creating new employment opportunities. Thus far, with the aid of the Department of Conservation and Economic Development, representative groups have been formed and OEDP's prepared by Passaic and Ocean Counties, and the tri-county region of Atlantic-Cape May-Cumberland. The Federal Government has approved all of the foregoing OEDP's, and the respective counties have taken additional steps toward participation in the ARA program, including the establishment of committees to study possible occupational training programs. To date, an ARA-sponsored course in tractor driving and maintenance has been given to 25 workers in Atlantic County, and Passaic County is training 62 persons as machine tool operators and welders.

The State succeeded last May in obtaining an ARA loan of \$42,250 to help finance the modernization and expansion of a cooperative egg auction and marketing plant which serves 600 farmer members located in Cumberland, Cape May, Salem, Gloucester and Camden Counties. New equipment will increase the capacity and efficiency of the plant and the number of per-

sonnel required for its operation. Twenty-nine new jobs will be created at the auction itself and a beneficial effect on the economy of the entire egg-producing region is expected.

Application for a technical assistance grant was submitted to the Area Redevelopment Administration early in June, 1962 for the purpose of undertaking an economic study of the entire Atlantic shoreline of New Jersey, from the Raritan Bay to the Delaware Bay. The economy of the region has been based entirely, or almost entirely, on the resort industry. Because of this, seasonal unemployment has been a persistent problem. The goals of the proposed study will be to obtain a sound body of general knowledge, which we do not now have, concerning the shore area; to strengthen the resort industry; to expand the industrial and economic base, so as to strengthen the over-all economy of the region and provide counter-seasonal employment opportunities; to conserve natural resources; and to effectuate well-balanced development. A supplementary application will be submitted in July requesting a geological study to be included and coordinated with the economic study. The geological study would especially investigate the problems of soil erosion and beach protection.

Community Development Activities

The State of New Jersey participates in four municipal planning assistance programs which are administered by the Department of Conservation and Economic Development. They are the Local Planning Assistance Program (701), Continuing Planning Assistance Program (50-40), Community Renewal Program (103), and Public Works Planning Assistance Program (702).

Under Section 701 of the Housing Act of 1954, as amended, funds are provided to municipalities undertaking the preparation of comprehensive master plans for their development. Municipalities in depressed or disaster areas may receive three-fourths of the total cost of planning from the Federal Government; those in other areas receive two-thirds. Ordinarily, the plans are prepared by private consultants approved by the State, but each year the State itself prepares plans for a representative group of municipalities. In this way, the State is kept abreast of local problems, and the plans pre-

pared are preserved as models for various types of communities. This year, plans were completed by the State for Ocean City in Cape May County, the Town of Newton in Sussex County, and the Townships of Blairstown and Pahaquarry in Warren County. The State is currently preparing plans for South Plainfield Borough in Middlesex County, Pompton Lakes Borough in Passaic County and Franklin Township in Warren County. Over two hundred municipalities have participated in the 701 program to date.

The Community Planning Assistance Program, initiated by the State of New Jersey, utilizes State funds only. There is no federal program of assistance for continuing planning. The program was begun last year in an effort to encourage municipalities to make planning a permanent function of government. The requirements for participation are that a municipality must have completed a comprehensive plan for development and must have provided to continue planning for the next six years. The procedure involved calls for the municipality to retain a private planning consultant approved by the State or to hire a municipal planner and to set a yearly planning expenditure goal. The State then advances 50 per cent of the planning expenditure goal for the first year, 40 per cent for the second, 30 per cent for the third, 20 per cent for the fourth and 10 per cent for the fifth year. No more than \$3,000 may be advanced to any one municipality during any one year under this program. If, during the sixth year, the municipality maintains its planning expenditure goal by itself, all advances are considered grants and need not be repaid. A dozen municipalities participated in the Continuing Planning Assistance Program during its first year.

The Community Renewal Program is a concerted effort against blight. Rather than restoring sub-standard neighborhoods in a piecemeal fashion, the program undertakes the study of the renewal needs of the entire municipality. Not only does it seek to eliminate current blight, but to analyze blighting factors, and to preserve all areas from future deterioration. The program was established under Section 103-d of the Housing Act of 1949, as amended, and provides federal grants of up two-thirds of the cost of preparing a Community Renewal Program. The

State of New Jersey supplies one-ninth of the total cost, plus technical assistance during the course of the program which was begun last year. Trenton was the first municipality to participate in the program. This year, five additional municipalities were approved for participation and four are currently applying.

A program of assistance for public works planning is administered by the State in conjunction with the Community Facilities Administration of the Federal Housing and Home Finance Agency. The funds for the program were made available under Section 702 of the Housing Act of 1954, as amended. Interest-free loans are provided to public agencies (states, counties, districts and municipalities) to plan public works, such as sanitary sewers, water facilities, municipal buildings, etc. The loans need not be repaid until actual construction work has been started. One hundred and twenty-five municipalities have participated in this program since the Division of State and Regional Planning (then the State Planning Bureau) took over its administration in 1956.

In addition to administering the above programs, the Division of State and Regional Planning maintains both a planning advisory service and an urban renewal advisory service for municipalities. Both services provide aid directly to municipalities by supplying technical assistance and answers to queries.

During the past year, the following publications were prepared and distributed free of charge by the planning advisory service:

- (1) **Services from Public Agencies for Municipal Planning.** Listings of service and literature available from all departments of the State of New Jersey.
- (2) **Community Planning.** Description of the aims of planning, fundamental procedures, and local assistance programs. Excerpts of this publication were reprinted by the Shenango Valley Regional Planning Commission in Pennsylvania, under the title *Understanding Comprehensive Community Planning*.
- (3) **701, Local Planning Assistance Program.** A procedural guide for municipalities.
- (4) **50-40, Assistance for Continuing Planning.** A procedural guide for municipalities.
- (5) **702, Assistance for Public Works Planning.** A procedural guide for municipalities.
- (6) **103, Assistance for Community Renewal Programming.** A procedural guide for municipalities.

A subdivision and a capital improvements programming manual are currently being prepared by the planning advisory service.

The urban renewal advisory service published a brochure entitled *The Community Renewal Program in New Jersey*, which was distributed free of charge to municipalities this year. Work on the New Jersey Regional Urban Renewal Study, which was begun two years ago with the aid of a federal grant, has been completed. Nine technical studies and a comprehensive final report have been written, describing the demographic features and housing needs of the north-eastern New Jersey Metropolitan Region. All of the foregoing will be published shortly. A series of five newsletters containing significant findings of the study were published during the year and distributed to municipalities. The sixth newsletter, which is a summary of results, will be published and distributed in the near future.

Special Projects

In March, 1961, the United States Department of Defense announced its decision to abandon the Raritan Arsenal in Middlesex County as an Army ordnance supply depot. The Department of Conservation and Economic Development began work immediately on suggested proposals for new uses of the arsenal. Because 2,600 civilians employed at the depot faced immediate job losses, land uses that would create new employment opportunities were particularly to be desired. By November, two reports on conditions at the site had been prepared by members of the department and presented to State, county and local public officials. Industrial development was recommended as compatible with existing uses in surrounding areas, and as a means of offsetting job losses. Recreational development was also desirable, in view of the large population concentration in the area. Another suggested alternative was the construction of a college or junior college campus, possibly affiliated with the State University. The southern portion of the site is marshy, and could very well be maintained as a game preserve. Other portions contain clay pits which should be conserved.

The total area of the site is 3,234 acres. During the year, the first parcel of this land, consisting of 184.4 acres was offered for sale. Legislation was passed which enabled Edison Town-

ship to purchase 110 acres for industrial use, and the State Highway Department will build an extension of Route 287 on the remainder.

Legislation also has been enacted to permit the establishment of a county authority to acquire, develop, sell and lease federal properties. This law was intended to safeguard land such as the arsenal site from piecemeal sales and indiscriminate exploration. As a further safeguard, a committee consisting of representatives from the State, Middlesex County, and Edison and Woodbridge Townships has been formed to prepare a general development plan for the arsenal site as a whole. The committee has held two meetings to date, and plans to continue meeting monthly, with additional sessions to be called at the discretion of its chairman.

Another special study undertaken by the Department was an estimation of future airport needs. The capacity of existing airfields was studied, together with the current and anticipated future demand for their services. Areas with inadequate air service were pin-pointed for the selection of future airport sites.

Regular Planning Publications

Jersey Plans, the quarterly journal published by the Division of State and Regional Planning, was given a new format this year and put on a paid subscription basis. Formerly, the journal had been distributed free of charge. Four issues were published during 1961-2, containing articles by Governors Hughes and Meyner, Senator Harrison A. Williams, State Assemblyman Raymond H. Bateman, and such well-known names in the planning profession as Leonard J. Duhl, John T. Howard, Lewis Mumford, Dennis O'Harrow, William H. Whyte, Jr., and Norbert W. Wiener. Over five hundred persons have subscribed to date.

News items concerning the work of the Division of State and Regional Planning and events related to planning throughout the State are now published, together with other useful information, in the Division's *Newsletter*. This publication was inaugurated in November 1961, and has appeared five times. The Division plans to continue publishing the *Newsletter* bi-monthly. The publication is distributed free of charge to 10,000 lay and professional planners and public officials.

Planning Conference

No State planning conference was held this year, because the National Planning Conference sponsored by the American Society of Planning Officials was held in New Jersey for the first time in twenty-seven years. Members of the department assisted the ASPO staff in all phases of work related to planning, organizing and servicing the conference. Over a thousand planning officials and community leaders, as well as several hundred city planners, attended the conference which was held at the Hotel Traymore in Atlantic City from April 29 through May 3, 1962. The theme of the conference was Urban Regions: Challenges and Achievements. The principal speakers included Governor Richard J. Hughes; Dr. Mason Gross, President of Rutgers, the State University; and Dr. Robert Wood, author and professor of political science at Massachusetts Institute of Technology.

Interdepartmental Planning Activities

Planning necessarily spans every department and activity of government. During the past year, the Department of Conservation and Economic Development has participated with other State agencies in the Interdepartmental Committee for State Planning, Interdepartmental Land Use Committee, Interdepartmental Committee on the Area Redevelopment Program, Interdepartmental Committee on Housing and Urban Renewal, Interdepartmental Committee on Surface Water Pollution, and the Economic Watchdog Committee. The latter consists of the Commissioners of Conservation and Economic Development, Labor and Industry, and of the Treasury. The purpose of the committee is to keep watch on economic indicators and employment trends, and to report significant findings to the Governor.

The activities of the Interdepartmental Committee for State Planning have included regular monthly meetings, at which reports prepared by the Statewide Planning Bureau were presented and discussed. Through the committee, each department was enabled to understand the needs of the others, and a unified approach to State planning problems was developed.

During the past year, several discussions were held by the entire committee on possible State uses for the Raritan Arsenal. Subcommittees



were established to deal with the New Jersey Pavilion at the 1964 New York World's Fair, and with open space.

The Subcommittee on the New Jersey Pavilion was created at the request of Governor Hughes last April. Two meetings have been held, at which suggestions for a theme and specific exhibits were reviewed. The subcommittee is expected to report its recommendations to the New Jersey Tercentenary Commission.

The Subcommittee on Open Space reviews individual applications for funds under the Green Acres program in light of their possible effect on the proposed activities of various departments. The applications need to be compared, for example, with plans for new highways, trunk sewers, disposal facilities, educational institutions, etc.

The Department has also cooperated with Mrs. Katharine E. White, a special consultant appointed by Governor Hughes to study the possibility of establishing a Department of Urban and Suburban Affairs. Considerable information has been compiled concerning the functions and relations of existing State agencies in the course of this project, although no decision has as yet been reached on the proposed department. A preliminary report of Mrs. White's findings was presented to the Governor in June 1962.

Interstate Planning Activities

During the past year, members of the department staff participated in the Penn-Jersey Transportation Study, and in the activities of the following interstate planning organizations: the Delaware River Basin Commission, which was organized in 1961; Delaware Valley Council; Metropolitan Council of Planning Agencies; Metropolitan Regional Council; Penjerdel; Port of New York Authority; Regional Plan Association; Resources for the Future, Incorporated; and the Tri-State Transportation Committee.



WATER RESOURCES

Round Valley and Spruce Run Reservoirs

Construction of Spruce Run Reservoir under Contract SR-1 has been advanced during the year in the following phases: The twin 84-inch steel release water conduits were assembled in place and encased in reinforced concrete and the outlet tower at the reservoir end of the conduits was completed to the operating floor, elevation 283, which is equivalent to the top of the dam; the rock cofferdam in the upstream toe of the dam was completed to elevation 220 and the flow of Spruce Run and Mulhockaway Creek was diverted through the twin conduits permitting excavation of the core trench of the dam crossing the flood plain.

Excavation of earth and unclassified overburden in the approximate 6,000 feet of core trench was completed to ledge rock and the rock surface covered with a concrete blanket to facilitate grouting the axis of the dam. Grouting operations along the axis of the dam and dike and blanket grouting, where required on either side of the axis to consolidate the limestone foundation, were completed during the year by working two or three shifts per

day. Except for special required chemical grouting and related operations, drilling and grouting has been completed for the full length of the dam, thus permitting the prime contractor to proceed with the placement of dam embankment.

By the end of the fiscal year about 1,000 feet of core and common embankment was placed at both the east and west ends of the dam and the placement of dike embankment was completed. Stripping and excavating operations of overburden and excavation of rock at the weir and in the spillway channel were begun during the year and are presently in progress. Most of the downstream drainage system of ditches and pipe drains has been completed. Portions of the access roads to the release water chamber and gaging station have been rough graded. The sand and gravel filter blanket under the downstream portion of the dam was placed in the flood plain and in certain portions of the abutments of the dam.

Laboratory tests of impervious fill materials obtainable from different borrow areas were studied by the consultants and staffs of the

Division of Water Policy and Supply to determine their suitability as to required strength, moisture conditions and degree of compaction. Total gross amount expended to the end of fiscal year was \$3,402,940.59.

Under Contract DC-30A, between the State and Union and Lebanon Townships, Union Township has agreed to construct the improved and relocated Van Syckles Corner—Route 69 road at Spruce Run within an amount to be financed by the State. The road contract was awarded to Hagan Industries, Incorporated, Elmhurst Contracting Company, Division, the low bidder and construction began immediately. The work on the above road contract is in charge of the Township Engineer. In connection with the construction of the Spruce Run relocated road, the State has entered into negotiations with Hunterdon County for construction of a new bridge at Van Syckles Corner.

Construction at Round Valley Reservoir under Contracts RV-1 and RV-2 has advanced during the year in the following phases: Under Contract RV-1 (South Dam, tunnel and related works) the force main tunnel in the west abutment of the South Dam was completed; the inlet tower at the reservoir end of the tunnel, with an operating floor elevation of 395 was completed to elevation 367; the concrete cut-off wall and grout curtain along the axis of dam were completed and the 36-inch steel release water conduit was assembled in place, encased in reinforced concrete and Prescott Brook diverted through it. By the end of the fiscal year the South dam embankment was placed to elevation 295 or 100 feet below crest of the dam; the access road from the relocated Lebanon-Stanton road to the inlet tower and South dam has been rough graded. Total gross amount expended to the end of fiscal year under Contract RV-1 was \$1,716,806.93.

Construction under Contract RV-2 (North Dam, Dike, and appurtenant works) has advanced during the year in the following phases: The concrete cut-off walls and grout curtains along axes of the dike and dam were completed; the embankment for the dike has been practically completed up to its crest, elevation 395, while the dam embankment has been placed to elevation 335. The twin 72-inch steel pipe outlet conduits were assembled and encased

in reinforced concrete; the outlet tower at the reservoir end of the conduits was completed to elevation 322, which is about 73 feet below finished floor of tower. Rock slope protection on reservoir faces of the dams and dike has been installed as embankment work has advanced.

The total gross amount expended by the end of the fiscal year under Contract RV-2 is \$2,886,247.44.

The right-of-way for the force main from Hamden to the tunnel at the South dam has been selected and the various parcels surveyed for acquisition of easements and of certain parcels in fee. The contract drawings, specifications, the contract documents for Contract PS-2, for the construction of force main and appurtenant works have been prepared. All prospective bidders interested in the contract were prequalified. Bids were received and opened June 26, 1962. Consulting engineers are preparing designs and specifications for the South Branch pumping station to be constructed under Contract PS-1.

Contract drawings and specifications have been completed for the Administration Building to be constructed under Contract PS-3. The contract documents and review for approval of the drawings and specifications submitted by the architect also have been completed.

Except for the relocation of power distribution and telephone lines at Spruce Run that must await the completion of the relocated Spruce Run road, and for the removal of temporary power and telephone lines to the present Round Valley Division office, all public utility facilities have been relocated.

Statewide Groundwater Investigations

The source of all groundwater in New Jersey is essentially precipitation. Although average rainfall is evenly distributed over the State there are pronounced differences between various geologic formations as to the amount of water they can contain and the rate at which water can move through them. Some areas of New Jersey are suitable for development of large quantities of groundwater, others are capable of supporting only small to moderate development. Except in certain localized situations groundwater constitutes the basic source

of fresh water supply for many developing regions of New Jersey.

The importance of the State's groundwater resources heightens as the competition for remaining surface water supply increases. Formal recognition of the necessity to provide for extensive study to determine distribution, quantity and quality of the State's groundwater resources was given when the Legislation approved the Water Supply Law of 1958. The time will arrive for greatly expanded development of this resource for local area requirements and the day may be not far away when it will become necessary to export from abundant groundwater regions to distant deficient areas.

New Jersey is fortunate in having highly permeable high infiltration capacity waterbearing formations under large areas of the State. The Cohansey Formation, for example, is said to have no equal in the northeastern United States.

Through proper long range study and planning for development, New Jersey will be ready to exploit this resource in a manner which will provide a dependable continuing source of water supply.

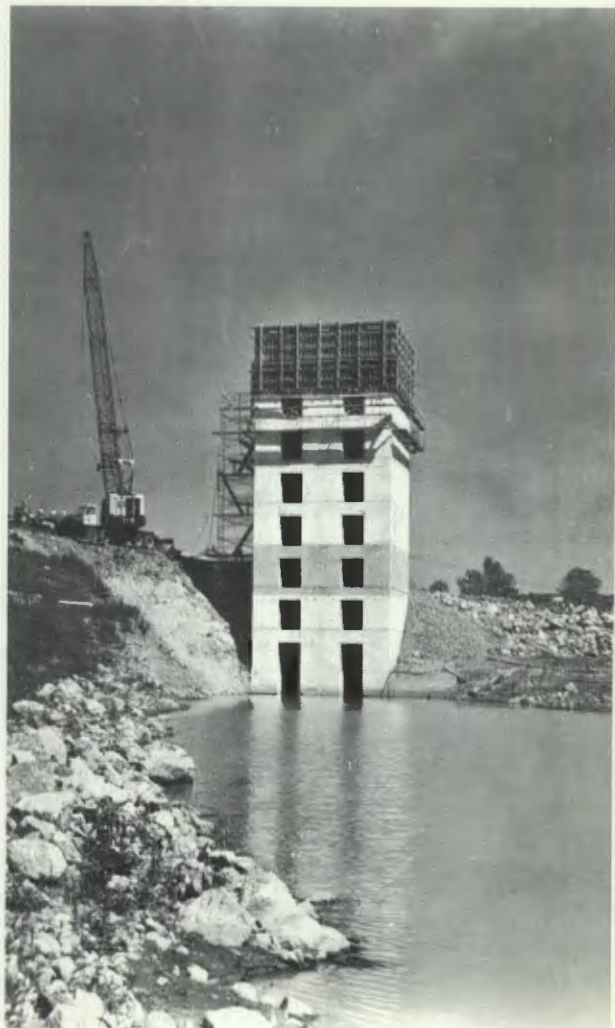
Significant progress has been made during this fiscal year on the groundwater investigation program which is being conducted on an equal cost-sharing basis with the Groundwater Resources Division of the U. S. Geological Survey:

Salem County. Full-time study of groundwater resources began in Salem County in the spring of 1958. Field work consisting of detailed reconnaissance and test drilling has been completed. Data analysis has been completed and after district office review by the Survey, the report will be submitted to Washington and the Department for final review.

Camden County. Work, planned as detailed county reconnaissance, began in Camden County in 1959. A preliminary report on basic data collected, with particular reference to public water supplies, is presently being prepared and should be ready for review in Washington and by the Department well before the end of this calendar year. Available data was provided to assist the Camden County Planning Board with its water resources report released in November, 1961.

Monmouth County. Work began on the detailed reconnaissance of the geology and hydrology of the County in July 1958. Field work has been completed. The covering report has already received district review and will shortly be ready for further review in Washington and by the Department. Close liaison has been maintained with the Monmouth County Planning Board which made considerable use of information developed by the study for its planning report released in the summer of 1961.

Morris County. Work, begun in November 1959, includes a detailed reconnaissance of the entire county based on field canvass of available water-resources information. A study of the distribution of buried pre-glacial valleys, which are important aquifers, has also been made using seismic methods. Field work was completed in February 1962, and the comprehensive report is nearing completion.





Round Valley

A study for the Corps of Engineers resulted in a related report on the effects on the groundwater regimen resulting from the deepening of the Passaic River between Chatham and Little Falls. Two papers also were prepared for the New Jersey section meeting of the American Water Works Association in Atlantic City in October 1961. The first, which will be published soon, is on the hydrologic role of the Great Swamp and other marshlands in the Upper Passaic River basin. The second, which has been submitted to the Journal of AWWA for consideration, is on tracing the continuity of the Pleistocene aquifers in northern New Jersey by geophysical methods.

Work was begun with the Geophysics Branch of the U. S. Geological Survey on an informal basis to evaluate the use of gravity surveying to trace the continuity of Pleistocene aquifers in northern New Jersey.

Ocean County. Collection and analysis of geologic and hydrologic data for an evaluation of the water resources of the county began in July 1960. Field work will be completed by the fall of 1962. Preparation of the comprehensive report has been begun and it is now about 40% complete. The first draft is expected in December, 1962.

Gloucester County. Work on Gloucester

County was begun in April 1957 and included groundwater and surfacewater considerations as well as the geology of the county. The major objective was detailed reconnaissance. Field work was completed in November 1957. A report on public water supplies is completed and has been submitted for publication as a Special Report. The comprehensive report has been reviewed in Washington.

Mercer County. Work on Mercer County began in January 1958. The detailed reconnaissance groundwater study was pursued through the summer of 1960. The final report has been approved by the Director of the Geological Survey for publication by the department as a special report.

Geological and Groundwater Hydrology of the Rahway Area. This report was begun in 1958. Field work was completed in September 1960. The purpose was a detailed groundwater reconnaissance of an important heavily populated industrial area. The report has been revised and is now undergoing further review prior to submittal to Washington for approval for publication.

Burlington County. The Burlington County project began in April 1960 to evaluate the groundwater hydrology and geology of the county. The objective of this project is determination of the total groundwater resources of the county. Evaluations have been made on an aquifer basis, with special reference to the high water-use areas and to the areas of greatest potential. The completion date for this project is December 1962.

Cape May County. Work on Cape May County began in July 1956, and included a program of test drilling to assist in a study of the subsurface aquifers. The major objective was to determine the extent of salt-water encroachment in the principal aquifers. Field work was completed in the summer of 1958. A circular has been prepared covering advanced information on the lower peninsula, and has been published as Water Resources Circular 1. A larger circular on well logs and other basic data and the comprehensive report are awaiting publication.

Pine Barrens Project. This project was initiated in 1951 to determine and compare the hydrologic characteristics of two drainage basins

in Lebanon State Forest. The hydrologic, geologic, and ecologic field work has reached a stage where reports dealing with the geology and hydrology can present significant results. Minimum field work is being carried on to maintain the program continuity while these reports are being prepared.

Routine weekly measurements of key wells and precipitation were continued throughout the year. Continuous monitoring of groundwater levels at seven stations and streamflow at two stations was maintained. Coordinated measurements of 165 groundwater levels with miscellaneous stream-system gaging for the two drainage basins were made at the spring and fall baseflow periods. Laboratory soil-moisture determinations were obtained and infiltration studies made. A continuous-weighing lysimeter to determine water loss in the forest litter was placed in operation as a part of the cooperative program with Rutgers University. The instrumentation is providing increased knowledge of the hydrology of the dominantly forested Pine Barrens region. The geology of the drainage basins of the Pine Barrens region has received intensive study throughout the year. A map of the surficial geology of the basins has been prepared to accompany a detailed report of the geology.

The geologic report is now near completion in first-draft form. This report presents new material that will increase our geologic and hydrologic understanding of the Pine Barrens region.

Wharton Tract Project. Measurements of hydrologic factors were continued throughout the year. The analysis of the pumping-test data has been completed, together with a description of the hydrology of the Wharton Tract test site. Four papers describing the various phases of the tests have been written; two have been published and one is awaiting publication in the Annual Review of the U. S. Geological Survey, which summarizes annually the important results of research activities of the survey. The fourth paper, describing the aquifer test, was submitted to the Journal of the American Water Works Association for consideration for publication. Analysis of the pumping-test data has indicated the following: 1. The aquifer at the test site is essentially one thick water-table

unit, having a co-efficient of transmissibility on the order of 150,000 gpd per foot and a co-efficient of storage of 0.15.

2. Because of the deposition of bog iron ore in and adjacent to the Mullica River, the hydraulic continuity between the aquifer and the Mullica River is poor, and little, if any, water reaches the aquifer under pumping conditions.

3. Inasmuch as the drawdown effects in the shallow zone were of the same magnitude as those observed in the middle zone of the aquifer, the bog iron ore underlying the Mullica River is probably thin and therefore should be easy to remove by means of a dragline.

4. Removal of the thin layer of impermeable material in the riverbed would create essentially complete hydraulic continuity between the river and the adjacent aquifer.

5. Because of the high permeability of the sands and the ease with which continuity can be established between the river and the aquifer, the development of the water resources of the Wharton Tract by means of wells is feasible.

Sayreville Area. Work was begun in September 1957 and has consisted of a detailed study of the groundwater hydrology of this limited industrial area which is chiefly in Middlesex County. The major objectives were determination of the extent of salt-water encroachment into important aquifers, and to consider possible remedial measures. Field work was completed in December 1959. The report is now complete. Information of data from the report have been made available to the Corps of Engineers in connection with proposed navigation improvements in the area.

Englishtown Formation Study. This project was initiated in June 1958 as an aquifer study of the Englishtown Formation. The objective is an integrated aquifer analysis of the Englishtown Formation relating the chemical quality of the water within the formation to the hydrologic and geologic framework of the coastal plain of New Jersey. Field work was completed in September 1961. A report entitled "Variations in the Chemical Character of the Water in the Englishtown Formation, New Jersey" was accepted by the University of Illinois as a Ph.D. dissertation and given open-file release by the U. S. Geologic Survey. The open-file report is being recast into two reports—one to be pub-

lished by the State and the other by the U. S. Geological Survey. A short paper entitled "Hydrochemical Facies in the Englishtown Formation, New Jersey" was published in May 1962 in U. S. Geological Survey Professional Paper 450-B.

Chlorides in Groundwater in the Coastal Plain of New Jersey. This project was initiated in January 1958 to compile all the chloride data collected by the U. S. Geological Survey from 1923 to date. The objectives are (1) to monitor movement of saline water into the coastal plain aquifers of New Jersey, and (2) to define more accurately the position of fresh-salt water interface in each of the important aquifers in the coastal plain. Field work was completed in June 1961. Wells for which chloride data are available have been grouped by aquifer and county. An analysis and synthesis of the chloride data have been completed. The data will appear as a special report published by the State.

Test Drilling and New Observation Wells. Activities under this program continued during the 1961-62 fiscal year. Four observation wells have been drilled in the Ocean-Burlington County areas. These wells are for three purposes: (1) to obtain geological information relative to the important aquifers within the depth drilled, (2) to finish each test hole as an observation well for monitoring the effects of withdrawals from aquifers tapped by the well, and (3) to obtain data relative to the position of the salt water-fresh water interface in the important aquifers of the Raritan and Magothy formations. The observation well at New Brooklyn Park is finished at a depth of about 1,500 feet, which is correlative with the heavily developed lower aquifer in the Camden-Philadelphia area. Chlorides in this particular well at the time of development were in excess of 300 ppm, which is corroborative of the position of the salt water-fresh water interface indicated in Special Report 13. Although the test well at Island Beach has not been completed as yet, electric logs obtained in the hole show the presence of high chlorides at depths below 2,000 feet, which provide further information as to the position of the salt water-fresh water interface farther north of the test well in Camden County.

Surface-Water Investigations

Eighty-two automatic recording gaging stations were maintained by the U. S. Geological Survey in cooperation with the Department. Eighty-five low-flow partial-record stations, established during the previous three years, were continued and two were discontinued. Eight new low-flow stations were established on small streams not previously gaged. The annual streamflow records have been completed and four special reports on surface water resources have been prepared.

New gaging stations were established on South Branch Rancocas at Vincentown and on Baldwin Creek near Pennington. Activation of the latter must await completion of the dam and filling of Baldwin Lake. Gages on Beaver Brook near Belvidere and Walnut Brook near Flemington have been discontinued. Cedar Brook at Spotswood continues to be the only gage in the district for which sufficiently accurate records cannot be obtained to justify publication. A very ingenious and quite usable rating for McDonald's Branch in Lebanon State Forest was developed to permit publication of eight years of records for that ground-water research project.

A total of 723 stream discharge measurements were made during the year; the third year in a row that a new record was set for the total flow measurements in New Jersey. Of these 486 were at regular gaging stations, 198 were made during base-flow conditions at partial-record stations, and 46 were in support of research studies in the Wharton Tract, Lebanon State Forest and in Great Swamp. The second and third remote indicating (Telemark) gages were installed on Pompton River and Ramapo River early in the year to complete the flood-warning network in the Passaic River basin.

Flood High-Water Reports

Raritan River. Thirteen and one-half miles of river were surveyed from 1958 to 1961 from South Branch to near New Brunswick. Three open-file reports have been issued dated March 1959, December 1960, and November 1961. These reports give data on flood elevations, flood profiles, river cross sections, and areas inundated by floods of several degrees of severity. A final report as a hydrologic atlas is 95%

complete and publication is expected about February 1963.

Millstone River. Sixteen miles of river from Lake Carnegie to the mouth were surveyed in 1961. An open-file report covering the reach was issued in February 1962. A hydrologic atlas combining the data from three Raritan River open-file reports and the Millstone River open-file report is in preparation.

New Jersey Coast. A map and a list giving locations and elevations of over 100 flood marks from New Brunswick to Cape May, left by the tidal flood of March 7, 1962, was issued in March 1962.

Atlantic City. A special hydrologic atlas showing areas on Absecon Island inundated by the tidal flood of March 7, 1962 was prepared as an all-federal project. Publication is expected in August 1962.

General flood frequency report. A study was started in the fall of 1961 to provide data for estimating stages of floods of various recurrence intervals at any place in the State. Work was diverted from this report in March 1962 to other studies. Work on the project will resume in September.

Electronic Computer Analyses of Streamflow Records. The discharge records for 64 gaging stations have been processed through electronic computer facilities in Washington. The records for three additional stations are scheduled for immediate processing. These stations did not meet the criteria set up for the program at first, but are now needed in the project to determine median flow at 82 sites in New Jersey. Phase I in the analysis of the processed records was considered to be the publication of output sheets from the electronic computer in a form suitable for ready reference by users of New Jersey streamflow data. This phase was completed by the publication of Water Resources Circular 6 in May 1962. Phase II is the preparation of a flow-duration report on New Jersey streams. It is expected that the first draft will be ready for review before the middle of the 1963 fiscal year. Phase III is the preparation of a report on the low-flow characteristics of New Jersey streams. This report will incorporate information from the base-flow measurements made at low-flow stations in addition

to the records at the regular gaging stations processed by the electronic computer.

Low Flow Measurements. A total of 198 base-flow measurements were made at low-flow stations during the year in the following river basins:

Hudson River basin	6
Passaic River basin	30
Elizabeth River basin	2
Raritan River basin	55
Coastal basins	45
Delaware River basin	60
Total	198

Hydrologic Conditions. Streamflow in July 1961 was median to slightly above. In October through February flow was below median or deficient. Heavy rains in March put the streams to above median flow. In May and June flow again decreased to the deficient range. The flow of the Delaware River at Trenton in June was the lowest for June in 50 years of record. The storage in Wanaque Reservoir was below the 30 year average for all of the past year. In December the storage was the lowest for December in the past eleven years.

The disastrous Atlantic storm of March 5-9, 1962, along the New Jersey coast caused extensive tidal inundations, erosion of beaches, and destruction of a large number of beach front properties.

Water Control

Construction by the Monmouth Consolidated Water Company for enlargement of the Swimming River reservoir and dam in Monmouth County to increase yield from 13.2 to 25.0 mgd as approved under water supply application No. 899 on May 19, 1957 has been completed.

Designs and specifications for Point View Reservoir in Wayne Township, Passaic County, to provide off-channel storage for diversion of water from Pompton River to increase the dependable supply from the Little Falls plant of the Passaic Valley Water Commission from 30 to 65 mgd as approved under water supply application No. 1026 on April 14, 1960, have been approved.

The New Jersey Supreme Court has confirmed the Water Policy and Supply Council's approval for the construction of a multiple-purpose reservoir on the upper Rockaway River in Longwood Valley, Jefferson Township, Morris County, and a second off-channel reservoir

adjacent thereto to increase the yield of the Jersey City Boonton Reservoir supply from 71.2 to 84.2 mgd and for peak power development by the Jersey Central Power & Light Company.

Administration

Water Allocation

Public hearings held	35
Diversion grants authorized	34
Water supply inspections	47
Well drillers licensed	538
Well permits issued—delineated areas, special	171
Stream gaging stations maintained	82
Ground water observation wells maintained	575
Samples analyzed for chloride content	525

Dams & Encroachments

Construction permits issued	135
Proposed projects reviewed	41
Inspections—Dams	20
Inspections—Encroachments	32
Conferences with applicants	258
Public hearings held	10

Water Development

Surface Water Investigations	16
Supervision ground water investigations	11
Contracts administered	5

Flood Control

Flood control investigations	57
Field inspections and conferences	111
Federal assistance projects investigated	19
Flood warning stations maintained	22
Flood data inquiries	36

Delaware and Raritan Canal

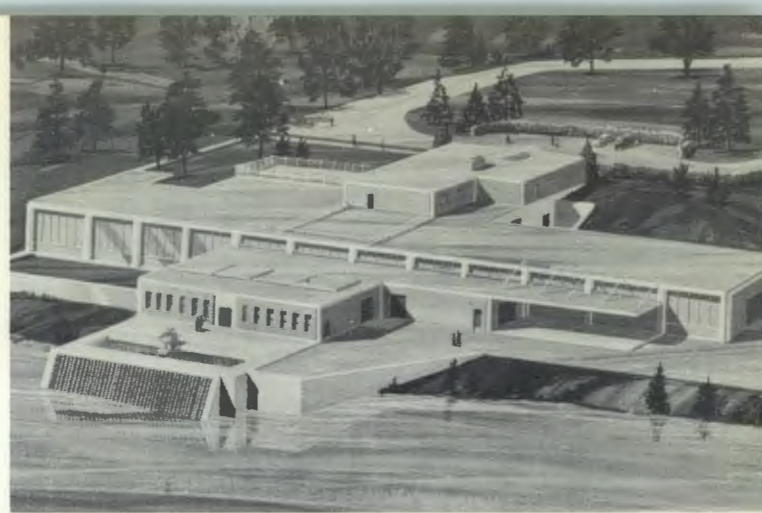
Miles of canal waterway operated and maintained	60
Buildings and structures repaired	25
Water customers served	21
Water delivered (billion gallons)	9.02
Leases and agreements supervised	152

Passaic Valley Flood Control

A survey report started in 1958 by the New York District, Corps of Engineers, was completed in June 1962 and is being reviewed by the North Atlantic Division. It is anticipated that a major comprehensive flood control program for the Valley as economically justified will be recommended by the Corps of Engineers.

Flood Plain Regulation

Under the provisions of Assembly No. 184, P. L. 19, 1962, the department is now authorized to designate and mark the flood hazard areas of the State. Pursuant to the provisions of Section 206 of the Federal Flood Control Act of 1960, which permits the Corps of Engineers to provide technical assistance and data concerning flood hazard areas, the Division of Water Policy and Supply as the State coordinating agency, is assisting local interests in the preparation of applications for flood plain stud-



ies on Rancocas Creek, North Branch of the Raritan River and the reach of the Delaware River opposite Bucks County, Pennsylvania.

Water Development

Studies of future development potentials of New Jersey's remaining undeveloped surface water resources, with particular emphasis on the Raritan River and its tributaries, is being continued as provided for by the Water Supply Law of 1958.

Delaware and Raritan Canal

Water delivered during the year to consumers from the Delaware and Raritan Canal totaled 9,029 billion gallons and income from water sale amounted to \$230,176.19. Operating costs for the canal during the year amounted to \$115,460.90. Miscellaneous rentals produced an income of \$16,747.70.

One improvement project, filling of the former canal basin at East Millstone, was virtually completed at the end of the fiscal year. Special maintenance was started on canal bulkheads in Trenton and Lambertville in addition to regular work on waterway, embankment, and control structures.

The Water Policy and Supply Council approved one new agreement for a supply of 0.40 mgd and renewal of a supply of 0.133 mgd, bringing the total contracts for water supply from the Delaware and Raritan Canal to 57.009 million gallons daily.

Delaware River Master

The Delaware River Master reported satisfactory compliance by New York City to his directions for stream-flow-regulation releases and an inspection was made by the River Master's Advisory Committee of the New York City reservoir system in general and construction work on the Cannonsville project in particular.

Water Consumption Table

	1955	1956	1957	1958	1959	1960	1961
Northern Metropolitan Area	431.28	430.84	453.20	439.01	465.561	460.352	478.803
Southern Metropolitan Area	85.25	81.72	87.62	86.43	93.588	93.871	97.417
Seashore Area	49.48	47.60	52.02	50.71	57.061	57.513	58.487
Rest of State	<u>52.35</u>	<u>50.40</u>	<u>55.22</u>	<u>55.10</u>	<u>59.081</u>	<u>60.474</u>	<u>61.888</u>
Total	618.35	610.55	648.02	631.24	675.291	672.210	696.595
Surface	410.44	409.24	429.88	414.82	443.343	440.813	455.124
Subsurface	207.91	201.31	218.14	216.42	231.948	231.397	241.471

State Water Development Fund

Table I

June 30, 1962

Funds Available:		
Proceeds from Sale of Bonds: Series A		\$25,000,000.00
Series B		20,850,000.00
Gift from State Committee on Water Resources Information—Balance in Study Funds		2,714.21
Proceeds from rentals of land and dwellings, and from sale of timber and hay		<u>31,139.76</u>
		<u>\$45,883,853.97</u>
Disbursements:		
Round Valley Project including Pumping Station and Force Main	\$ 8,168,544.67	
Spruce Run Reservoir Project	7,371,410.21	
State-wide Ground Water Investigations	336,313.43	
Pennsauken Studies	4,913.21	
Surface Water Resources—Raritan/Millstone	53,548.30	
Surface Water Resources—Balance of State	<u>32,976.38</u>	
Total Disbursements		\$15,967,706.20
Balance as of June 30, 1962		29,916,147.77
		<u>\$45,883,853.97</u>

Table II

Allocation of Costs		Spruce Run Project	Round Valley Project
Preliminary Studies	(a)	\$ 94,540.80	\$ 76,558.44
Land Acquisition			
Purchase of Property		2,414,718.50	2,334,989.13
Salaries		113,659.00	40,420.67
Appraisals		42,772.25	47,650.52
Special Services		28,894.89	44,653.35
Engineering Services and Surveys		48,841.12	43,130.65
Supplies and Expenses		12,920.01	7,648.18
Equipment		8,306.46	564.35
Tax Lieu		55,059.94	93,443.47
Sub-total		<u>2,725,172.17</u>	<u>2,612,500.32</u>

Administration & Engineering (Design, Investigations and Surveys)

Salaries	687,587.05	615,565.24
Consultant Services	24,038.08	15,497.60
Surveys	17,479.64	4,190.00
Investigations: Subsurface	239,548.01	76,626.70
Hydrologic	6,041.66	7,250.00
Designs: Dams and Dikes	213,026.47	191,324.13
Relocated Roads	0	40,000.00
Pumping Station	0	172,999.29
Bridges	8,500.00	0
Administration Building	0	0
Supplies and Expenses	101,582.59	91,340.32
Equipment	44,866.72	36,347.45
Damages	1,605.00	0
Sub-total	<u>1,344,275.22</u>	<u>1,251,140.73</u>

Construction

Culverts and Bridges	103,144.72	0
Power Line Relocation	41,630.77	72,406.53
Telephone Line Relocation	0	0
Road Relocation	0	406,691.39
Spruce Run Dam	3,062,646.53	0
Round Valley North Dam	0	2,597,622.70
Round Valley South Dam	0	1,151,624.56
Sub-total	<u>3,207,422.02</u>	<u>4,228,345.18</u>

GRAND TOTAL

\$7,371,410.21 \$8,168,544.67

(a) See Detailed Statement on Page 103, Annual Report of 1959-1960

Construction Contracts

Contract	Contractor	Date of Award	Contract Completion Date	Bid Price
SR-1 Spruce Run Dam, Dikes Spillway, Weir and Channel and Appurtenant Works	Hagen Industries	2-14-61	4-14-64	\$7,347,771.50
SR-2 Bridge and Culverts, Spruce Run Relocated Road	George M. Brewster & Sons	10-14-60	6-14-61	\$ 109,501.50 (completed)
RV-1 South Dam, Tunnel and Appurtenant Works	C. J. Langenfelder & Sons	3-30-61	3-30-64	\$3,222,504.90
RV-2 North Dam, Dike, Part of Relocated Road and Appurtenant Work	C. J. Langenfelder & Sons	3-30-61	3-30-64	\$4,150,159.06
RV-3 Part of Relocated Road, Round Valley	S. J. Groves & Sons	10-18-60	6-18-61	\$ 380,201.00 (completed)

Construction Agreements

Agreement	Contractor	Date of Execution	Amount
DC-30A Spruce Run Relocated Road	Township of Union	10-5-60	*\$ 257,500.00
DC-37 Spruce Run Relocated Power Lines	N. J. Power & Light	10-24-60	\$ 66,250.00
DC-45 Spruce Run Relocated Telephone Lines	N. J. Telephone Co.	4-19-61	\$ 8,000.00
DC-31 Round Valley Relocated Power Lines	N. J. Power & Light	10-24-60	\$ 97,755.00
DC-44 Round Valley Relocated Telephone Line	N. J. Telephone Co.	4-19-61	\$ 35,000.00
DC-50 Round Valley Detour Road	Township of Clinton	12-20-61	\$ 11,000.00

*Contract modified increasing reimbursement to \$280,000 to cover construction of the entire length of the Van Syckles Corner—Route 69 Relocated Road.

SHELL FISHERIES

Maurice River Cove Area

The results of the 1961 oyster planting season in the Maurice River Cove Section were history making. For the first time on record, oysters planted in May were marketed in September, October, November and December of the same year. In May 1961, 165,000 bushels of oysters were transplanted from seed beds to leased areas. These marketed oysters provided gross receipts of over \$1,500,000 to the industry.

In May 1962, 172,000 bushels of oysters were transplanted and it is expected that they will be marketed during the last four months of the same year. It is apparent that the additional efforts being made are producing the hoped-for dividends.

Delaware Bay Area

Projects to effect rehabilitation of seed beds in the Delaware Bay Area have included the following during the year:

500 bushels of dredged oysters were given to the State of Delaware for placement in its natural seed beds in Delaware Bay with the hope that the spawning of these oysters will help improve New Jersey oyster beds.

8,000 bushels of oysters were transplanted from the Beadon's bed to New Beds and Bennies in our continuing effort to revive these once prolific seed-bearing beds.

8,000 bushels of oyster shells were placed in the Beadon's bed to replace the oysters removed with shells for a new sitting area for spawn.

4,000 bushels of spawning oysters were purchased from the State of Virginia and planted in sanctuary areas of New Beds, Bennies and Cohansey. The theory prevails that the introduction of a foreign strain of oysters into new areas would stimulate the production of oyster larvae.

1500 bushels of oysters have been taken from the Maurice River upstream, and placed in Back Creek at the mouth of the Maurice River



in Delaware Bay and in Bidwell's Creek as another phase of the rehabilitation program. 51,000 bushels of shells have been planted in New Beds, Bennies and the Delaware Bay area at the mouth of Maurice River. During the Maurice River tonging season (March 19 to May 12) over 60,000 bushels of oysters were tonged.

Raritan Bay Area

A special program of intensive patrols has been conducted in the Raritan Bay area due to a hepatitis scare which was said to have been caused by the eating of clams taken from condemned areas. Additional Shell Fisheries Protectors assisted by members of the State Police plus acquisition of additional equipment has enabled the Department to maintain an "around-the-clock" patrol of the Raritan Bay area since last October.

The Department is continuing these patrols in an intensified effort to stamp out illegal clamming. The purpose is to make certain that the public is offered only healthy clams taken from approved waters. Surveillance is also directed to other violations such as clamming on Sunday or clamming without a license.

The Departments of Health, Law and Public Safety and the State Police are cooperating with the Department of Conservation and Economic Development in the stepped-up enforcement program. During the year, boats of the Division of Shell Fisheries logged 13,097 patrol hours and cars logged 132,000 miles. Fines for clamming in polluted waters begin at \$100 for the first offense and increase to a 30-day jail sentence and fine on second offense.



After the Department of Health finds a body of water polluted, shellfish protectors and other law enforcement officers work cooperatively to prevent violations. The quality of the water in such areas is frequently checked so that the ban against the taking of clams can be lifted as promptly as possible if conditions warrant.

The clamming industry has been hit hard as a result of the hepatitis scare and the fact that more and more areas are being closed because of water pollution. An effort is being made to develop a practical purification procedure whereby clams may be removed from condemned areas, treated and placed on the market.

Winter crab dredging and summer crabbing by use of crab pots were quite productive.

The shellfish programs are still being guided and aided through the work of the Rutgers Oyster Research Laboratory.

Mullica River Area

Two oyster projects have been completed in the Mullica River area.

Tonging, while not as successful as before the MSX blight described in last year's report, provided enough oysters to indicate that these beds are still capable of bearing oysters. Ten thousand bushels of sea clam shells were planted in natural seed beds in the Mullica River which provide an excellent area for the setting of oyster larvae. It is hoped that the additional effort being made will bring this river closer to its potential.



VETERANS SERVICES

Over 800,000 veterans reside in the New Jersey field service area (as of June 30, 1959 USVA) and, according to recent census figures, approximately 45,000 servicemen. Each veteran has at least one and one-half dependents. The number of New Jersey veterans and dependents who are now, or may be, eligible for veterans benefits, approximates 2,000,000.

During the fiscal year, 69,917 veterans contacts were made, 5,987 new claims were filed and 4,372 powers of attorney were secured. Monetary recoveries for such services as service-connected disability compensation, disability pensions, insurance, dividends, burial allowances and other purposes totaled \$5,454,509.69, a figure appreciably larger than the amount recorded for the fiscal year 1960-61. This increase is attributable to the assumption of duties and services formerly conducted by the Veterans Administration, a stepped up veterans information program and the 1961-62 call-up of military reservists by the President.

The scope of work of the State Division of Veterans Services includes responsibility for maintaining highly trained personnel completely familiar with federal legislation concerning veterans' and dependents' rights and benefits. In addition, such knowledge must include New Jersey statutes relative to veterans' and dependents' benefits as well as out-of-state laws concerning veterans. A professional Veterans Service officer is described as "having knowledge of federal and state laws pertaining to veterans, a deep and compassionate understanding of human problems, and the abilities of a lawyer, clergyman, teacher, legislator and public relations man."

New and amended federal and State legislation, foreign crises, and the ever-increasing number of veterans living in New Jersey have

called for a "new look" in the organizational structure of the division. A complete field survey of all offices, personnel and functions was initiated in March and completed in June 1962. The implementation of the "new look" needs of the Division will commence in July 1962.

Four itinerant field offices in the heavy metropolitan areas will be closed and their personnel and functions will be consolidated in a central full-time and fully-staffed headquarters. Three new field itinerant offices will be established in the central and southern areas of the State to meet service needs in those areas. New administrative and field reporting procedures will be established to achieve greater efficiency, properly distribute workload and increase personnel morale. Increased public relations and liaison with local levels of government and with civic and other groups is also a new feature.

In addition to the many federal benefits which New Jerseyans are receiving, the Division is also charged with the administration of benefits pertaining to war orphans, hemiplegia, osteochondritis, amputee, multiple sclerosis, blind veterans and Civil Service preference cases, New Jersey Reservists' and Guardsmen's reemployment rights, and admission assistance to New Jersey Soldiers Homes.

Monetary benefits secured for New Jersey veterans and dependents is an important part of the overall State economy as is shown in the following statistical report. Almost six million dollars were added to the spending stream during the year. In addition, such monetary benefits *decrease* the potential added load to county and State welfare rolls because many veterans would necessarily become welfare cases.

Total Contacts Adviseements and Claims Filed

	1961-1962
Loans	1,635
Education and Training	1,278
Compensation and Pension	42,669
Death Benefits	4,072
Insurance	3,934
Medical and Hospitalization	4,979
Armed Services Claims	2,403
Other Services*	8,947
	69,917
New and Reopened Claims Filed	12,060
Powers of Attorney Secured	4,372

*Includes: State Benefits, Reemployment Cases, Out-of-State Bonus and Special Services

Monthly Bulletin. Twelve issues of this information bulletin were printed and distributed during the 1961-1962 fiscal year, with an average circulation of 3,100 copies per month.

Amounts of Monetary Recoveries Secured by this Section and Credited to the Various Field Offices During Fiscal Year 1961-1962

Service Connected Death Compensation	\$ 98,694.74
Non-Service Connected Death Pension	1,251,004.17
Service Connected Disability Compensation	275,505.82
Non-Service Connected Disability Pension	2,787,474.03
National Service Life Insurance	687,918.96
G. I. Policy Loan	1,427.00
Burial Allowance	219,387.61
Accrued at Death	8,649.87
Insurance Dividends	1,189.90
Waiver of Insurance Premiums	436.70
Returned Insurance Premiums	23.00
Total Disability Income	200.00
Unauthorized Medical Expenses	66.10
Servicemen's Indemnity	11,336.90
Statutory Awards	701.22
Dependency	1,301.50
Hospitalization	5,220.00
Death Gratuity	1,950.00
U. S. Government Life Insurance	102,022.17
	\$5,454,509.69

Armed Forces Claims 1961-1962

Mustering Out Pay	\$ —
Family Allotment	1,645.20
Combat Pay	—
Arrears in Pay	—
Retirement Pay	—
Miscellaneous	—
Total	\$1,645.20

New Jersey State Benefits Approved

War Orphans	\$153,561.19
Multiple Sclerosis	500.00
Amputee	—
Blind	—
Paraplegic	—
Loss of Use of	—
Total	\$154,061.19

Miscellaneous

Out-of-State Bonus	\$ 250.00
Reemployment Rights	8,805.00
Other	920.00
Total	\$ 9,975.00
GRAND TOTAL	\$5,620,191.08

**Direct Cash Awards and Regular Monthly Payments Secured for Veterans by the
Field Offices of the Division of Veterans Services**

Atlantic County	\$ 396,720.04
Bergen County	660,341.33
Burlington County	30,516.78
Camden County	252,504.00
Cape May County	3,375.91
Cumberland County	271,618.11
Essex County	217,613.91
Gloucester County	252,320.92
Hudson County	822,227.54
Hunterdon County	5,643.74
Mercer County	273,783.24
Middlesex County	172,807.97
Monmouth County	729,036.26
Morris County	75,385.28
Ocean County	84,383.60
Passaic County	393,524.72
Salem County	10,015.42
Somerset County	200,780.92
Sussex County	14,017.02
Union County	590,547.39
Warren County	4,292.24
Out-of-State	158,734.74
	<hr/> \$5,620,191.08

Workload Activity

War Orphans' and Disabled Veterans' Benefits

1961-1962

	Applications Received				Cumulative Qualified
	1961-1962	Pending	Denied	Approved	to 6-30-62
War Orphans	246	48	18	180	426
Amputee	4	1	2	1	43
Blind	0	0	0	0	49
Hemiplegia	0	0	0	0	24
Multiple Sclerosis	11	0	5	6	39
Osteochondritis	0	0	0	0	3
Paraplegia	4	0	2	2	133
Total	265	49	27	189	717

Expenditures

	Expended 1961-62	Cumulative to 6-30-62
Blind	\$ 24,495.08	\$ 373,771.06
Paraplegia, etc.	120,916.89	1,304,278.84
War Orphans	136,947.87	293,289.46
Total	<hr/> \$282,359.84	<hr/> \$1,971,339.36

CENTRAL HEADQUARTERS—Division of Veterans Services,

222 West State Street, Trenton

Field Offices:		
Asbury Park	Hammonton	North Plainfield
P. O. Box 945, 710 Mattison Ave.	State Employment Service 110 Railroad Avenue	Borough Hall, 263 Somerset St.
Atlantic City	Hackensack	Paterson
Schwehm Bldg., Room 209	14 South State Street	City Hall, 4th floor
Atlantic & New York Avenues	Irvington	Perth Amboy
Bridgeton	Town Hall, Civic Square	State Employment Service Office 347 Maple Street
State Employment Service Office 22 Washington Street	Jersey City	Philadelphia
Camden Area	Armory, Jordon & Montgomery Streets	V.A.D.O.—5000 Wissahickon Avenue Germantown, Pennsylvania
413 Broadway, Room 407	Millville	*Princeton (new office to be opened in Borough Hall, September 1962)
Dover	American Legion Post Home Buck & Mulberry Street	Somerville
American Legion Home	New Brunswick	State Employment Service 275 East Main Street
1 Legion Place—P. O. Box 588	County Record Bldg., Lower Floor Bayard Street	Trenton Area
Elizabeth	Newark Area	222 West State Street
State Employment Service Office 1115 East Jersey Street	Center Bldg., Room 210, 1100 Raymond Blvd.	Woodbury
Freehold	Newark Liaison	Court House Annex
American Legion Home, 62 W. Main St.	V.A.R.O.—20 Washington Place	*Contact Trenton Area Office

FISH AND GAME

Wildlife Management

The wildlife harvest by licensed hunters in New Jersey was regarded as reasonably successful during the past fiscal year. The rabbit kill showed a decrease over the previous year with an estimated 417,240 animals; the pheasant harvest was estimated at 262,225, an increase over the 1960 season; and an estimated 167,280 squirrels, 65,450 bobwhite, 29,670 ruffed grouse, 44,820 ducks, and 16,975 brant were taken by hunters. An estimated 107,035 license holders hunted deer, 102,370 hunted pheasants, and 102,340 hunted cottontail rabbits. This is the first year that the pheasant has competed with the cottontail rabbit as the most popular small game species.

During the deer bow and arrow season, 1,081 deer were reported killed; the firearm deer season yielded a kill of 5,250; and the special statewide hunter's choice deer season registered a kill of 6,070 animals. The total kill of the three seasons was 12,406 representing an all-time high in this State.

Activities of a research nature included the evaluation of certain insecticidal applications on the saline marshes and the resulting effects on macro and micro organisms. Experimental work with wildlife food production on low quality soils was continued and annual acorn production was evaluated. Control of aquatic and upland noxious plants with herbicides was conducted on an experimental basis. A total of 80 acres of phragmites was treated with good results.

Considerable work was done with cottontail rabbit habitat. Experimentation with low level dikes as mosquito control and wildlife facility showed excellent promise. An annual clapper rail nest and deer census was completed. A woodcock and dove call count and winter waterfowl count were conducted on a cooperative basis with the U. S. Fish and Wildlife Service. The January mid-winter waterfowl inventory showed 248,139 birds to be in New Jersey, a

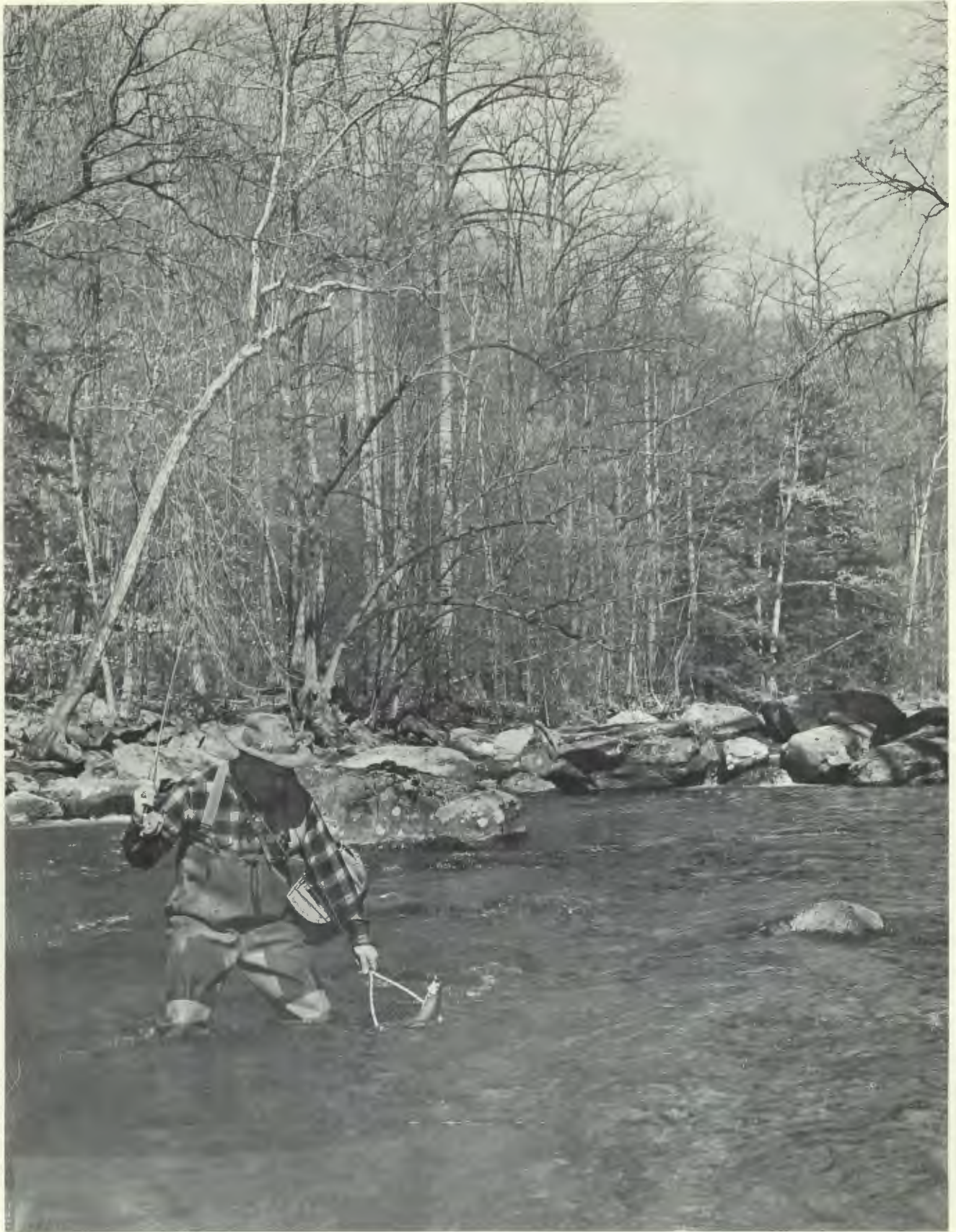


decrease from the previous year when 345,556 birds were recorded. The species suffering the greatest decrease was the American brant. With the cooperation of the U. S. Fish and Wildlife Service, 350 immature laughing gulls and 729 waterfowl were live-trapped and banded.

Considerable cooperative work was undertaken with other state and federal agencies. These included the New Jersey Department of Health, New Jersey Mosquito Commission, several county mosquito commissions, Rutgers University, Harvard University, Rockefeller Institute for Medical Research, Soil Conservation Service, several branches of the United States Fish and Wildlife Service, New Jersey Bureau of Forestry Management, New Jersey Bureau of Forests and Parks, Green Acres, State Police, and other mid-Atlantic and north-east states.

The farm-game habitat restoration project included the planting of 438 spring food patches and 169 acres of fall rye. A total of 341,950 trees and shrubs and 10,850 lbs. of seed was distributed to cooperators, 9,025 linear feet of hedgerow were managed, 3,625 linear feet of woodland border installed and 12,800 linear feet of Lespedeza border and 54.4 acres of perennials were planted. Additional cooperators were added to the project during the year.

Hunting by registration on the Lakehurst Naval Air Station was continued. A total of 1,708 hunters was registered during the small game season and 1,645 hunters during the three deer seasons.



Development work during the year on the several State-owned public shooting and fishing grounds included the following:

Building construction	3
Land clearing	60 acres
Boundary line clearing	13,500 ft.
Firelane construction	8,286 ft.
Firelane discing	26,000 ft.
Rye planting	107 acres
Corn planting	23 acres
Buckwheat planting	3 acres
Birdsfoot trefoil planting	9.5 acres
Bridge construction	1
Culverts	3
Roads were gravelled and graded	
Road construction	13,000 ft.
Building repair	1
Dirt fill	139 cu. yds.

The March storm caused severe damage to coastal installations, especially at Heislerville, Matts Landing, Tuckahoe, Manahawkin. All damage has been repaired and facilities are operating.

Two land tracts were acquired during the year: 254.34 acres were purchased as an addition to the Greenwood Forest Public Shooting Grounds in Ocean County; and 913.17 acres were purchased in Cumberland County.

Projects associated with management were expanded during the year. Considerable data were collected dealing with age classes, reproduction ratio, road kill, and herd composition. Efforts to reduce deer damage to agricultural crops were continued. A total of 170 deer complaints, were serviced. Landowners suffering deer damage were furnished 210 gal. of Magic Circle deer repellent, 39.7 gal. of Good-Rite Z.I.P., 603 rolls of mesh wire and 104 rolls of barbed wire. Thirty-five deer were live-trapped at the Earle Ammunition Depot and liberated in southern New Jersey.

In addition, wildlife control representatives serviced landowners, farmers and sportsmen in the control of nuisance and predaceous animals. From July 1, 1961 to May 25, 1962, the following animals were removed from properties: 771 raccoons, 680 foxes, 617 crows, 450 opossum, 315 skunks, 371 muskrats, 160 cats, 86 beaver, 48 weasles, 76 turtles, 2 woodchucks, 16 hawks, 7 snakes, 11 squirrels, 22 owls, 13 dogs, 14 rabbits and 7 porcupine.



Fisheries Management

As predicted earlier, the number of trout over 12 inches was in excess of the number stocked last year. In the fiscal year 1960-61, 42,660 trout over 12 inches were released in comparison to 53,558 this year. Pre-season stocking began on March 5 and ended on June 15. Pre-season adult trout totals were as follows: 93,280 brook trout, 17,580 brown trout, and 77,360 rainbow trout. These averaged 9.7 inches in length. In-season—April 16-June 15 adult trout totals were: 61,530 brook trout, 137,175 brown trout and 128,154 rainbow trout. These averaged 10.1 inches in length. The combined average length of trout from the Charles O. Hayford Hatchery was 9.9 inches. The total adult trout spring stocking was 515,079.

Good reproduction of fathead minnows throughout the summer of 1961 made it possible to introduce them into rearing ponds at the Hackettstown Hatchery which already contained 30,000 largemouth bass. The original stock was provided by the Fisheries Laboratory. In July, 1961 400 calico bass were introduced into another pond of approximately two acres in which fathead minnows also were introduced as a forage fish.

Four ponds were drained, gravel nested, re-filled and stocked with potential smallmouth bass breeders which were provided through electro fishing operations. One small hatch occurred in the spring of 1961 and another during the calendar year. Selected largemouth breeding bass were reintroduced as well as a limited number of mature bluegill sunfish and fathead minnows to serve as forage production.

Very good holdover on two-year-old largemouth bass and channel catfish was evident upon draining the four-acre lake at Hacketts-town last November; 2740 bass, averaging 7 inches and representing a 46% survival, were obtained. Seven hundred channel catfish which have grown approximately 10 inches in two years were recovered for a 60% holdover. These two species seem to be quite compatible when reared in the same pond.

Species combination and selective single species trout stocking was conducted at the hatchery during the year. Biologists requested that only rainbows be stocked in certain streams and brook trout and brown trout be stocked in others. This was done in an experiment to place a species in the habitat best for increased survival and holdover or for return to anglers.

During pre-season and in-season stocking, 62,200 rainbow trout were procured from the National Fish Hatcheries at Leetown, West Virginia and Pittsford, Vermont. About 10,740 rainbow trout were too small for release and were held over for next year. Those stocked from both out of state hatcheries averaged 8.8 inches.

Over 13,000 fingerling trout were released during the fiscal year; 2,000 brook trout, 1,000 brown trout, 10,000 rainbow trout and 500 sea-run brown trout. Warm water releases were: 2,773 largemouth bass adults, 37,090 largemouth bass fingerlings, 5,575 bluegill sunfish adults, 175 pumpkinseed sunfish adults, 974 brown bullhead adults and 235 channel catfish adults.

Twelve shipping pools were compartmented to facilitate species isolation and separation of various size ranges for stocking streams in the small, medium and large classifications. Removal of concrete raceways, installation of corrugated piping and construction of transverse roadways between shipping pools permitted greater freedom and versatility in loading operations during the distribution season. A hopper system involving the transfer of trout through 4" irrigation pipe from pool to pool was successfully used to fill distribution pools with truck-load capacity before shipment. The distribution total for all types of fish was 626,857 for the fiscal year.

Trout Research and Management Unit

Studies on trout stocking techniques and associated problems are being continued. A new study was initiated on Big Flat Brook as part of a long-range program to determine the fate of trout stocked in New Jersey waters. Possible factors to be investigated include: fish taken by unlicensed anglers (mostly youngsters) both in and out of season, effects of culling, movement of fish out of the stocking area, and natural, hooking and stocking mortality. Tagged trout in three experimental areas totalled 6,870: Big Flat Brook, 4,640; Big Swartswood, 1,500; and Lake Grinnel, 750. The trout studies in southern New Jersey were confined to a saturation stocking of fingerling trout in a tributary of the Manasquan River to evaluate crowding as a possible factor in stimulating a seaward movement, stocking of European sea trout raised at the hatchery, and continued work on the Oyster Creek experimental tract. Brook trout raised in this extremely acid water have been providing limited fishing.

Work continued on early-season stocking mortality of trout. Data to date suggests that trout stocked in water differing greatly in chemical characteristics from Hatchery water suffer considerable mortality when temperatures are around 40-50° F. If this premise is true it could explain the poor fishing often experienced in soft water streams during a wet cold spring. The small pond trout studies were continued.

Marine Fisheries Research and Management Unit

This unit is located at the Marine Laboratory at Island Beach. About 60% of the activities of this unit are financed with federal-aid funds. *Fluke Investigations.* A total of 3,143 fluke were tagged during the past season. Tag returns suggest an exploitation rate of 20-25% of the population. Valuable data on seasonal movements of this species have been secured.

Porgy (Scup) Investigations. The analysis of data and preparation of the joint report with the Bureau of Commercial Fisheries Laboratory at Woods Hole is continuing.

Striped Bass Studies. Eighty-eight striped bass were tagged from the Maurice River, thirty-three of which have been reported caught to



date. This is part of a program to study local striped bass populations. The Delaware River striper study included sampling for striper (and shad) eggs at five stations from Kilahook Refuge to Bristol.

Artificial Reef Studies. Data are being collected on fish attracted to various types of reef materials. Underwater movies are being taken to document the observations.

Estuarine Development Studies. The study has been initiated to evaluate the effects of man-made changes in our estuarine areas.

Shark Studies. The Smith Research and Development Corporation has donated its research vessel to the Bureau of Sport Fisheries and Wildlife and the Department of Conservation and Economic Development. The marine laboratory was assigned to the State in these studies.

Warmwater Management Unit

Lake Surveys. Three lakes were surveyed and rechecks were conducted on some fifteen other lakes.

Weed Control. The three hundred acres of water milfoil treated at Big Swartswood Lake last year remain under control. Seven acres of the bathing beach area at the State Park were treated again this year for all wood growths. Lake Hopatcong required an emergency treatment late in June to control twenty acres of milfoil reinfestation. A helicopter was employed for this purpose demonstrating the practicability of this technique for small plot applications. Portions of Colliers Mill and Turnmill Pond were also treated; reports indicate excellent control and very good bass fishing now being enjoyed. Experimental plots for testing new chemicals have been applied on different weed types and in representative lakes. This has been conducted in cooperation with chemical companies and is necessary to keep abreast with the latest advances in this field.

Stony Brook Impoundments. Periodic supervision was carried on here. The entire drainage area to Linvale Lake has been reclaimed. This lake is now finished and has been stocked with channel catfish and rainbow trout. Work is progressing on Site 5 and is scheduled for completion in late July.

Passaic River Flood Control Project. The effects of the proposed Corps of Engineers project on sport fishing in the Passaic Valley have been studied. A number of Soil Conservation Services, Corps of Engineers and County Mosquito Commission proposals or prospects have been reviewed. Public hearings and meetings with local officials were often a necessary extension of these studies.

Bass and Pickerel Spawning Studies. Several lakes that have been repeatedly treated for weed control are being compared with similar lakes where no treatment has been undertaken. This is to determine any possible effects of certain types of weed control techniques on bass and pickerel spawning.

Artificial "Oxbow" Project. Artificial "oxbows" and/or lagoons are believed to be one possibility for improving fishing where channel dredging has disturbed the stream environment, or where the terrain may not permit the construction of impoundments. An artificial oxbow and lagoon has just been completed on the Van Nest Tract. The cost of this project is financed by federal aid, but the responsibility for construction and subsequent evaluation has been assigned to the Warmwater Management Unit.

Warmwater Fisheries Research Unit

Bass Survival and Harvest Experiments. These are designed to evaluate the success of stocking hatchery-reared bass above 3 inches in length in various types of environments. Comparisons are being made with the survival of salvage and native bass under similar conditions. The criteria being used is the returns of tagged fish. To date there appears to be no appreciable difference in the return of tagged fish of the same size regardless of their origin. A few tag returns have gone as high as 25% to 30% which is probably good for largemouth bass, since this is in line with the highest returns from similar studies elsewhere.

Species Combination Studies. Of the many combinations undertaken to date the most promising appear to be the bass-sunfish-fathead minnow combination, and the channel catfish in several combinations. The channel catfish has been received with considerable enthusiasm wherever it has been stocked to date. It is a

fish that can be taken on all types of lures and bait, a good sport fish, good eating and it seems to be most actively taken during July and August when other game fish are less available. These combinations are now being set up in public fishing areas.

Design and Development of Electrofishing Gear. Several new electrode systems were designed and/or constructed and tested under various field conditions in lakes and streams. Greater emphasis is being given to gathering basic data: water characteristics throughout the State, possible mortality of fish that have been electrocuted and measurement of the electric field in the water.

Fish Population Dynamics. This is a long-range study designed to acquire basic data on the standing crop and species composition of fish population in New Jersey lakes and ponds. Data from one lake drainage were processed this year.

Pollution Unit

The pollution unit was transferred to the Research and Development Section on January 1, 1962. A three-year demonstration grant from the U. S. Public Health Service (for a reorganization of the pollution unit) was obtained on March 1, 1962. A completely equipped chemical laboratory and an air conditioned wet laboratory for bioassay work are being installed.

Public Fishing Acquisition and Development Unit

This unit was established and assigned to the Research and Development Section on January 1, 1962. The major responsibility at the present time is the acquisition of public fishing areas or access sites. Other responsibilities include checking on the physical condition of presently owned fisheries areas, meeting with various groups and/or agencies on joint development projects, or maintenance problems on existing sites and supervision of development work. Acquisitions completed are: Clarks Pond in Cumberland County and the Greenwood site in Salem County. Development of Linvale Lake in Hunterdon County has been completed; grass, trees and shrubbery were planted and several islands have been constructed. A parking area and access road is

under contract. Baldwin Lake in Mercer County is scheduled for completion in July 1962.

Special Studies and Activities

Park Pond Management Program. This unit is responsible for fishery management programs in small park ponds. Twenty-six 2-4 week "kid fishing" programs were supervised, fifteen new park ponds were surveyed and numerous meetings were held with county and local park officials on the construction and management of park ponds.

Shad Reintroductions. Hatching of shad eggs was continued in the Raritan and Manasquan rivers. Checks were conducted for possible spawners from the 1959 hatching operations, but there was no evidence that any had returned.

Delaware River Survey by Staff Members

This was the third and final year of the extensive-type survey. During the spring, seven stations were occupied from Deep Water Canal at Penn's Grove to Belvidere to check for striped bass and shad eggs. Several Conservation Officers assisted in this work. Pennsylvania and New York were assigned additional stations upstream to the lower east and west branches of the Delaware.

Fishing Census. The 12th annual ice fishing census was continued on Lake Hopatcong and other important fishing lakes in North Jersey during January. The postcard census of licensed fishermen was also continued.

Law Enforcement

Conservation officers contributed much more than enforcement during the year. A primary duty of any enforcement officer is the prevention of violations through education. Officers are required to attend meetings of the State Federation of Sportsmen's Clubs at the county level and are requested to attend meetings of individual clubs within their assigned areas. Their presence at these meetings affords an opportunity to correct any misunderstanding of programs or policies that may be in effect.

In order to keep abreast of activities within the Department's fish and game division, each officer attends a monthly meeting at the district level and bi-monthly meeting at the State level.

Subjects discussed at these State meetings have included the Green Acres program, deer research programs and the conservation officer's role therein, evaluation of trout waters, and the trout stocking program. These meetings have included in-service training periods devoted to legal aspects of the work. The conservation officers, coastal patrol officers, and certain Division employees attended an instructional course in gun handling, provided by the State Police Academy at Sea Girt. Classroom instruction and range firing were included.

Conservation officers reported over 100,000

hours of duty during the year. Prosecutions are up about 300 cases or close to 25%. The increase is attributed to extra enforcement practices instituted during the past deer seasons, and the fact that the force was at full strength during the rest of the year.

Under police powers as harbor masters, the enforcement unit joined in the coordinated enforcement effort to prevent the taking of shellfish from areas along the coast found as polluted by the State Board of Health. Conservation officers turned over three cases to Shellfish Officers who secured convictions.



FINANCIAL STATEMENT

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
Office of the Commissioner	\$ 397,280.95	\$ 330,431.55	\$31,793.05	\$ 35,056.35
Division of Resource Development	14,220,202.12	7,391,176.72	2,849.52	6,826,175.88
Morris Canal & Banking	221,135.82	53,811.02		167,324.80
Division of Water Policy & Supply	462,249.04	408,900.21	2,337.25	51,011.58
Division of Shell Fisheries	279,443.00	278,228.99	1,166.65	47.36
Division of Fish & Game	2,444,243.32	2,037,551.46		406,691.86
Division of Veterans Services	496,320.00	495,318.10	1,001.90	
Division of State & Regional Planning	787,130.05	769,890.62	483.03	16,756.40
TOTAL GENERAL OPERATIONS	<u>\$19,308,004.30</u>	<u>\$11,765,308.67</u>	<u>\$39,631.40</u>	<u>\$7,503,064.23</u>
TRUST ACCOUNTS				
State Recreation & Land Acquisition	\$ 69,007.85	\$ 69,007.85	—	—
State Water Development Fund	7,993,091.11	7,993,091.11	—	—
TOTAL TRUST ACCOUNTS	<u>\$ 8,062,098.96</u>	<u>\$ 8,062,098.96</u>	—	—
Debt Service	<u>\$ 3,350,125.00</u>	<u>\$ 3,350,125.00</u>	—	—
GRAND TOTAL	<u>\$30,720,228.26</u>	<u>\$23,177,532.63</u>	<u>\$39,631.40</u>	<u>\$7,503,064.23</u>

Unappropriated Receipts

	Deposited To School Fund	Deposited To State Treasury
Division of Resource Development	\$986,435.77	\$1,846,914.20
Division of Water Policy and Supply		425,324.79
Division of Shell Fisheries		69,281.07
	<u>\$986,435.77</u>	<u>\$2,341,520.06</u>

OFFICE OF THE COMMISSIONER

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
General Operations	\$271,747.00	\$271,375.95	\$ 371.05	
Delaware River Basin Compact	50,000.00	20,000.00		\$30,000.00
Study of Small Business Project I	6,586.95	2,559.30		4,027.65
Study of Small Business Project II	11,625.00	10,596.30		1,028.70
Disabled War Veterans	25,000.00	25,000.00		
Catholic War Veterans	12,322.00		12,322.00	
Marine Corp League	20,000.00	900.00	19,100.00	
	<u>\$397,280.95</u>	<u>\$330,431.55</u>	<u>\$31,793.05</u>	<u>\$35,056.35</u>

DIVISION OF RESOURCE DEVELOPMENT

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
GENERAL OPERATIONS				
Directors Office	\$ 187,419.68	\$ 187,392.11	\$ 27.57	
Bureau of Commerce	330,052.42	320,033.42	222.32	\$ 9,796.68
Bureau of Geology	101,019.59	98,035.48	1,305.65	1,678.46
Bureau of Housing	104,885.83	91,835.60	5.61	13,044.62
Bureau of Forestry	694,619.62	683,478.94	502.34	10,638.34
Bureau of Navigation	424,192.55	423,060.30	506.25	626.00
Bureau of Parks & Recreation	1,341,580.43	1,336,558.40	246.24	4,775.79
Bureau of Aeronautics	54,523.27	54,489.73	33.54	
TOTAL GENERAL OPERATIONS	\$ 3,238,293.39	\$ 3,194,883.94	\$ 2,849.52	\$ 40,559.89
STATE AID				
Bureau of Navigation				
Beach Protection	\$ 4,073,982.81	\$ 2,011,601.16		\$ 2,062,381.65
Inland Waterways	363,545.71	290,490.63		73,055.08
Atlantic City Marina	347,143.32	288,063.89		59,079.43
Special Beach Erosion Fund	88,750.37			88,750.37
Beach Protection Control	4,000,000.00	23,336.74		3,976,663.26
State Shore Beach Protection	18,500.00	18,496.13		3.87
TOTAL STATE AID	\$ 8,891,922.21	\$ 2,631,988.55		\$ 6,259,933.66
CAPITAL				
Bureau of Navigation	\$ 241,107.00	\$ 241,058.55		\$ 48.45
Bureau of Parks & Recreation	1,123,574.84	597,940.96		525,633.88
TOTAL CAPITAL	\$ 1,364,681.84	\$ 838,999.51		\$ 525,682.33
FEDERAL FUNDS				
Federal Airport Grant	722,461.26	\$ 722,461.26		—
Federal Soil Bank	746.78	746.78		—
Watershed Programs	2,096.64	2,096.64		—
TOTAL FEDERAL FUNDS	\$ 725,304.68	\$ 725,304.68		—
TOTAL RESOURCE DEVELOPMENT	\$14,220,202.12	\$ 7,391,176.72	\$ 2,849.52	\$ 6,826,617.88

DIVISION OF RESOURCE DEVELOPMENT

Unappropriated Receipts

	Deposited To School Fund	Deposited To State Treasury
Bureau of Commerce		
Sale of Literature		\$ 8,520.01
Bureau of Aeronautics		
Sale of Licenses		648.00
Bureau of Forestry		
Rentals & Fines		3,801.81
Sale of Seedlings		10,756.05
Bureau of Geology		
Sale of Maps		6,847.34
Bureau of Housing		
Veterans Housing		1,105,205.00
Bureau of Navigation		
Marina Rentals		100,643.04
Marina Concessions		22,099.97
Preparation of Instruments		7,992.00
Power Vessel Licenses		66,036.50
Atlases and Maps		428.00
Riparian Rights		
School Fund Income Account (Lease Rentals, License Fees)	\$ 84,431.79	
School Fund Investment Account (Grants, Easements, One-fee Sale)	902,003.98	
Bureau of Parks & Recreation		
Permits, Rents, Fees, Sales of Commodities		510,058.80
Sale of Literature		3,877.68
TOTAL UNAPPROPRIATED RECEIPTS	\$986,435.77	\$1,846,914.20

DIVISION OF WATER POLICY & SUPPLY

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
General Operations	\$428,473.00	\$401,069.59	\$2,337.25	\$25,066.16
State Aid Flood Control Passaic & Morris Counties	<u>33,776.04</u>	<u>7,830.62</u>	_____	<u>25,945.42</u>
TOTAL DIVISION OF WATER POLICY & SUPPLY	<u><u>\$462,249.04</u></u>	<u><u>\$408,900.21</u></u>	<u><u>\$2,337.25</u></u>	<u><u>\$51,011.58</u></u>

DIVISION OF VETERANS SERVICES

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
GENERAL OPERATIONS	<u>\$213,998.00</u>	<u>\$213,153.89</u>	\$ 844.11	_____
STATE AID				
Veterans Orphans	\$137,222.00	\$137,072.86	\$ 149.14	_____
Blind Veterans	24,500.00	24,496.08	3.92	_____
Paraplegics, etc	<u>120,600.00</u>	<u>120,595.27</u>	4.73	_____
TOTAL STATE AID	<u>\$282,322.00</u>	<u>\$282,164.21</u>	\$ 157.79	_____
TOTAL—DIVISION OF VETERANS SERVICES	<u><u>\$496,320.00</u></u>	<u><u>\$495,318.10</u></u>	<u><u>\$1,001.90</u></u>	<u><u>_____</u></u>

MORRIS CANAL & BANKING CO.

	Available For Expenditure	Expended	Returned To State Treasury	Reappropriated
General Operations	\$ 66,427.08	\$52,432.99	_____	\$ 13,994.09*
Capital	<u>154,708.74</u>	<u>1,378.03</u>	_____	<u>153,330.71</u>
TOTAL—MORRIS CANAL & BANKING CO.	<u><u>\$221,135.82</u></u>	<u><u>\$53,811.02</u></u>	<u><u>_____</u></u>	<u><u>\$167,324.80</u></u>

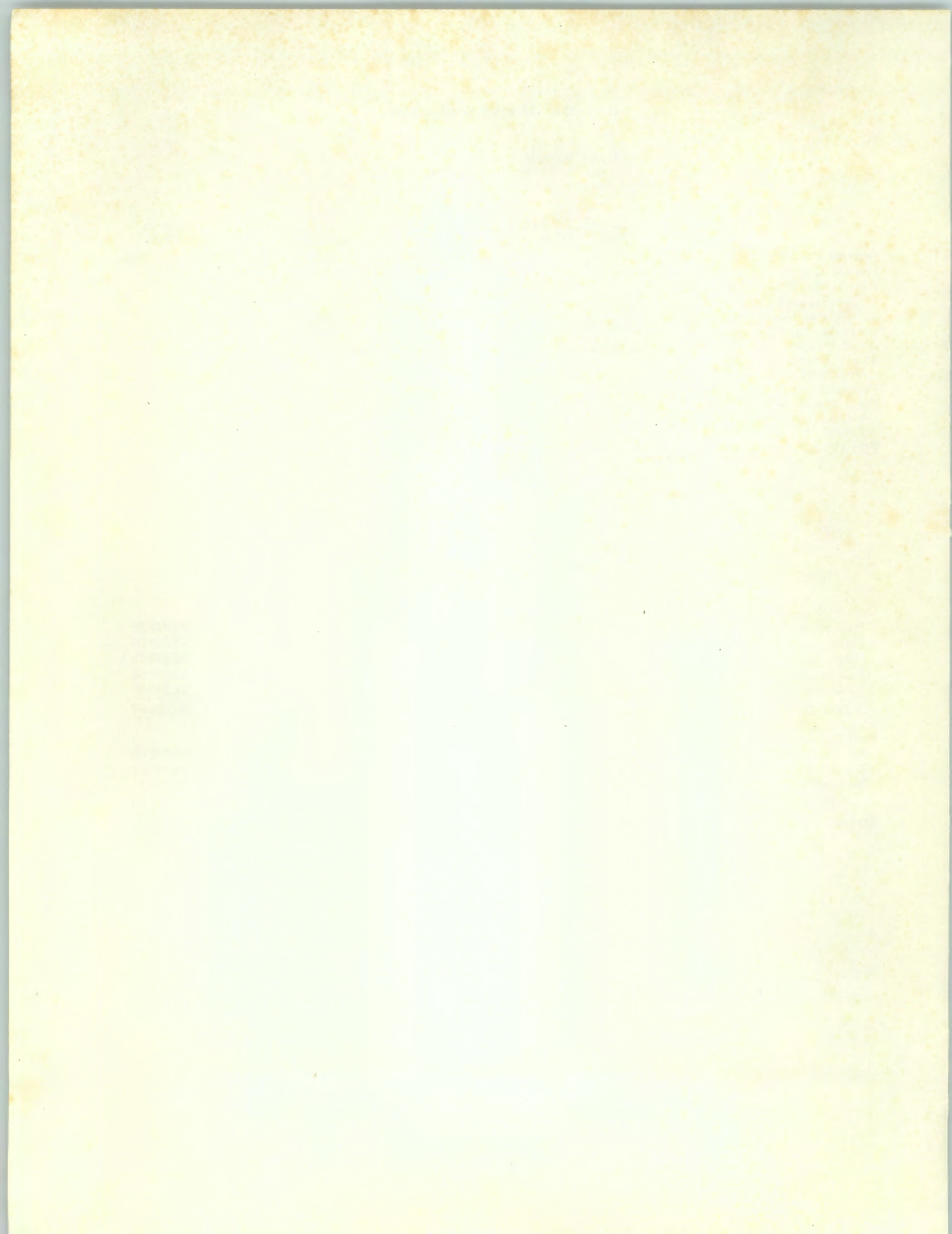
DIVISION OF FISH AND GAME

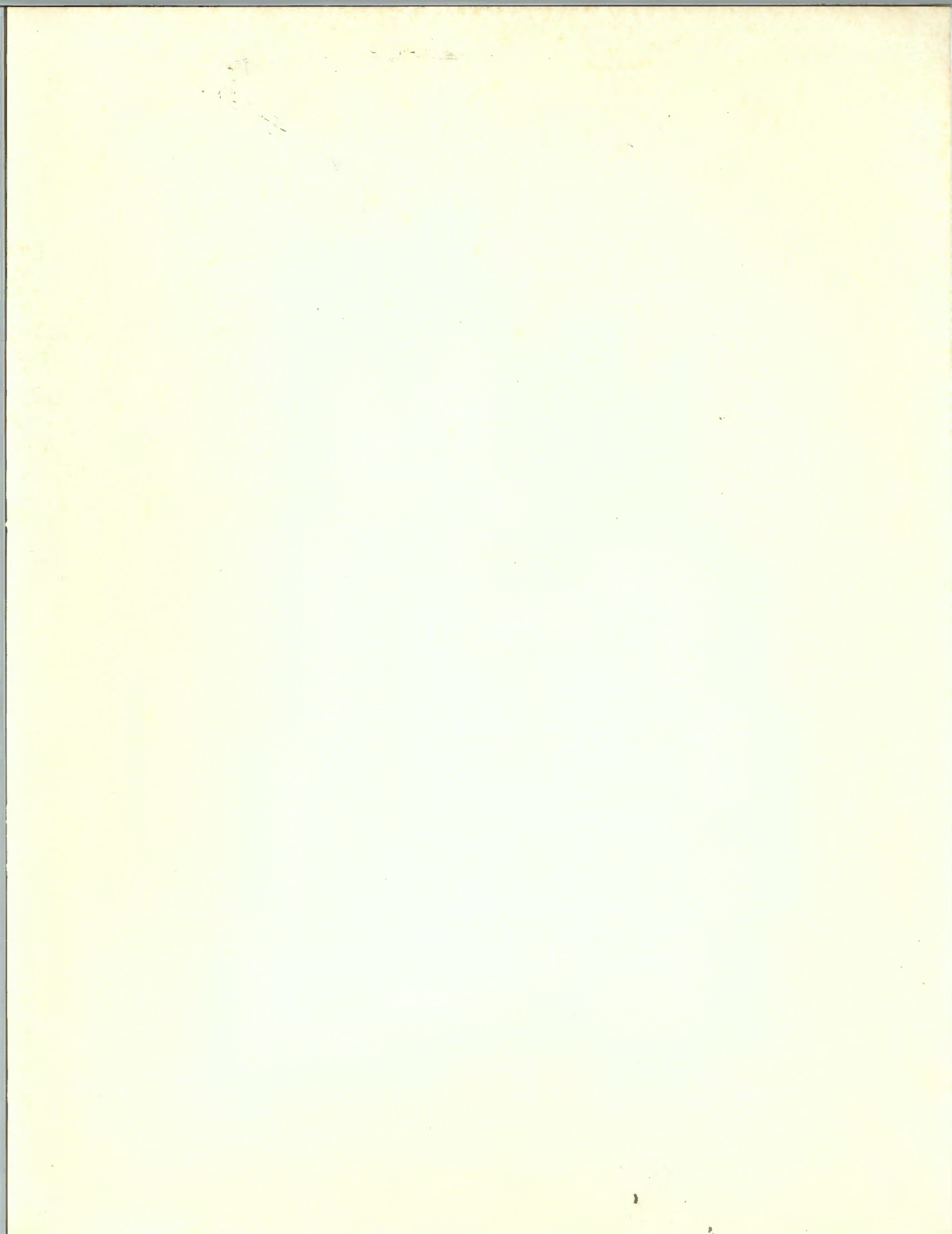
(The Fish and Game Division is supported entirely from receipts and Federal Funds. Although moneys are appropriated in the regular manner unexpended funds do not lapse but carry over.)

	Balance 7-1-61	Receipts 7-1-60 to 6-30-62	Total	Expended	Outstanding Requisitions	Balance 7-1-62
General Fund						
Federal Grant—Pollution Control				\$1,589,067.17	\$10,421.68	
Federal Aid to Fisheries (Reimbursable by 75% from Federal Government)				9,136.76		
Total General Fund & Federal Aid to Fisheries				<u>39,960.58</u>		
Public Shooting & Fishing Grounds Fund	\$277,266.61	\$1,583,226.57	\$1,860,493.18	\$1,638,164.51	\$10,432.68	\$211,895.99
Federal Aid to Wildlife				266,812.84		
Total Public Shooting and Fishing Grounds Fund and Federal Aid to Wildlife				<u>122,152.43</u>		
	<u>41,395.37</u>	<u>542,365.77</u>	<u>583,761.14</u>	<u>388,965.27</u>		<u>194,795.87</u>
TOTAL	<u><u>\$318,661.98</u></u>	<u><u>\$2,125,592.34</u></u>	<u><u>\$2,444,254.32</u></u>	<u><u>\$2,027,129.78</u></u>	<u><u>\$10,432.68</u></u>	<u><u>\$406,691.88</u></u>

ANALYSIS OF RECEIPTS

General Fund and Federal Aid to Fisheries	\$1,393,446.10
Hunters and Anglers' Licenses	56,928.00
Fines	91,407.79
Other Receipts	15,199.68
Federal Aid to Fisheries	26,245.00
Federal Grant—Pollution Control	<u>1,583,226.57</u>
TOTAL	
Public Shooting and Fishing Grounds Fund and Federal Aid to Wildlife	\$ 402,355.95
Hunters' and Anglers' Licenses	14,425.71
Recoveries, Sales, Rentals of Equipment, Rents	125,584.11
Federal Aid to Wildlife	<u>542,365.77</u>
TOTAL	<u>\$ 542,365.77</u>
TOTAL DIVISION OF FISH AND GAME RECEIPTS	<u><u>\$2,125,592.34</u></u>







**DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT**
TRENTON 25

